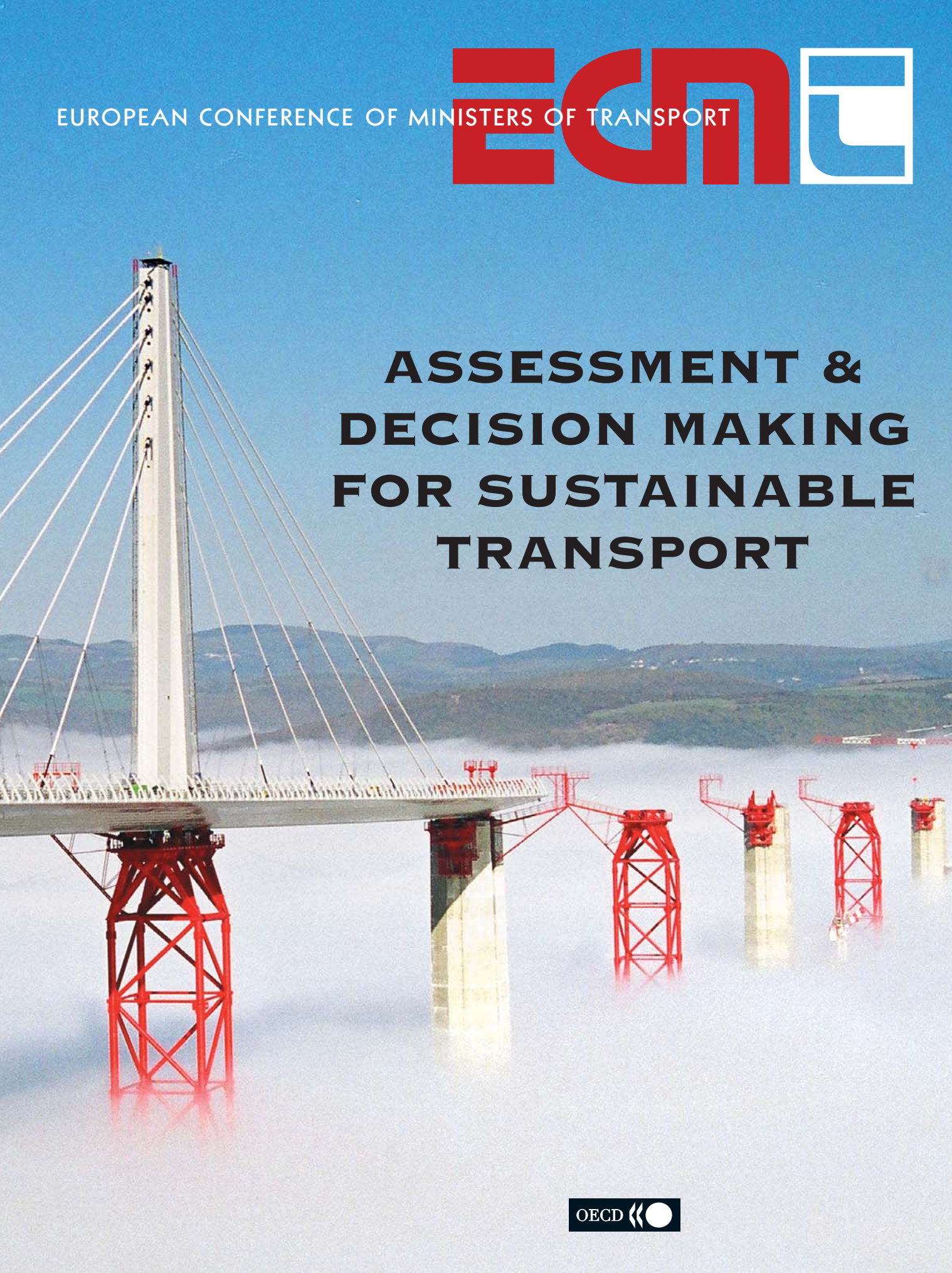
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ASSESSMENT & DECISION MAKING FOR SUSTAINABLE TRANSPORT

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The European Conference of Ministers of Transport (ECMT) is an inter-governmental organisation established by a Protocol signed in Brussels on 17 October 1953. It is a forum in which Ministers responsible for transport, and more specifically the inland transport sector, can co-operate on policy. Within this forum, Ministers can openly discuss current problems and agree upon joint approaches aimed at improving the utilisation and at ensuring the rational development of European transport systems of international importance.

At present, the ECMT's role primarily consists of:

– helping to create an integrated transport system throughout the enlarged Europe that is economically and technically efficient, meets the highest possible safety and environmental standards and takes full account of the social dimension;

– helping also to build a bridge between the European Union and the rest of the continent at a political level.

The Council of the Conference comprises the Ministers of Transport of 43 full member countries: Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, FYR Macedonia, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Netherlands, Norway, Poland, Portugal, Romania, the Russian Federation, Serbia and Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom. There are seven Associate member countries (Australia, Canada, Japan, Korea, Mexico, New Zealand and the United States) and one Observer country (Morocco).

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The issues currently being studied – on which policy decisions by Ministers will be required – include the development and implementation of a pan-European transport policy; the integration of Central and Eastern European Countries into the European transport market; specific issues relating to transport by rail, road and waterway; combined transport; transport and the environment; sustainable urban travel; the social costs of transport; trends in international transport and infrastructure needs; transport for people with mobility handicaps; road safety; traffic management; road traffic information and new communications technologies.

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FOREWORD

This report makes recommendations for good decision-making in infrastructure planning and transport policy development. It includes a Resolution agreed by Ministers at the ECMT Council meeting in Brussels in April 2003 and is based on reviews of recent experience in seven member countries. The ECMT Secretariat is very grateful for the assistance of national experts from each country for carrying out these reviews, and in particular Jean-Charles Poutchy-Tixier from France; Olivia Bina from Italy; Freddie Rosenberg, Jan Prij and Nathalie Koning from the Netherlands; Paul Tomlinson from the United Kingdom; and Mikael Hilden from Finland.

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CONCLUSIONS AND RECOMMENDATIONS

At the Prague Council in 2000, Transport Ministers agreed to a common approach to developing sustainable transport policies[1] that highlighted the need for improved support for decision making on transport projects and policies. The importance of good cost benefit analysis and effective strategic environmental assessment was stressed and guidance sought on developing better procedures and tools for presenting the results of appraisals to decision makers. Improved decision making was viewed as the key to integrating transport and environment policies.

This paper presents the conclusions of work on improving tools to support decision making undertaken since the Prague Council. Experience in the use of economic and environmental assessments and procedures for incorporating results in the decision making process was reviewed in detail in the United Kingdom, France, Italy and the Netherlands with additional short summaries provided by Germany, Spain and Finland. The paper is accompanied by a Resolution on Strategic Assessment and Decision Making for Integrated Transport and Environment Policy adopted by the ECMT Council of Ministers in April 2003.

A new political emphasis on integrated policy has been fundamental in driving change in transport project and policy screening procedures. This treats transport more as a means to promoting the explicit political objectives of governments (for example growth, equity, employment, protecting health and the environment) rather than a self contained sector. In operational terms projects are then assessed in terms of contribution to sustainable development (sustainable jobs, sustainable communities etc.) instead of growth in mobility. This has been reinforced by an emphasis on identifying how transport projects are to deliver these wider benefits and exactly how regional development benefits are expected to be achieved. The focus has shifted to outcomes rather than outputs, measuring the performance of the transport system rather than the length of new road that is provided.

Pressure for more robust economic appraisal has come from the reflections in expert committees working for transport ministries and from Finance Ministries looking for value for money in public investments. In some countries the introduction of environmental assessment procedures has led to improved economic appraisal techniques and in general more progress has been made in applying strategic environmental assessment to transport than in other sectors.

Finally, legislation can play a key role and sometimes has wider consequences than initially envisaged. Transposition of the draft EU Directive on strategic environmental assessment[2] is likely to have a significant effect in the longer term in EU countries. Incorporation of the UN/ECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters in the Directive may prove particularly significant.

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The Purpose of Appraisals

The purpose of economic and environmental appraisals is not to attempt to take the decision in place of technical or political decision makers but to present them with the information they need to make an adequately well informed decision. Assessments therefore need to be presented in a way that directs decision makers to the key factors to weigh in their decision, highlighting trade-offs, risks and uncertainties, rather than making judgements in place of the decision maker. The limits to appraisal techniques also need to be acknowledged.

The contribution of the transport policy or project assessed to each of the main relevant policy goals of government needs to be highlighted together with conflicts and trade-offs that have to be made between different goals. Assessments should also not be seen as a blunt yes or no test of whether a project goes ahead. They should be used instead to draw out issues and propose ways forward. They should also provide a mechanism for drawing stakeholders into a consensus as to the fundamental problems a project is to address, the alternatives available and the solutions preferred.

Strategic assessments need also to go beyond simply identifying problems and identifying measures to mitigate costs. They need to propose ways in which sustainable development can be promoted. This is increasingly the practice with Italy's *Conferenza di Servizi*, stakeholder consultation groups established under project environmental impact assessment (EIA) procedures, and France's "1%" sustainable local development funds[3].

The strategic assessments discussed here are applicable to transport policies and major infrastructure projects together with the spatial plans and programmes of investment that in scope and scale lie between policies and projects. The results of strategic assessments provide the context for smaller projects and should facilitate project level appraisals. As set out below, strategic assessments are not supposed to introduce additional costs in terms of time and resources but to streamline planning procedures. Assessment costs should not be allowed to escalate beyond the appropriate level for the scale of project or policy being appraised.

It should also be noted that appraisals are usually more effective when the financial responsibility for projects matches their spatial dimension (e.g. for local projects local governments have discretionary powers over the use of resources). Where this is not the case it may be more efficient to reorganise government responsibilities than develop elaborate assessment and consultation procedures. This reflects experience in the Netherlands and the issue is explored in the work on urban sustainable travel presented to the Lisbon Council[4].

Communicating results and traceability

The key to making appraisals useful and indeed useable for decision makers is effective presentation and communication of results.

Key results and issues have to be presented succinctly, in just a few pages, but in a way that makes the analysis behind each issue readily accessible. The UK government has made some progress in communicating complex results from appraisals in a simplified form with Appraisal Summary Tables.

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It has to be acknowledged that the process of distilling the appraisal information into the rigid format of the summary tables inevitably leads to the loss of information and introduces the potential for over-simplification of the results, particularly in the process of aggregating individual impacts. Such potential loss of information should be addressed through references that ensure a paper trail linking each indicator to increasingly detailed layers of supporting analysis. Providing traceability in this way is essential to ensuring confidence and lending credibility to the results of assessments. It also greatly facilitates updating and review of assessments when delays or new information or new policy imperatives make this necessary.

Earlier engagement with decision-makers

Establishing the regional economic development and other objectives that transport projects are intended to deliver at the early stages of planning is critical, as unless there is a consensus the plan or project objectives may be challenged later on and different or additional objectives applied, potentially aborting previous work at great cost. The major delays and revisions during the planning of the high speed Channel Tunnel rail link now under construction in the United Kingdom demonstrate the high costs that can be incurred. Political decision-makers should play an integral part of the process of defining the problems and community objectives that the transport plan or project is designed to address at the outset, rather than at the end of the exercise when other wider issues appear.

In France, extension of the high speed rail line south of Lyon was initially planned to meet the narrow criteria of delivering efficient rail services. Environmental considerations were incorporated later, adding to costs. Local objections to the project required long and costly negotiations that might have been avoided if the innovative approach "major road infrastructure and regional development"[5] applied to motorways in France for integrating local sustainable development priorities into new infrastructure projects had been available. The Netherlands provides a counter example where new integrated assessment procedures have been applied to their high speed rail project, albeit after the initial planning phases.

As transport plans and projects increasingly seek to address community needs beyond those of transport, decision-makers need to ensure that the organisations and institutions charged with developing transport plans and project can operate within the wider framework and address the policy priorities of different Government departments simultaneously. Problems have arisen in this respect with major rail projects in several countries. In the United Kingdom for example, the regional focus of the Government's Multi-Modal Studies is in contrast to the national focus of the Strategic Rail Authority[6]. Some experts view the SRA investment priorities as at variance with the objectives of delivering integrated transport solutions in the regions and argue for a regional structure to the SRA. In sum, the institutional machinery to deliver integrated transport solutions has to be in place if the appraisal process is to be effective.

Credibility and legitimacy

Establishing confidence in consultation procedures is essential but the emphasis in achieving this differs between countries. In France for example, credible, independent institutions able to act as arbiters are seen as the key element. Everywhere, however, stakeholder involvement is crucial together with wider public consultation (see below). Safeguarding the objectivity of assessments is also a concern, particularly for example in the Netherlands, where separation of stakeholder consultation from expert appraisal is viewed as important.

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Stakeholder involvement

France has innovated to ensure tighter co-ordination with local government and other local organisations through charters (*Chartes d'Itineraires*) agreed with stakeholders for major new roads and through its "1%" sustainable local development funds (see above), experimented with in some other countries. A system of matching central and local funding for these projects promotes effective consultation in a flexible process with local authorities and integration with local land use planning. Italy has established consultation procedures for local governments and other local organisations with the creation of *Conferenza di Servizi* under voluntary project EIA procedures and regional legislation. Spain has adopted a similar structure under project EIA procedures that provide for an Implementation Commission comprised of state, local and regional authorities to ensure implementation of the recommendations of environmental impact statements.

Public Consultation

Difficulties are apparent in most countries in reaching individuals and the public in general as opposed to organised groups. Consultation must go wider than institutional stakeholders and just creating the opportunities is not sufficient. It requires formal strategies for public involvement. Partners for achieving political acceptance have to be identified and all representative groups solicited, especially weak groups and particularly potential losers. UK legislation has the merit of aspiring to ensure consultation at all stages of planning from the earliest moment possible, although much remains to be done in practice.

An effective forum for consultation has to be created and animated. Ideally a consultation manager should be employed (community facilitator is the UK term). This practice has been adopted for urban projects in Switzerland[7]. Consultation should not be limited to the search for solutions to issues raised by a project but should be brought in from the early stages of project development to achieve a common vision of the problem to be addressed and the goals to be achieved[8]. It should continue into the stage of reviewing implementation with continuous contact.

Participation should ideally involve:

- Identification and weighing of problems, bringing in the perceptions of a spectrum of stakeholders.
- Identification of goals.
- Definition of strategies and measures.
- Participation in the actions implemented, if possible.
- Monitoring of effectiveness.

Achieving pre-project consultation is a crucial challenge in the coming years. Although the Swiss practice, based on a tradition of direct democracy may not be directly transferable, some promising experience is reported in Germany with Transport Strategy Round Tables and in France with public consultation on *Schemas de Service Publique* (regional transport plans).

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Finally, a crucial stage usually overlooked is communicating the results of appraisals to the public after a decision is taken. This is important to streamlining evaluation procedures and avoiding costs as the arguments considered may be highly relevant to other projects particularly when revised versions of the original proposal resurface at a later date.

Monitoring Delivery of Objectives

Ex post evaluations[9], i.e. assessments to verify results of projects after their implementation, should become a routine part of the planning process. They are important in establishing the credibility of project and policy assessments, for verifying, and if necessary correcting the results of transport investments and policy changes, and can yield important information for improving future policy and project assessments.

Streamlining Assessments

Considerable sums of money have been wasted because of flawed appraisal processes in many countries resulting, for example, from abandonment, re-configuration of the project or the addition of environmental mitigation works, imposed when project planning is at an advanced stage. A central thread of appraisal practice should be the desire for efficient decision-making in which the effective assessment of alternatives is an essential component in ensuring the robustness of the policy or project. Thus as assessment procedures mature there is a trend to incorporate project cost benefit analysis and environmental impact assessments into multi-modal transport studies. As a result scarce financial resources should be less likely to be wasted and prove more cost effective in delivering objectives.

Opportunities should be taken to streamline assessment procedures in a linked process down to the project environmental impact assessment level. In this way efficiency gains can be made and repetitious assessments avoided.

Strategic environmental assessment is being increasingly applied to transport plans that have a 20-30 year horizon. Such long-term plans create new challenges for appraisal in that they need to be sufficiently robust to accommodate external events, in particular they need to be fundamentally linked to long term spatial strategies.

Integrated Assessment

Assessments should be linked directly to the decision making procedures of elected and technical decision makers for full effect. Integrated assessments as part of the planning process are therefore likely to be more effective than separate environmental or health impact assessments undertaken in isolation. The United Kingdom, where there is a strong tradition of spatial planning that links local, regional and national objectives, has relevant experience in developing such integrated assessment procedures and the Netherlands increasingly links transport planning to spatial planning as a result of applying cost benefit analysis. Recently French experience with setting up co-ordinated and coherent service plans instead of sectoral infrastructure plans is also noteworthy.

An appraisal focus upon economic efficiency can struggle to provide a single measure of the net benefit of a project, as the valuation of some benefits and costs, particularly those of an environmental character is difficult. In all the countries examined the increasing multi-criteria analysis is becoming a central part of project assessment, complementing traditional cost benefit analysis and lending more

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credibility to economic assessment procedures. In the last few years this has been particularly important in strengthening the role for assessments in the Netherlands, Germany and Spain.

Also as social equity issues gain increased attention so it has become clear that economic efficiency does not assist in an appreciation of the distribution of costs and benefits. Situations may arise where alternatives that are equally economically efficient perform differently in terms of the distribution of costs and benefits. Economic appraisals should be supported by a wider analysis that provides an understanding of the distribution of the costs and benefits in terms of location and the different communities that are affected.

The separate economic and environmental appraisal strands have increasingly become more closely integrated as new issues have become part of the appraisal process. This has raised concerns over double counting particularly between the economic appraisals and statutory requirements to report significant environmental impacts. Integrated appraisal means not simply that the separate appraisal techniques are mutually supportive, but that the process of appraisal is integrated with multi-disciplinary teams and that the communication of information to decision-makers is also integrated without placing undue emphasis upon one particular element. Integration across sectors is also required so that health plans, school plans and land use plans are all served by the transport plan in a consistent and coherent manner.

Good Economic Appraisal

Notwithstanding the limitations of economic appraisal in isolation already noted, good quality economic appraisals are an essential part of effective decision making. Quality here requires that all important economic effects are addressed. Many governments were in the past reluctant to place too much value on the results of cost-benefit assessments because they were viewed as both unable to quantify the external costs of health and environment impacts and inadequate in identifying how external benefits (in terms of local and regional development) were to be delivered. Progress has been achieved in both areas in recent years.

Several countries, including France, have established official values for external costs that are routinely factored into transport appraisals. These values are also relevant to pricing policies in the sector. Research in the United Kingdom has produced operational procedures for accounting for distortions in transport markets and for identifying how local and regional development benefits can be better quantified[10]. The work concludes that assessments should explicitly account for significant distortions in the pricing of transport services and in the markets they serve. This recognises that such distortions result in wider economic effects, both positive and negative, than are captured in conventional cost benefit analysis. Where regional development effects are an important element, assessments should include comparisons with other ways in which equivalent benefits might be delivered, in order to test cost effectiveness[11].

Assessment Tools and Assessment Teams

While the development of assessment tools (methods, guidance etc) are a vital component of delivering integrated appraisal and integrated transport, this is only a first step. There is a danger that too much attention may be given to the assessment tools and not enough to how they are being used and the training needs of the users. Change in institutional attitudes towards transport planning are fundamental. The dominance of transport managers and highway engineers needs to evolve towards a

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truly integrated assessment team with the value of each component is recognised. This also means that the terms of reference for transport plans and projects need also to stress the "3Is": integrated transport, integrated appraisal and integrated appraisal teams.

Complexity in Appraisal

As the coverage of appraisal topics is expanding to encompass health impact assessment and social impact assessment, so there is a danger that the process becomes an end in itself and essentially becomes too burdensome as more stakeholders participate. The appraisal must carry the support of both the public and decision-makers if it is to survive. The current danger is that appraisal may be seen to delay decision-making processes rather than help inform such decisions. Those responsible for appraisal practices must ensure that they are efficient and effective in communicating complex issues.

Institutional Capacity

The quality of assessments and the value in practice of the procedures discussed here depend on the availability of staff with the skills needed. Adequate resources have to be allocated to managing consultation and contracting expert assistance. More fundamentally for transport Ministries, staff have to be recruited or trained with the skills to manage assessment procedures, interpret results and liaise with other stakeholders.

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NOTES

1. Sustainable Transport Policies, ECMT 2000.

2. Directive 2001/42/EC, originally presented in the form of a revision to the environmental impact assessment directive (85/337/EEC).

3. The "1% Paysage et Developpement" policy under which 1% of project expenditure is allocated to projects along the route of new infrastructure designed to promote sustainable local development (encompassing economic, social and environmental dimensions).

4. See Implementing Sustainable Urban Travel Policies, Final Report, ECMT 2002 and the workshop proceedings, Overcoming Institutional Barriers to Implementing Sustainable Urban Travel Policies http://www.oecd.org/CEM/UrbTrav/Workshops/InstBarriers/index.htm .

5. The policy on "*Grandes infrastructures routières et développement des territories*" includes drawing up of a "white paper" and consulting with local governments and associations at an early stage, long before working out a layout and organising a public enquiry.

6. A non-Departmental agency of the Government.

7. Review of Swiss Urban Sustainable Travel policies reported to the Lisbon Ministerial in CEMT/CS/URB(2001)3/REV2, Synthesis of Self Reviews and forthcoming publication.

8. See for example the proceedings of the EC Conference on Good Practice in the Integration of Environment into Transport Policy, October 2002, http://www.europa.eu.int/comm/environment/gpc/

9. Experience in the use of such evaluations was reviewed by the OECD Road Transport Research program in its report *The Impact of Transport Infrastructure on Regional Development*, DSTI/DOT/RTR/IM2(2001)1.

10. See Transport and the Economy, report of the Standing Advisory Committee on Trunk Road Assessment, HMSO 1999, UK.

11. International experience in these areas was reviewed in "Assessing the Benefits of Transport", ECMT, 2001.

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FRANCE

Decision making processes and sustainable transport policies
Statutory framework, methods and tools*

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*. Status in summer 2002. Report drafted by Mr. Jean-Charles Poutchy-Tixier, French Secretary to the Sustainable Development and Road Transport committee of the World Road Association - Officer of the French National Transport Council. The views expressed in this report are those of the author and do not represent official positions of either the National Transport Council or the Ministry for Infrastructure, Transport, Housing, Tourism and the Sea.

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EXECUTIVE SUMMARY

Complex decisions relating to sustainable development require a dual approach. Firstly in terms of the procedures which, by virtue of the organisation of executive and decision-making structures, ensure the legitimacy of legal process, and secondly in terms of the processes which ensure the legitimacy of public utility through consultation.

Successive amendments to French legislation have made it possible to establish a new legal framework for the implementation of sustainable transport policies through recent statutes regarding the organisation of executive and decision-making structures, public utility and consultation, sustainable and mutually supportive urban and territorial development, the environment and quality of life. Four recent Acts in particular have profoundly modified the 1982 *Loi d'Orientation sur les Transports Intérieurs* (Domestic Transport Guidelines Act) by incorporating sustainable development into decision-making processes, namely: the 1999 *Loi d'Orientation sur l'Aménagement et le Développement Durable du Territoire* (Sustainable Territorial Development Guidelines Act), the 1999 *Loi sur le Renforcement et la Simplification de la Coopération Intercommunale* (Act on the Enhancement and Simplification of Intercommunal Co-operation), the 2000 *Loi sur la Solidarité et le Renouvellement Urbain* (Solidarity and Urban Regeneration Act) and the 2002 *Loi sur la démocratie de proximité* (Neighbourhood Democracy Act).

A variety of approaches, methods and instruments have been developed in France to assist the decision-making process relating to the sustainable development of transport. Approaches to the ranking of alternatives include establishing priorities, value sharing, ranking the issues at stake and ranking the constraints. Partnership-based approaches have led to the development of contract-based policies, original initiatives such as the *"1% Paysage et Développement"* (1% Landscape and Development) instrument, public-private partnerships, and co-operation between stakeholders. Dialogue and appropriation processes are based on creating relationships based on trust, establishing bodies for discussion, the qualification of actors and organisation of the consultation process. The methods most commonly used for preliminary appraisal consist in the Strategic Environmental Assessment of plans and programmes, partial Strategic Sustainability Assessment of forecasts and prospective studies, and Environmental Impact Studies in relation to projects. The instruments used for analysis consist notably in multi-criteria analysis, value analysis, cost-benefit analysis and tariff analysis.

Approaches such as the use of contractual policies, public-private sector partnerships, Environmental Impact Studies of projects and the *"1% Paysage et Développement"* policy have already proved themselves to be effective in the long run. Appraisals are a necessary part of the decision-making process. Value analysis based on the principles of sustainable development allows the maximum amount of needs to be satisfied with the minimum amount of resources. Cost-benefit analysis offers a means of ensuring that projects are economically viable by providing insight into factors that can be used to reorganise charging systems.

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After identifying the interactions and phases in the decision-making process for the implementation of road transport policies, the World Road Association set itself the objective of drawing up, by the autumn of 2003, a short booklet of a dozen or so pages on decision-making processes, intended primarily for use by heads of services but also for project managers and field operatives, containing case studies illustrating best practices with regard to participation that have made it possible to frame sustainable transport policies despite differences in executive structures and areas of responsibility.

1. ISSUES RELATING TO DECISION-MAKING FOR SUSTAINABLE DEVELOPMENT

From the standpoint of sustainable development, the main difficulty in the decision-making process lies in properly establishing the relative ranking of the issues at stake and constraints to ensure that the decision has more advantages than disadvantages with regard to the general interest of present and future generations, while preserving the common heritage of the planet.

The work that has been conducted over the past 30 years both at the international level and in France has shown that to ensure that the right decision is taken, and that it is both respected and implemented, the decision-taking process must combine two approaches:

- An approach in terms of procedure that aims to uphold the law and to specify responsibilities through compliance with the rules relating to organisation, scheduling and deadlines, so that decision-makers and citizens alike can be guaranteed that the decision taken is legitimate. This procedure is primarily based on the organisation of administrative structures and on the respective competences of the executive.

- An approach in terms of process that aims to carry out a comprehensive and consistent appraisal of all the positive and negative impacts of a decision and to determine whether it is rightly in the public interest, thereby allowing decision-makers to ensure their decision is both legitimate and transparent. This process is primarily based on the public interest of the scenarios considered and on the involvement of the actors and stakeholders concerned in the relevant discussions.

The entire history of the French Republic bears witness to the fact that major policy developments or social achievements have only been possible because both of these two approaches have been pursued simultaneously. Neither the law nor legitimacy alone have been sufficient for the implementation of sustainable policies or projects in the history of the Republic. In contrast, policies or major projects combining legality, underpinned by legislation or regulations establishing obligations, approaches and instruments (procedures), and legitimacy based on a common vision of issues, criteria and values shared by actors, stakeholders and the major part of the population (processes) alike, have been successfully implemented in operational terms through the large-scale mobilisation of resources in what represents a genuine challenge from the standpoint of the public

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interest: health, hygiene, education, congestion, new towns, renovation of unfit housing, post-war reconstruction, etc.

Decision-making procedures in France involve structures and organisations, on the one hand, and executive powers and responsibilities on the other. The relevant legislation in France addresses the organisation of executive and decision-making structures and is designed to ensure that decision-making powers are properly assigned to the various structures in place at the national and regional level, and at the level of the *département*, local government and the commune.

In contrast, decision-making processes in France concern the organisation of dialogue and participation, on the one hand, and the interrelationship between governance and subsidiarity on the other. The relevant legislation deals with public utility and consultation, and is designed to ensure that the public interest is properly taken into account in the formulation and implementation of plans, schemes and projects.

The goal pursued in the case of decision-making for sustainable development is that of achieving an overall improvement in quality of life that is at once prudent, harmonious and properly reasoned. This has led to the introduction of provisions aimed at achieving mutually supportive urban and territorial development that both protects the environment and safeguards quality of life. Transport is merely one means among others of achieving this objective, as a service provided to the population within the framework of policies with a wider remit requiring an integrated approach.

A discussion of the decision-making process in France in relation to the implementation of sustainable transport policies therefore requires examination of the following five areas: the organisation of executive and decision-making structures, public utility and consultation, sustainable and mutually supportive urban and territorial development, environment and quality of life, and lastly transport.

France has a long-standing tradition of centralised government in which local government has no legislative role to play, unlike some countries where local government has legislative and regulatory autonomy. It is also a country with a long-standing legislative tradition in which problems are primarily solved through the introduction of new legislation or regulations, in contrast again to some countries where problem-solving is primarily addressed through the setting of objectives and preliminary comparative analysis of best practices.

These traditions have gradually evolved in the latter half of the 20th century as work has proceeded on constructing the European Union. Furthermore, France was one of first countries to introduce legislation on the public interest and protection of the environment. This legislation has subsequently been remodelled to take account of the principles of sustainable development and has also been organised in a way that will ensure overall institutional consistency with regard to territorial development, the environment, transport and society.

Gaining a proper understanding of decision-making machinery in today's France first requires an insight into the historical development of French legislation. This paper will therefore preface its review of decision-making in France in relation to the implementation of sustainable transport policies with a summary description of the key stages in the development of French legislation.

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Readers with insufficient time at their disposal or who are already familiar with the history of French legislation may choose to proceed directly to chapter 3 which discusses the methods and instruments used in France to assist in decision-making for the sustainable development of transport.

2. LEGISLATIVE CHANGES TO PERMIT THE IMPLEMENTATION OF SUSTAINABLE INTEGRATED TRANSPORT

French legislation relating to the organisation of administrative bodies or public inquiries has a very long history dating back to the French Revolution; the first statutes on environmental protection in France were enacted at the turn of the 20th century. The shift in legislative focus towards the sustainable development of transport took place over a period of more than twenty years as amendments were progressively introduced to take account of European regulations that post-dated existing French regulations.

It is therefore by no means easy to describe these changes both clearly and succinctly. To facilitate the task, this paper will first describe the key stages in the development of French legislation in the form of a short chronology followed by a description in greater detail of the five areas mentioned above, namely: the organisation of executive and decision-making structures, public utility and consultation, sustainable and mutually supportive urban and territorial development, environment and quality of life, and lastly transport. In contrast, no consideration will be given to the issue of sustainable development in relation to changes in social legislation, for two main reasons:

- Firstly, this legislation is highly complex and describing it would simply have added to the length of the paper without providing any major additional insights into decision-making processes.

- Secondly, the consistency and interrelationship of social legislation are not apparent with regard to the implementation of sustainable transport policy, unlike the five other areas mentioned above.

2.1 Chronology of major legislative changes in France

A succinct chronology of the major stages in the development of French legislation with regard to decision-making processes and sustainable development is provided in Box 1 overleaf.

Theses major stages in the development of legislation will be discussed in greater detail in the following five sections:

- Legislation on the organisation of executive and decision-making structures.

- Legislation relating to public utility and consultation.

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- Legislation on sustainable and mutually supportive urban and territorial development.
- Legislation on the environment and quality of life.
- Legislation on transport.

It is worth noting the high degree to which these five legislative areas are interrelated and interlinked due to the need for consistency in the implementation of integrated policies for sustainable transport.

2.2 Legislation on the organisation of executive and decision-making structures

After the French Revolution, France was divided into three institutional levels: the State, the *département* and the commune. France currently has 100 *départements* and 36 780 communes.

The fourth institutional level, that of the Region, was not introduced until 1962, although at the time the 22 regions were created in France no provision was made for elected assemblies which were not created until 30 years later in 1992.

The large number of communes in France has resulted in a high degree of territorial sub-division and similarly large numbers of institutional centres. Intercommunal co-operation therefore proved to be essential in rural areas by as early as the later 19th century. It was not until the 1960s, however, that the creation of districts made it possible to co-ordinate the activities of urban communes. This first stage in urban co-ordination was completed in 1996 with the creation by the French State of 4 urban communities within the 4 largest provincial conurbations. At that time, a further five large provincial conurbations voluntarily adopted the configuration of urban conglomeration, although in legal terms the city of Paris still remained under the authority of central government.

The decentralisation of executive and decision-making powers only became a reality in France with the adoption of the 1982 Acts on decentralisation which shared out these powers between the State, the regions, *départements* and communes. Communes were granted new powers with regard to town planning, transport and the organisation of travel movements, and local public services. The Acts on decentralisation also assigned funding to each of the three institutional levels to allow them to exercise their powers. They also provided greater scope for intercommunal co-operation, while at the same time preventing one commune from exercising oversight over another.

Ten years later, the results of this legislation on decentralisation allows some highly positive conclusions to be drawn with regard to decision-making at the relevant level, that is to say the level closest to problems in the field and to local populations, but also some negative conclusions with regard to certain unwanted effects such as the creation of a host of new fiefdoms and the lack of overall consistency or subsidiarity between institutional levels.

The *Loi d'Orientation sur l'Administration Territoriale de la République* (LOATR) of 1992 sought to promote voluntary intercommunal co-operation in projects. In particular, this Act introduced formal groupings of towns and groupings of communes. It also set out procedures for co-operation between different territorial communities, either on a contractual basis or through the creation of public establishments. In addition, under the policy towards contractual arrangements, the LOATR provided for planning contracts between the State and a region (CPER) and planning contracts for

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conurbations, towns and counties (*pays*), all of which are examples of successful partnerships in co-operation between different institutional levels. However, the overlaying of different forms of co-operation and the wide variety of structures and contracts have had the adverse effect of rendering decision-making processes opaque to both users and citizens. The system of voluntary adhesion has also had the unwanted effect of encouraging alliances based on interest or political affinity between elected officials rather than co-operative alliances reflecting population catchment areas.

Box 1. **Chronological classification of the main legislative milestones in France with regard to decision-making processes for the implementation of sustainable transport policies**

1933	Preliminary enquiry for a Declaration of Public Utility (DUP)
1952	Joint Review Procedure
1961	*Loi relative à la lutte contre les pollutions atmosphériques et les odeurs* (Air Pollution and Odours Act)
1962	Establishment of regions (without creation of elected assemblies)
1966	Establishment of urban communities
1971	Introduction of the *Versement Transport* (VT)(Transport Levy) for firms and administrationsin urban areas
1976	*Loi pour la protection de la nature* (Nature Protection Act) -- Mandatory performance of Environmental Impact Studies (EIE)
1982	Legislation on decentralisation -- Devolution of powers to local authorities – Intercommunal co-operation
1982	*Loi d'Orientation sur les Transport Intérieurs* (LOTI) (Domestic Transport Guidelines Act)
1983	Enhanced protection of natural sites, historical monuments and architectural and landscape heritage
1983	*Loi sur la démocratisation des enquêtes publiques* (Democratisation of Public Enquiries Act)
1985	Enquiries to be held prior to establishing a noise exposure plan for areas in the vicinity of airports
1985	Principle of prior consultation before any development operation (Act of 18 July 1985)
1991	*Loi d'Orientation pour la Ville* (LOV) (Town Planning Guidelines Act)
1992	*Loi sur l'eau* (Act of 2 January 1992) (Water Act)
1992	*Loi d'Orientation sur l'Administration Territoriale de la République* (Territorial Administration of the French Republic Guidelines Act) -- Creation of 5 types of community -- Organisation of contractual policy (Act of 6 February 1992)
1992	Entry into force of a system of elected assemblies for the Regions (March 1992)
1992	*Loi relative à l'élimination des déchets ainsi qu'aux installations classées pour la protection de l'environnement* (Act of 13 July 1992) (Act on waste disposal and facilities classified for the purposes of environmental protection)
1992	Opening of debate over major functions of transport infrastructure in an inter-modal approach ("Bianco" Circular of 15 December 1992)
1992	*Loi relative à la lutte contre le bruit* (Act of 31 December 1992) (Noise Pollution Act)
1995	Preliminary public participation and consultation -- Creation of the *Commission Nationale du Débat Public* (CNDP) (National Commission for Public Debate)
1995	*Loi d'Orientation sur l'Aménagement et le Développement des Territoires* (LOADT) (Territorial Development Guidelines Act)
1996	*Loi sur l'Air et l'Utilisation Rationnelle de l'Energie* (LAURE) (Air and Rational Energy Utilisation Act)
1997	Reorganisation of rail transport -- Creation of *Réseau Ferré de France* (RFF) (French Railway Network) and redesignation of SNCF as a public establishment
1999	*Loi d'Orientation sur l'Aménagement et le Développement Durable des Territoires* (LOADDT) (Sustainable Territorial Development Guidelines Act) -- Introduction of Collective Services Schemes
1999	*Loi sur le renforcement ete la simplification de la coopération intercommunale* (Act on the Enhancement and Simplification of Intercommunal Co-operation)

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Enacted in 1999, the *Loi relative au Renforcement et à la Simplification de la Coopération Intercommunale* reduced the number of intercommunal institutional levels to three (instead of the five created under the LOATR): groupings of towns (for urban areas with more than 500 000 inhabitants), groupings of conurbations and groupings of communes. The Act establishes financial solidarity through application of a single tax regime to the entire territory covered by the grouping. Groupings of conurbations receive annual funding of 36 euros per inhabitant from the State, and can enter into direct contracts with the State. In 2000, one year after the Act was adopted, 90 groupings of conurbations, representing 11 million inhabitants, were established in France and over 80% of communes similarly organised themselves into groupings.

These new groupings are represented by elected officials from each of their component institutional bodies, and have full legal authority to form a new inter-communal executive at a scale more commensurate with the population catchment area. They also have the advantage of strengthening partnerships between regions and groupings, which offer a closer match to institutional arrangements in other EU Member countries than those between *départements* and communes. It is still too early to analyse the impacts of this reform, as the French remain very attached to the commune which they see as the only genuinely local institution that is in touch with the ordinary citizen. Despite the benefits of these changes, some elected officials at the level of the *départements* and communes are also resisting the transfer of their previous powers to elected officials from the regions and groupings.

Solely the city of Paris, the Paris conurbation and the Ile-de-France Region currently retain a special status in which the State plays a dominant role, given that the State is responsible for drawing up the masterplan and the urban transport plan. However, in 2005 the Ile-de-France Region will be given responsibility for drawing up the Ile-de-France Territorial Coherence Scheme due to replace the current Masterplan.

2.3 Legislation relating to public utility and consultation

The origin of the concept of "public necessity" lies in the declaration of the rights of man and of the citizen at the time of the French Revolution, a concept that the Napoleonic code subsequently transformed into "public utility".

The need to carry out inquiries into the public utility of a project prior to taking a decision first became apparent in France during the first half of the 20th century. The first statutory public enquiry was the public enquiry into water resources introduced in 1905, followed in 1906 by the enquiry into energy distribution concessions. The preliminary enquiry held before issuing a Declaration of Public Utility (DUP), first introduced under legislation enacted in 1933, gradually saw its scope of application extended to a wide variety of different procedures and projects until the end of the first half of the 20th century. Ultimately there were so many procedures that, in a report published in December 1999, the Council of State[1] was able to list 19 different types of enquiry subject to the provisions for preliminary enquiries before issuing a Declaration of Public Utility, as well as a further 5 types of public notice under this poorly defined legal regime. The Council of State added that this list was probably not exhaustive.

The principal (and practically sole) aim of all of these preliminary inquiries is to permit the compulsory purchase of privately owned land for projects, since property rights in France are recognised as "sacred and inviolable". The process is therefore not a democratic one of participation in

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the decision-making process, but an instrument allowing verification, once a decision has been made to undertake a project, that "its interest is sufficient to warrant the violation of private property rights" in return for "fair prior compensation"[2].

Since the late 1960s and early 1970s, the public enquiry held before issuing a Declaration of Public Utility has been fiercely criticised for its undemocratic nature. It was even regularly described in the 1960-80s as a "mascarade designed to railroad projects of no public utility that have already been agreed upon[3]", especially when the owners launched two enquiries simultaneously (one prior to the declaration of public utility and one to evaluate the amount of land and owners to be expropriated), whereas the objectives pursued were vague or incoherent. Fortunately, the Council of State, the highest court of administrative law for rulings on Public Utility both *de jure* and on appeal, has allowed the Declaration of Public Utility to be ruled illegal for such projects.

During the period of immediate post-war reconstruction and the 1950s, it became clear that, even within institutions, public utility projects could seriously jeopardise other public utility projects, particularly those relating to the protection and security of territories and populations. 1952 therefore saw the adoption of a statutory Joint Review Procedure designed to instigate collaboration between administrations. Originally restricted in scope solely to matters of security and defense, the procedure was gradually extended to all administrations at both central (government departments) and local level. Primarily a means of obtaining the necessary permits, this procedure failed to resolve the problem posed by the priorities given to different forms of public utility. In 1972, for example, the Council of State ruled that a "*declaration of public utility for a planned motorway and approach road project whose construction would seriously disturb the treatment of mental patients resident in the hospital that owned the land on which construction of the civil works depended*" to be illegal[4].

Public participation in territorial development decisions was introduced under the 1983 *Loi relative à la democratisation des enquêtes publiques*. This Act, which also introduced a guarantee of environmental protection, makes it mandatory for a public enquiry to be held for certain projects, subject to certain technical and financial criteria, in cases where such projects are liable to entail damage to the environment. The Act provides for the possibility of organising public meetings and made consultation of both government and the communities affected by the project mandatory. The purpose of the enquiry is to inform the public and seek its opinions, suggestions and counter-proposals.

Legislation enacted in 1985 and 1986 extended the democratisation of public inquiries to a number of other domains, starting in 1985 with the mandatory establishment of a noise exposure plan for areas in the vicinity of airports. The principle of public consultation prior to any development project was also enshrined in legislation adopted in July 1985. However, an Owner is not bound by the outcome of this consultation and is under no obligation to modify a project to take its results into account. In 1986, the relevant Act extended these provisions and inquiries to wetlands, lakeshores and marine littorals, as well as to changes in the maritime public domain.

The preliminary public debate on the major functions of transport infrastructure in an inter-modal approach was not originally introduced through the statutes but in a Ministerial Circular sent out to government administrations in 1992 (the "Bianco" Circular). This public debate may be instigated by the Minister responsible for transport and is conducted by a co-ordinating Prefect; it precedes the route studies and must take place before publication of the decision setting out the main characteristics of the project. A "debate monitoring commission" is responsible for ensuring that the debate is properly

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conducted and, once completed, issues a report that will serve as a basis for the drafting of specifications for the route planning studies. After the public enquiry, in the case of major transport infrastructure projects, the State must publish its commitments and set up a committee to monitor the projects and publish progress reports at intervals of 1, 3 and 5 years after commissioning.

The 1995 Act on environmental protection, the so-called "*Loi Barnier*", introduced on a general scale a new procedure for public participation under which major projects must be discussed in a preliminary public debate organised under the aegis of a *Commission Nationale du Débat Publique* (CNDP). For major transport infrastructure, government departments must always apply the "Bianco" circular, which sets outs guidelines and recommendations. The "*Loi Barnier"* made public participation a statutory obligation for all major projects, regardless of the owner, and not just for transport projects.

Alongside these developments, a voluntary public consultation charter was proposed by the Ministry of the Environment in 1996. The signatories to this Charter undertake to respect, in an open and receptive manner, the nine principles it expounds:

1. Consultation begins before the project starts.
2. Consultation must be as wide-ranging as possible.
3. Consultation shall be initiated by government.
4. Consultation requires transparency.
5. Consultation encourages participation.
6. Consultation is organised to coincide with milestones.
7. Consultation often requires the presence of a guarantor.
8. Consultation is financed by the Owner.
9. Reports shall be drawn up on the outcome of consultations.

The rejection of this charter by the entire community of locally elected officials has prompted associations and project opponents to embark on a guerilla war in the courts (or on occasion to intervene directly), using every possible legal procedure or appeal to either delay or hold up projects -- pure manna from heaven for their lawyers, given the amount of legislation which that has been enacted over the past 100 years and whose gradual accumulation simply adds to its complexity at the expense of consistency.

In 1998 the Prime Minister asked the Council of State to propose improved procedures for assessing the public utility of major development and construction projects. The Council of State put forward its proposals in 1999, dividing them into five main spheres of action[5]:

1. Integrate projects into schemes and programmes before the design stage.

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2. Arrange an initial public consultation meeting before the planning stage.

3. Overhaul the Declaration of Public Utility to take better account of the public interest:

   - Broaden the scope of projects subject to a notification of public interest.
   - Substantiate all Declarations of Public Utility.
   - Completely overhaul the machinery for inter-administration consultations.
   - Introduce a project declaration procedure for local communities, followed in the event of compulsory purchase or transfer or property by a DUP issued by the State.

4. Streamline and modernise the enquiry and building permit system:

   - Adjust and re-appraise the role of the enquiry commissioner.
   - Modernise information and comment collection media.
   - Encourage the holding of certain inquiries at the same time.
   - Ensure the consistency of the DUP process with the issuing of work permits.

5. Expand the role and resources of the *Commission Nationale du Débat Public* in order to:

   - Determine consultation objectives and procedures and ensure their oversight.
   - Assist those responsible for consulting the public at the appropriate time.
   - Ensure the protection of the rights and interest of those who are to be consulted.

These proposals were in large part incorporated into the 2002 *Loi sur la démocratie de proximité*. This Act set itself three objects: to make major projects more democratic; to empower territorial communities with regard to their development activities; and to enhance the legal safety of projects. The Act draws on five major principles with regard to public debates:

1. Citizens' right to participate (which it reasserts).

2. An independent administrative authority to safeguard that right (*Commission Nationale du Débat Publique*).

3. Public debate as an arena for confrontation.

4. Public debate prior to the design stage of major projects.

5. A broader scope of application (a greater number of projects made subject to debate).

The Act also provides for the possibility of public debate at a very advanced stage to address: "general options for the environment or development", e.g. choices of multi-modal transport policy in a highly congested region. In all cases, a summary record and conclusions are published at the end of the public debate. Within six months of publication of the conclusions, the Owner decides whether to halt the project or proceed, and in the latter case the conditions under which the project will be

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pursued. The legislation makes publication of this decision mandatory and therefore makes it possible to appeal in the courts against the decision. Furthermore, the Joint Review procedure has been abolished and replaced by inter-administration consultations organised at the local level by the Prefect of the *département*. These inter-administration consultations are held before the public enquiry and are reported in a summary record detailing the reasons for the conclusions reached. This record, the arbitration rulings and the arguments supporting the conclusions reached are attached to the public enquiry file. Full explanations must be provided of the rationale for issuing a Declaration of Public Utility. Special rules on project declarations apply to projects conducted by local authorities that do not entail compulsory purchase orders. Other legislation to promote decentralisation is in preparation and should eventually strengthen the interactions between the various levels of representative democracy and participatory democracy, pursuant to the principle of good governance that underpins sustainable development.

2.4 Legislation on sustainable and mutually supportive urban and territorial development

Because of the highly centralised nature of French government, the French State was the sole guarantor of solidarity until the statutes on decentralisation were eventually enacted. Since the State was responsible for territorial planning, a relatively sovereign approach was adopted to balanced territorial development until the late 1970s, with all the disadvantages inherent in this form of administration which some felt to be too technocratic and out of touch with practical realities. The advantage to the Development and Urban Masterplans developed during the 1960s was nonetheless to have provided integrated, coherent and long-term approaches embracing territories, transport and the environment.

After decentralisation in 1982, the first statute on urban solidarity was the 1991 *Loi d'Orientation pour la Ville* (LOV). This Act established a close link between urban environment and problems regarding accessibility and transport and made it possible to use major urban regeneration projects to address given distressed urban areas in terms of social amenities, employment, services, quality of life, the environment and transport.

The 1995 *Loi d'Orientation sur l'Aménagement et le Développement des Territoires* (LOADT) allowed different communes within the same population catchment basin to join forces to form "counties" (*pays*) for the purposes of implementing development action programmes. Solidarity in terms of transport within such pacts took the form of a right to accessibility for territories with the least access to transport services.

However, it was in 1999 that the concept of sustainability finally came into its own with the *Loi d'Orientation sur l'Aménagement et le Développement Durable des Territoires* (LOADDT), which modified the LOADT by bringing practically all of its provisions into line with the principles of sustainable development. The radical change introduced by the LOADDT was to replace the concept of infrastructure and facilities with the concept of collective services to the population and users. The LOADDT introduced the obligation to work through partnerships to develop Collective Services Schemes (SSC), which not only had to be co-ordinated between themselves but also had to be internally consistent[6]. This Act radically reformed a number of statutes and codes in various domains, including the *Loi d'Orientation sur les Transports Intérieurs* (LOTI).

Lastly, the *Loi Solidarité et Renouvellement Urbains* (SRU) (Solidarity and Urban Regeneration Act) adopted in late 2000 was designed to:

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- Overhaul urban policy by amalgamating issues relating to urban planning, housing and transport.

- Improve the consistency of urban policies by streamlining and harmonising development procedures.

- Promote a transport policy geared towards sustainable development.

- Support town planning policy.

The SRU allows the planning of new urban developments to take account of public transport services and networks. Development and Urban Masterplans are converted into Territorial Coherence Schemes, updated every ten years and subject to public enquiry requirements, which must reflect long-term urban planning directions, social balance and transport movements within the territories covered by conurbations and their mobility catchment area and area of influence.

In this way sustainable development has been integrated into the planning contracts between the State and the Regions for the period 2000-2006, the aim of which is to "promote a different form of development that is designed for the long term and that is directed towards both job creation and ensuring the sustainable nature of such jobs". For the first time in France, a "county" or conurbation that wishes to undertake a joint project for sustainable territorial development can enter into a contract with the State as soon as the planning contract between State and Region enters into force.

2.5 Legislation on the environment and quality of life

The earliest environmental legislation initially addressed the range of visibility with regard to historical monuments and natural sites (Acts of 1913 and 1930).

It was in 1961 that the first legislation was introduced on air pollution and odours, which provided for measures to combat toxic emissions and unpleasant odours released into the atmosphere.

The 1976 *Loi pour la protection de la nature* made it mandatory to perform an environmental impact study for a number of projects whose nature, scale and cost were defined by Decrees. Almost all transport infrastructure projects fall within the scope of application of this Act.

Thematic legislation on the protection of architectural, urban and landscape heritage enacted in 1983, together with three other *Lois d'Orientation* (Guidelines Acts) enacted in 1992 (on water, waste disposal and noise pollution respectively), had a number of procedural impacts on infrastructure planning and transport policy.

Legislation introduced in 1996 increased the protection afforded to flora and fauna under the law. The *Loi sur l'Air et l'Utilisation Rationnelle de l'Energie* (LAURE), also adopted in 1996, supplemented the 1961 statute and specified targets, warning thresholds and limit values for air quality which may require traffic restrictions. This Act made the use of urban transport plans (PDU) mandatory for urban areas with more than 100 000 inhabitants.

As in the case of legislation relating to the sustainable and mutually supportive development of towns and territories, these statutes on the environment and the quality of life amended the *Loi*

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d'Orientation sur les Transports Intérieurs (LOTI) and the corresponding decision-making procedures (see chapter 2.6 below).

2.6 Transport legislation

The *Versement Transport* (VT) was introduced in 1971 in the Paris region and subsequently extended in successive stages to all authorities responsible for organising transport services in towns of over 10 000 inhabitants that wished to apply the levy. This transport levy is a tax paid by firms and administrations with over 9 employees whose premises are located within an urban transport boundary (PTU). The assignment of this tax to public transport has played a major role in the development of public transport since the 1970s, and since the 1990s in the development of tramways which for medium-sized conurbations are both the backbone of a non-polluting public transport network and an instrument for marshalling urban development and regrading existing districts.

However, it is the 1982 *Loi d'Orientation sur les Transports Intérieurs* (LOTI), enacted virtually simultaneously with the legislation on decentralisation, which currently set outs the directions for a transport policy which is part of an integrated policy for sustainable development. Progressively amended[7] by the decentralisation statutes mentioned above and by structural reforms relating to certain types of transport, the current LOTI primarily consists of Articles drawn from *Loi sur l'Air et l'Utilisation Rationnelle de l'Energie* (LAURE) (1996), the *Loi d'Orientation sur l'Aménagement et le Développement Durable des Territoires* (LOADDT) (1999) and the *Loi Solidarité et Renouvellement Urbain* (SRU) (2000) which introduced the concept of sustainable development into transport services used as resources at the disposal of towns and territories and which are seen as the "building blocks of governance" for sustainable and mutually supportive development.

The LOTI first enshrines the right to transport. It then sets out the objectives of the overall transport policy whose formulation and implementation are the joint responsibility of the State and local communities. Outside the Ile-de-France region, regional authorities are responsible for regional passenger traffic by road and by rail, the authorities at the level of the *département* are responsible for intercity passenger transport by road (intercity coach services within the *département*, school buses), and groupings of towns, groupings of conurbations and intercommunal agencies for urban transport flows.

To co-ordinate transport policies within population catchment basins, the SRU Act allows joint transport agencies to be created by a region, *département* or the authorities organising transport services within a territory of at least 50 000 inhabitants, where such authorities may be communes, groupings of communes, a single-purpose intercommunal syndicate (SIVU transport) or a multi-purpose intercommunal syndicate (SIVOM).

These local communities can delegate the public transport service to private operators. In practice, 93% of local authorities in France delegate management of their transport network to an operator and only 7% manage their network directly.

Introduced under the 1982 LOTI, made mandatory within conurbations with over 100 000 inhabitants under the 1996 LAURE and strengthened by the SRU legislation in 2000, urban transport plans (PDU) provide the basis for decision-making processes relating to sustainable transport policies in urban areas. Subject to a mandatory public enquiry under the legislation mentioned above, such plans are the first stage in a procedure involving both locally elected officials and the public in the

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issue and challenges of sustainable mobility. A coherent and comprehensive approach must be adopted towards mobility that takes all modes of transport into account, namely walking, cycling, new modes of passenger transport, and that is both forward-looking and interlinked with areas such as the quality of life, the environment, health and safety in all transport movements and trips. The objectives of urban transport plans under this legislation are to:

- Improve safety in all transport movements.
- Reduce car traffic.
- Develop public transport together with cheap means of transport as well as those that are least polluting, namely cycling and walking.
- Develop and operate the main road network in the conurbation to increase its efficiency with regard to different modes of transport.
- Organise parking facilities.
- Re-organise goods transport and deliveries in order to reduce their impact on traffic flows and the environment.
- Encourage firms and administrations to set up staff transport plans that promote greater use of public transport and car-sharing.
- Introduce integrated tariff schedules and ticketing.

Regarding rail transport, the separation of transport infrastructure from transport services was introduced by the Act of 1997. *Réseau Ferré de France* (RFF) is responsible for rail infrastructure. The status of French national railways (SNCF) was changed to that of a public establishment with responsibility solely for rail transport services.

At the request of the Minister, in 1998 the *Mission sur le Transport Combiné* (Combined Transport Mission) drew up ten proposals for the balanced sustainable development of combined transport as part of the process of drawing up multi-modal services schemes.[8]:

First introduced in 1999, multi-modal schemes for collective transport services for passengers and freight were drawn up and subjected to broad-based consultations in the two years that followed their introduction, and were then approved in April 2002. Designed to establish a new transport policy, their purpose is to strike a new balance between modes of transport and travel, to frame a new approach to public choice and to strengthen transport policy in terms of multi-modality and the quality of the services offered. Five lines of strategic approach were specified:

1. Development of international passenger transport links.
2. Multi-modal organisation of freight transport at the national and European levels.
3. Successful operation of major international transport corridors.

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4. Multi-modal organisation corridors across the Alps and the Pyrenees.

5. Organisation of urban and peri-urban transport.

Providing a planning framework for the next twenty years, these two schemes for collective transport services identify the strategic choices to be made in order to integrate the territory of France into the European area, organise that territory and services to isolated sectors, incorporate France's international commitments (Kyoto protocol, Alpine convention, TENs, etc.), establish a framework for the programming and monitoring all actions planned, and establish a framework for ex-ante evaluation in order to involve the public in the development of projects upstream of the major infrastructure projects put forward for public debate.

The enactment of legislation on infrastructure and transport systems safety officially endorsed the integrated monitoring of safety and risks in late 2001.

3. METHODOLOGY AND INSTRUMENTS TO ASSIST IN DECISION-MAKING FOR THE SUSTAINABLE DEVELOPMENT OF TRANSPORT

Approaches, methods and instruments that are not imposed directly by the legislation have been grouped together under this heading in order, firstly, to keep the length of this paper within reasonable limits, and secondly to illustrate more clearly the consistency of, and interrelationships between, these approaches, methods and instruments, whose complementarity will be discussed in the first part of this section.

The above approaches, methods and instruments have been divided into five major categories. To avoid adding unnecessarily to the length of this paper, the number of methods or instruments described and commented upon in each category has been limited to four.

3.1 Complementarity of methods and instruments

Over the years France has accumulated a wide array of methods and instruments to assist in decision-making for the sustainable development of transport. This aid consists in data analysis and trend modelling, upstream assessment of the impacts of decisions, dialogue with stakeholders and the introduction of subsidiarity through contract-based policies.

Presented in this order, these methods and instruments flow from the technician to the decision-maker and are generally used in both a complementary and subsidiary manner to help the decision-maker reach a decision. Such subsidiarity is essential: firstly, to compensate for and relativise hierarchical structures founded solely upon monetary criteria (analysis of returns on investment or value analysis) that cannot account for aspects to which a monetary value cannot be assigned; and secondly, to allow the decision-maker to set priorities on the basis of disparate, unrelated criteria or

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indicators (multi-criteria analysis, indicator-based methods) whose accumulation precludes both an integrated vision and creative synergies.

However, in view of the growing complexity and interrelationship of the issues at stake for future generations, one of the major problems regarding sustainable development that decision-makers in France currently face is the ranking of issues in terms of their legitimacy and their economic, social and environmental relevance, both in the short term and in the long run. This need to rank is an issue of direct concern to a civil society that is currently undergoing radical change and that has no hesitation in challenging the legitimacy (and not the legality) of decisions, particularly those concerning transport, in cases where economic criteria take precedence over the well-being of the population and natural balances[9].

In order to provide a better insight into the complementarity between approaches, methods and instruments, the following presentation progresses from the perspective of the decision-maker to that of the technician by starting with approaches to ranking and then moving on successively to partnership-based approaches, dialogue and compulsory purchase processes, preliminary assessment methods, and analytical tools.

3.2 Approaches to ranking

Approaches to ranking are at the heart of the decision-making process. The aim of decision-makers is to set priorities. This section of the paper will therefore consider the process of prioritising, the sharing of values, the ranking of issues and lastly the ranking of constraints.

Establishing priorities

Establishing priorities is an exclusively political action.

Within government administrations, at either the central (Ministries) or the territorial (regions, *département*s, sub-divisions) level, the preferred instrument for setting priorities consists of *Directives Nationales d'Orientation* (DNO) (National Guideline Directives). The DNO issued by the Ministry of Public Works, Transport and Housing in February 2001 therefore sets out a number of guidelines on policy directions, complete with logbooks and indicators, illustrated by examples or best practices. These policy guidelines are divided into 7 objectives:

1. Improve safety in the transport field.

2. Implement a better all-round and safer policy towards management and maintenance of the road network.

3. Promote an overall transport policy that is determinedly inter-modal.

4. Support balanced territorial development.

5. Step up efforts to combat exclusion.

6. Develop an efficient programme of economic and social action.

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7. Build the foundation for future public works engineering.

At the local level, priorities are set on the basis of a local Agenda 21 approach, broken down in five main stages:

1. Conduct a territorial diagnostic study.

2. Organise partnerships for the decision-making process.

3. Organise the public debate and consultation of inhabitants.

4. Assess the policy towards sustainable development.

5. Finance the local Agenda 21.

Since 1997, the notices of competition issued by the Ministry of Territorial Development and the Environment, the publication of catalogues of best practices and methodological guides by various agencies has provided the foundation for a wide array of instruments and methods that can be used by local decision-makers in this approach to establish their priorities[10].

Sharing values

Determining shared values is a difficult although essential exercise that allows a consensus to be reached on the timeliness of the decisions taken and the social acceptability of the projects concerned. It is also by determining shared values that the ranking of issues and constraints by order of importance required for the decision-making process can be accomplished.

The term "value", however, has a variety of meanings, of which at least two are contradictory:

- An economic sense: a value represents a measurable parameter in monetary terms.

- A social sense: a value represents "what a society objectively holds to be fair, attractive and good, and which serves as a reference or principle"[11].

The contradiction between these two meanings of the word "value" is central to current debates over the themes of sustainable development and equitable economic growth that emerged from the World Summit on Sustainable Development in Johannesburg (26 August to 4 September 2002).

Besides these two types of value, there are also non-measurable values such as good health (seen in France as the most important value, greater than all the others), safety, quality of the environment, and the heritage of mankind.

Some very good examples of these contradictions between economic and social values were given in a report on improving resource productivity submitted to the Club of Rome in January 1997[12]. One example in the field of transport is that of major road accidents, which not only are a disaster for families and society in general, but also have an economic impact on GDP: "*What a windfall for GDP: ambulances, doctors, nurses, breakdown trucks, repairs or new cars, court cases, visits by relatives, sickness benefits, insurance agents, newspaper reports, road cleaning, etc. -- innumerable*

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professional services that all have to be paid for. Even if none of the victims gain in terms of well-being and even if some lose everything, our national 'wealth' (GDP) increases"[13].

In the case of road infrastructure, the Western European Road Directors (WERD) raised the issue of the harmonisation of values at the European level in the course of their work in developing cost-benefit analyses and feasibility studies[14]. The approach proposed by WERD towards transport infrastructure, although it has not yet been validated at the international level, consists of classifying values into four different categories[15]:

- Values deduced directly from costs (including induced costs), on which there is a general consensus among experts (costs and values of energy, maintenance, operation).

- Social values that can be set at the European or national level further to debate in parliament (e.g. values for health, safety, time).

- Social values to be set in collaboration with major social groups or after public debate (e.g. values of employment, integrated services, social exclusion).

- Values relating specifically to a given region or local context (value of heritage, landscape, relocation of activities, land redistribution).

In addition to the four values listed above there are also "unacceptable" thresholds requiring compensatory measures (e.g. limits for noise, air pollution or water pollution).

In the case of social values, which require transparency and validation and hence a relatively lengthy period of time to reach a consensus, it is proposed that provisional values be used, pending validation, by dividing these social values into four categories:

- Values for which little is at stake in terms of monetarisation.

- Values corresponding to a high policy priority and respect for commitments entered into.

- Values with a high degree of uncertainty at the current stage or research or social discussion.

- Values to be discussed with possible application of the precautionary principle.

Ranking of issues

Once priorities have been set and/or values more or less shared, ranking is an operation conducted in partnership with the actors, partners and other stakeholders (users, associations). A number of methodological guides for use in ranking issues, applicable to territories or transport infrastructure, have been published in recent years in France by the Ministry of Public Works, the Ministry of the Environment, the government highways network and territorial authorities, in many cases in partnership with associations or professional groups[16].

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Ranking of constraints

The ranking of constraints is conducted in parallel with the performance of territorial diagnostic studies and environmental assessments (strategic assessments, impact studies). As a general rule, fixed constraints can be readily assessed through the use of cartographic aids or geographical information systems. Variable constraints can be displayed by means of models (noise, distribution of air-borne pollutants). As in the case of issues, the ranking of constraints is usually conducted in partnership with the various actors, partners and other parties involved (users, associations), however there are often more important areas of disagreement with regard to the relativity of the criteria used to gauge the size of constraints.

The mapping of major points, issues and constraints is at the same time a useful instrument for dialogue, public debate and validation in the integrated decision-making process.

3.3 Actions in partnership

Actions undertaken in partnership to achieve common goals provide a basis for legitimate, shared decision-making and are therefore a fundamental part of the process of collective appropriation of scenarios and future projects.

In the case of policies and programmes, the use of contractual policies in France has been enshrined in the legislation and will only be mentioned here *pro mem* as they have already been discussed in section 2.

In contrast, the *"1 % Paysage et Développement"* partnership-based approach in French road policy, which is used for major infrastructure projects, will be discussed in slightly more detail since it is a specifically French approach that has proved its effectiveness and that is frequently cited by name in the catalogues of best practices used by road administrations in other countries.

The use of public-private partnerships is another approach that has proved to be interest for infrastructure projects, modal shift, network operation or the introduction of road-pricing policies. Many books and articles have been published on this topic, which will only be discussed here in terms of its interaction with the sustainable development of transport.

Co-operation between stakeholders is an effective means of implementing integrated policies for sustainable development. As a result, this approach lies outside the formal framework of transport but is one of the most effective instruments for sustainable development and the integrated management of territories and conurbations.

Contractual policies

The legislation has created methods and instruments that can be used to set the priorities for contractual policy at different decision-making levels. These instruments have already been discussed in section 2, the main ones being as follows:

- Collective Services schemes (SSC) and in particular multi-modal collective services schemes for passenger and freight transport, the strategic approaches to which have been briefly described in paragraph 2.6. Further details are available on the website for the Ministry of

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http://www.equipement.gouv.fr

- Territorial coherence schemes (SCoT) and urban transport plans (PDU), mentioned in paragraphs 2.4 to 2.6, which are designed to ensure the consistency of decision-making with regard to a territory and urban transport services at the level of conurbations and their surrounding areas.

- Planning contracts between the State and the regions (CPER) mentioned in paragraph 2.2, whose aim over the period 2000-2006 is to "promote another type of development that is designed for the long term and that is directed towards both job creation and ensuring the sustainable nature of such jobs".

"1% Paysage et Développement" partnership-based approach in French road policy

Following a decision made by the Conseil des Ministres in 1989, the *"1% Paysage et Développement"* policy was first adopted for the A75 and A20 motorway projects in the Massif Central and was subsequently extended in 1995 to all motorways and major regional highways in France.

Under this policy, the French government makes 1% of the cost of the project available to communities for studies and other projects whose funding will shared equally between the State and territorial authorities. As the Owners of these studies and projects relating to land other than that on which the infrastructure will be built, local authorities must therefore match the funding provided by the State in order to benefit from the 1% reserved for them. In contrast, the State is under no obligation to step in to take the place of authorities that fail in their duty, that is to say the 1% reserve will not be forthcoming if authorities are unwilling to implement sustainable and coherent development projects or fail to reach a consensus to that effect.

This partnership-based approach proposed the State is designed to secure the involvement and collaboration of territorial authorities and has primarily aims to:

- Preserve the quality of landscapes in terms of the mutual visibility of the infrastructure and the territories it crosses.

- Participate in the economic development and growth in tourism in the areas crossed.

- Avoid imbalances by capitalising on assets, fostering solidarity, avoiding non-productive competition and ensuring oversight and coherence in the long term.

The *"1% Paysage et Développement"* initiative is also an instrument that can be used in the decision-making process to:

- Put in place flexible partnership bodies (1% committees, joint routing agencies) for dialogue, oversight and on-going assessment which will provide sustained support for the infrastructure in terms of coherence and continuity, around shared development objectives in a White Paper.

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- Manage the policy towards territories located within the field of vision of the infrastructure at the local level with a relative degree of flexibility, via organised concertation.

- Enter into reciprocal commitments by the State and territorial authorities through charters signed by all partners (routing charters, then local charters).

- Allow 2% (half of which is provided by the State) of the cost of the operation to be used to fund studies and developments on land not utilised by the infrastructure with regard to the qualitative structural remodelling and enhancement of landscapes, accompanying measures for the infrastructure project and development of the local economy.

Besides preliminary territorial studies, the main actions that have been carried out with regard to road infrastructure under *"1% Paysage et Développement"* provisions have consisted in projects concerning natural or urban sites, landscapes, historical monuments, public or private buildings, improvements to urban facades, the development of or promotion of tourism in the territories crossed by the infrastructure, the provision of staging villages, discovery routes, burial of electricity transmission lines and telephone lines, reinstatement of the landscape in land previously consolidated, etc.

The overall outcome of use of this instrument for integrated decision-making designed to ensure consistency between transport infrastructure and territories has proved to be highly positive in terms of:

- General participation by territorial authorities and all the partners involved (including associations, Chambers of Commerce, Chambers of Trades, Chambers of Agriculture, etc.).

- Co-operation and subsidiarity between territorial authorities at either different levels (regions, *départements*, communes, community groupings) or the same level (intercommunal relations, co-operation between cantons).

- Territorial development, notably as a result of the flexibility and pragmatic design of the instrument.

- The motivating of the actors involved in development and development of long-term federative links between them.

As a result of this success, the French government is currently extending use of the *"1% Paysage et Développement"* approach and instruments to urban projects and a policy towards the requalification of urban areas and other types of transport infrastructure, including that for rail.

Public-private partnerships

The use of public-private partnerships is already a well-established means of implementing major civil engineering projects (Channel tunnel, Normandy bridge, Millau viaduct) and supporting the franchise system that has permitted France to rapidly acquire and operate a substantial motorway infrastructure network. Readers wishing to learn how public and private procedures are co-ordinated in the case of a motorway concession are advise to consult the website maintained by the French Roads Directorate (www.route.equipement.gouv.fr) which provides a description of the major stages in

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highway projects: 1) Procedure for the design and planning of major infrastructure projects; 2) Route planning and construction of a franchised motorway.

The franchising system also allows France to use pricing policies to strike a new balance in the modal split and in the pursuit of sustainable development objectives. These efforts, which are still at an experimental stage, should ultimately make it possible to:

- Levy inter-modal tolls on motorway franchises awarded for routes crossing sensitive areas (crossings through the Alps or Pyrenees).
- Charge variable tolls on congested major inter-city highways.
- Incorporate into urban tolls external costs and costs of network development and rebalancing the modal split.

Pricing instruments are described in greater detail in section 3.6 on analytical tools.

Public-private partnerships are also an extremely important means of developing and testing, in collaboration with manufacturers, innovative vehicles (accessibility, non-polluting, safe), new forms of mobility (non-polluting individual vehicles provided free of charge, semi-slow and semi-motorised vehicles, car pooling and car-sharing systems[17] managed from a central control system), intelligent transport systems (integrated multi-purpose ticketing, flow management, real-time passenger information systems, advanced public transit systems), new fuels or renewable energy sources. In France, such partnerships are organised under the aegis of PREDIT[18], an agency with a partnership-based steering committee (French Administration, European Commission, research agencies, private partnerships), a policy council that is similarly partnership-based and a standing secretariat provided by the government. Further information on PREDIT can be found at: www.predit.prd.fr/02-Predit/01/presentation/pre000f.htm

Co-operation between stakeholders

Co-operation between stakeholders, that is to say government administrations, economic and social actors, associations and the public, is a direct outcome of implementation of the principles of the 1992 Rio declaration on the environment and development. It is central to the mechanisms used for sustainable development at the local level. The methods used to implement co-operation between stakeholders are described in the guidance manuals for preparing local agenda 21 schemes[19]. The unprecedented success of these territorial initiatives, in which the charisma and confidence of local personalities plays a significant role, lies in an integrated territorial approach to problems and the use of co-operation to implement effective and inexpensive alternative solutions based on subsidiarity and intersectoral synergies.

The Ministry of the Environment, operating in partnership with other bodies[20], regularly collects and publishes information on French and international best practices implemented through such co-operation at the local level under the title *"Ville et Développement Durable -- Des expériences à échanger"* (Towns and Sustainable Development -- A basis for exchanging experiences), an on-line version (French only): www.environnement.gouv.fr/villedurable/Default.htm with a key-word guide to best practices. This publication provides information regarding best co-operative practices in the field of transport that have allowed authorities to reduce urban mobility through better control over urban

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sprawl, to use inter-modality in urban transport systems to ensure social solidarity and the spatial re-organisation of districts, to introduce electric vehicles for local public transport services, to relieve congestion on the roads through better timetabling of schedules and working hours in administrations, schools and firms, etc.

Note that it is in developing countries and countries where material or financial resources are lacking that the use of such co-operative methods have made it possible to introduce the most original and effective forms of sustainable transport policies (as well as the most profitable) in financial terms.

3.4 Dialogue and compulsory purchase processes

The process of dialogue and compulsory purchase by government is currently a key issue in the decision-making process in France. It is an issue that has required far-reaching institutional and legislative reform over the past ten years, of which the last stage consisted in the passing of the 2002 *Loi sur la démocratie de proximité* (see 2.3). The four principal instruments of this process that will be discussed here consist in the forging of relationships based on trust, bodies for dialogue, the qualification of citizens and the organisation of the consultation process.

Forging of relationships based on trust

Trust between stakeholders and decision-makers lends legitimacy to the decision and endorses its implementation. Trust cannot be forged through decrees; it must be built up over the years through mutual respect and on the basis of transparency, reciprocal willingness to listen and honesty.

In the absence of a natural trust-based relationship between stakeholders and decision-makers, and notably between policy-makers, public administrations, associations and the public in the transport sector, the initial confidence-building must take place within independent organisations that are neither judge nor jury, that have no interests at sake and that are respected at all times by all parties.

These independent bodies, respected by all parties including the public, can either be brought mandatorily into the decision-making process or given a consultative role to provide a guarantee to all stakeholders of the reciprocity of the transparency, openness to differing views and honesty of the process with regard to all stakeholders. The latter may consist in:

- Official bodies of the French Republic such as the Council of State, the Economic and Social Council and the National Evaluation Council.

- Independent commissions or authorities such as the Commission Nationale du Débat Public (CNDP), Autorité de Contrôle des Nuisances Sonores Aéroportuaires (ANUSA).

- Agencies that can draw up recommendations or issue opinions such as the Commission Française du Développement Durable (CFDD), Conseil National de l'Air, Conseil National du Bruit (CNB), Conseil National des Transports (CNT).

- Scientific and technical agencies, of which the three most important administered by the Ministry in charge of Transport are the *Centre d'Etudes de la Navigation Aérienne* (CENA), the *Institut National de Recherche sur les Transports et leur Sécurité* (INRETS) and the *Laboratoire Central des Ponts et Chaussées* (LCPC).

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- Technical agencies at the national (five of which form the backbone of the technical network of the Ministry in charge of transport in France[21]), inter-regional or regional[22] level.
- Universities and associate university agencies such as the *Laboratoire d'Economie des Transport* (LET).
- Recognised expert committees or independent consultants.
- Non-Governmental Organisations.
- Public or private foundations recognised as being of public utility.
- Associations recognised as being of public utility.
- Independent personalities who are recognised and respected authorities in their field.
- Individual "facilitators" or mediators trusted by all stakeholders.

Bodies for dialogue

Such bodies may be either standing bodies (committees, councils, observatories) or temporary bodies relating set up for the purposes of implementing a given project or policy (monitoring and assessment committees, joint agencies for major infrastructure projects).

The *Conseil National des Transport* (CNT) (National Transport Council), set up in 1982 under the *Loi d'Orientation sur les Transports Intérieurs* is the principal French forum for dialogue and on-going consultation over transport-related issues at the national level. It is made up of representatives of Parliament, the State, territorial authorities, authorities and firms responsible for the organisation of transport, national unions of transport workers, various categories of users of passenger and freight transport services and persons appointed because of their particular skills or expertise. The CNT also maintains a permanent observatory of economic and social conditions in the transport sector and an accessibility liaison committee for the quality of life of the handicapped and persons of reduced mobility (COLLIAC).

Obviously there are also many other bodies for discussion and dialogue at the level of the regions, *départements*, intercommunal and local bodies. Local or regional representatives take part in national discussion bodies such as the *Conseil National des Transports* through federations[23] or groupings[24].

A number of specialised permanent commissions or councils provide a parallel network of expertise within the central administration[25].

Qualification of actors

The decision-making process applicable to complex multi-sectoral systems with a social dimension (such as multi-modal integrated transport, control over travel flows and urban sprawl, the ranking of issues in relation to sustainable development, etc.) calls for actors, including the public, to

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acquire a shared level of qualification permitting the marshalling of all resources and the forging of collective intelligence.

The assistance that the pluri-disciplinary procedures introduced in France over a period of many years reaches its limits in the decision-making process applied to the complex systems described above, in which the large numbers of economic, social and environmental interactions involved, as well as the need to forge synergistic phase matches between different parameters, require a shift from pluri-disciplinarity to trans-disciplinarity, as recommended by the OECD.

Progressing from a pluri-disciplinary to a trans-disciplinary approach, in which consultants and experts must be used synergistically, requires skills to be articulated so that the messages sent are both consistent and readily accessible to all the actors involved in the decision-making process. In most cases this calls for the use of "facilitators" who have sufficient scientific and technical expertise in a wide range of disciplines to be able to dialogue with large numbers of experts and translate the outcomes into readily understandable language that does not betray the content of the information but highlights the issues at stake. These "facilitators" must also possess the personal qualities of active listening, open-mindedness, inter-cultural awareness and an ability to match the register of their audience that will permit dialogue in a climate of mutual trust. At present, such "facilitators" are still too few in France, and most are mainly to be found working in consultancy firms, Non-Governmental Organisations, Foundations or Associations.

With reference to the decision-making process in the field of "territorial transport", the principle of creating a knowledge base shared by all actors calls for "qualifying action", in which qualification based on adult-learning techniques is gradually incorporated into the action as the decision-making process progresses.

The areas where "qualifying action" with regard to actors and the public has been pursued the most vigorously are currently at the local level and in certain conurbations or territories. Through clear assignment of responsibility for commitments, and of the roles, rights and obligations of each actor, these "qualifying actions" have permitted the inter-sectoral committees and panels of public citizens to assume collective responsibility for territorial issues in order to frame integrated and sustainable policies for local mobility.

A dynamic support for qualification known as the management of sustainable territorial development projects has gradually been put in place in the form of "route files[26]" by a vast international panel of consultants and highly skilled "facilitators". This dynamic support for qualification, designed for use by territorial managers, project managers or the advisors to decision-makers, provides a clear although nonetheless fairly dense recapitulation of the general architecture and interlinkage of methods that have proved their merits and that are reproducible at the local level. The CERTU is currently developing architectures that are better targeted on specific domains as well as comparable approaches for use at the regional or national levels.

The transparent transmission of information to the public through Internet websites maintained by institutions or NGOs, combined with the creation of information exchange networks and trans-disciplinary partnership clubs, provides a basis for collective qualification of the "learning society -- learning organization" type for the pursuit of sustainable development objectives. Examples of clubs include the "towns and territorial transport" clubs run jointly by the *Centres Interrégionaux de Formation Professionnelle* (CIFP) (Inter-regional vocational training centres) administered by the

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Ministry of Development and the *Centres d'Etude Techniques de l'Equipement* (CETE) (Public works technical centres), occasionally operated in partnership with the qualification centres operated by local authorities, universities or associations.

Organising collaboration

France has made major efforts in the legislative field over the past twenty years with a view to reorganising the channels for formal collaboration with the public (see section 2.3 of the current document). Such collaboration is now founded on clearly defined procedures with regard to major transport infrastructure projects. There are a total of five main stages of collaboration in decision-making processes relating to such major infrastructure projects:

1. Upstream stage: preliminary public debate with regard to the economic and social interest of major national development projects, with an inter-modal approach to major functions, socio-economic issues and significant environmental impacts of the projected infrastructure, under the aegis of the *Commission Nationale du Débat Public*, leading to a decision and publication of specifications by the government.

2. Route planning stage: discussion, moderated by a co-ordinating Prefect, with policy-makers, associations and those responsible for social and economic issues in the presence of the Owner; after the preparation of external expert appraisals and a report by the *Commission de suivi du débat public*, a series of studies is ordered by Ministerial decision; the studies addressing various options for the route, route corridor and the exchange system are then published.

3. The enquiry prior to issuing of a Declaration of Public Utility is designed to allow public enquiry commissioners to canvas public opinion within a route corridor; the conclusions of the enquiry are then published; a declaration of the public utility of the project is issues after review by the Council of State and government undertakings are published.

4. During the study finalisation and construction stage, monitoring committees chaired by the Prefects of the *départements* affected verify that the undertakings made by the State are properly implemented.

5. After commissioning, assessments are made of the outcome in terms of compliance with the original specifications and undertakings given by the State and of the socio-economic effects and environmental impacts with regard to the undertakings given prior to issuance of the Declaration of Public Utility. A final report is then published.

Owners can follow guidelines referring to best practices derived from experience[27] and tried and tested methodologies[28] to organise consultations with the public throughout the decision-making process.

The organisation of public consultations during the process of drawing up transport plans and programmes needs to be aligned more closely on the Transport and Environment Reporting Mechanism (TERM) relating to the EU Directive on Plans and Programmes. Although the involvement of citizens panels in the decision-making process has not been fully incorporated into processes in France, it is likely that the organisation of public involvement in France will evolve over

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the next few years in accordance with best practices at the European level into a long-term planning process broken down into four stages:

1. Stage 1: collective participation in examination of a problem area and search for possible solutions.

2. Stage 2: creation of a project structure directed by a respected personality.

3. Stage 3: formulation of solutions through open social dialogue.

4. Stage 4: finalisation of the scheme or administrative programme.

While it would be premature to state it clearly, this process is very close to the current process of consultation-based planning with regard to major transport infrastructure projects.

3.5 Preliminary methods of assessment

Strategic Environmental Assessment of plans and programmes

This approach set out in Directive 2001/42/EC by the European Parliament and the Council of 27 June 2001 relative to the assessment of the environmental impacts of certain plans and programmes was tested in France in relation to inter-modal transport in the Northern corridor (Paris-Brussels) in 1999[29].

Besides the ECMT[30] recommendations and the pending transposition of the Directive into French law, in late 2001 the Ministry of Territorial Development and the Environment issued a methodological guide[31] to the issues, impact indicators and tools for the environmental assessment of transport plans and programmes.

This pragmatic and comprehensive approach applies to all modes of transport, upstream of procedures, and is broken down into two stages: (1) identification of environmental issues; (2) assessment of the impacts of the scenarios studied and determination of accompanying environmental measures by means of four assessment protocols based on impact indicators.

The first protocol deals with the fragmentation of natural habitats, with identification of the networks which fragment territories and calculation of non-fragmented areas, calculation of the areas of biological interest in non-fragmented areas, ranking of areas in which the maintenance of biodiversity is a national priority, and evaluation of the impacts of the transport plan or programme.

The second protocol concerns quiet areas, with identification of noise-emitting transport infrastructure and mapping of its noise imprint, identification and calculation of quiet areas, ranking of quiet areas and evaluation of the impact of the transport plan or programme.

The third protocol concerns the quality of both surface water, with water quality assessment in each catchment area, making it possible to rank areas by iso- quality, and of vulnerable ground water, with ranking by iso-vulnerability.

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The fourth protocol addresses air quality, with definition and rating of polluting flows taking account of mandatory limits, comparison of the impacts, constraints and limits imposed for each scenario, decision to reject, accept or modify the scenario.

Strategic Assessments of Sustainability

Strategic Assessments of Sustainability are not widely used in France at present.

The principle of such assessments may be summed up as a classification of goods and resources by their use over time and the manner in which they are shared in human activities. There are goods and resources that are depleted irretrievably as a result of being shared, such as the integrity of ecosystems. At the other extreme, there are goods and resources that increase as a result of being shared, such as knowledge and experience.

Strategic assessments of sustainability should no longer take the form solely of operational strategies based on the benefits, drawbacks and competitiveness of the transport project compared with other modes, and compensatory measures to resolve conflicts, but should be conceived as sustainable transport management strategies designed to reduce the uncertainties of transport/quality-of-life systems (habitat, work, leisure, education), improve modal interfaces, and create actual or potential synergies that outlive temporary power games.

The *Centre Intermodal d'Echanges de Limoges* (CIEL) is an example of this new approach which was implemented between 1996 and 2000 to create synergies and agreements between four owners and eight funders of an integrated sustainable intermodal project.

Further technical analysis would buttress and deepen strategic assessments of sustainability.

Life cycle analysis, whose use in relation to major transport infrastructure has been developed since the mid-1990s by the *Laboratoire Central des Ponts et Chaussées*, primarily enables comparisons to be made of inter-modal variants over the entire life cycle of infrastructure by making use of the values of indicators of energy consumption, materials consumption, recycling and environmental impacts. Life cycle analysis is a means of assessing[32] impacts during the construction and operation of the work, estimated at 50 years, by taking account of both the overall impact on the environment and local effects.

Other environmental methods for the Strategic Assessment of Sustainability based on measurements of the ecological footprint and other indicators, applicable mainly to product manufacturing, have not as yet been developed in the transport field in France other than in a research context.

In the social arena, France has not developed Strategic Assessments or Social Impact Studies, unlike other countries including a number of road administrations in Asia. This is due to the fact that socio-economic impacts, impacts on human beings and populations are already incorporated into Strategic Environmental Assessments and Environmental Impact Studies.

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Forecasts and prospective studies

Forecasts are used to draw up scenarios for future development based on the prevailing situation and on trends and variations in given parameters. Development scenarios must also include an obligatory trend scenario, also known as the status quo scenario, which consists in imagining a future in which all trends were to continue unabated. This status quo scenario is often accompanied by a dual growth scenario (with increased imbalances in the modal split, social inequalities with regard to accessibility and mobility), a productive scenario (where economic development fuels strong growth), a conservative scenario (with low or highly circumscribed growth), a sustainable development scenario and possibly a number of hybrid scenarios.

Prospective studies adopt the opposite approach and taking a desirable future selected through a collective intelligence exercise ("our common future") attempt to predict changes and identify the parameters that need to be controlled in the present in order to arrive at that future. A number of guide manuals to territorial prospective studies[33] explain how to conduct such studies. The method most commonly used in long-term complex schemes is undoubtedly the Delphi method, although other approaches can also be used[34] according to specific circumstances.

Environmental Impact Studies in relation to projects

First introduced under legislation enacted in 1976, Environmental Impact Studies are now a well established part of the decision-making process in France with regard to major transport infrastructure projects.

These studies must be conducted during the preliminary planning stage, prior to the enquiry preceding the Declaration of Public Utility, and represent a genuine environmental analysis in the broad sense of the term, including socio-economic aspects and social or health impacts on the populations affected. The assessments and adjustments to procedures made over the past 25 years have enabled planners to draw up a number of highly effective[35] methodological guides which are regularly updated to take account of changes in national or European methodology.

By way of example, any environmental impact study of a major transport infrastructure project must analyse it and assess its impacts on at least the following:

- Water resources (watercourses, water tables, wetlands, pollution, vulnerability).
- Hydrology (flood plains, catchment areas, valleys).
- Natural environment (fauna, flora, biodiversity, listed sensitive areas).
- Air (gaseous and particulate pollutants, acid rain, greenhouse effect, ozone).
- Noise (compliance with abatement levels, sleep, quiet areas, noise footprints).
- Health (sleep, pollution, toxins in food chain).
- Agriculture and forestry (plantations, land consolidation, sensitive crops, microclimates).
- Landscape and natural sites (landscapes visible to local inhabitants and from the road, tourism heritage).
- Heritage (historical monuments or buildings, archaeological sites).

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- Climate (climate change or changes in microclimate).
- Waste (recycling of building materials, operating wastes).
- Development and urban planning (accessibility, development, functioning, severance).
- Risks (natural hazards, technological risks).
- Populations served and populations exposed (accessibility, noise, pollution, risks).

It should be noted that in the case of air transport infrastructure (airports), the environmental impact studies currently conducted in France solely take account of local residents in the vicinity of airports and not those living below flight paths.

The environmental impact study dossier to be provided for the preliminary enquiry preceding a Declaration of Public Utility in France must currently include the following:

- General outline of the environmental impact study.
- Assessment of the impacts of the programme.
- Names of the authors of the studies.
- Study of the major variants.
- Description of the proposed solution.
- Description of project, its impacts on the environment and the integration measures proposed (analysis of the costs to the community arising from pollution and nuisance, together with an assessment of the energy consumption arising from operation are also included under this heading).
- Cost of integration measures.
- Analysis of the assessment methods used.
- Analysis of the health impacts of the project.

The contents of this Environmental Impact Study file are similar to those of the EU Transport and Environment Reporting Mechanism used for Strategic Environmental Assessment.

3.6 Analytical tools

Multi-criteria analysis

This method allows preliminary assessment to be made of a policy or transport policy by establishing the impacts it would have from an economic, social, environmental or other standpoint with a view to guiding decision-makers in their choice of development objective. In France, multi-criteria analysis is the preferred tool for assessing impacts that cannot be determined, or that it would be unadvisable to determine, in monetary terms.

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Each type of impact is assigned a value expressing the importance of that impact for each of the variant scenarios studied. Impacts can be evaluated either qualitatively or quantitatively, in view of which no systematic use of made of a common unit of measurement. The units therefore vary according to the importance or preference accorded to each criterion (environmental, economic, socio-political) by the assessors. In France, the Circular issued by the Ministry of Territorial Development and the Environment on 11 May 1999 on the assessment of public policy according to sustainable development criteria introduced 36 new indicators, some of which relate to transport, to be taken into account in multi-criteria analyses.

It should be noted that the internalising of external costs arising from these impacts, as recommended by economists and the Ministry of Finance, does not meet with universal approval in France. Some actors in the decision-making process are opposed to a predominance of economic criteria, particularly in view of the fact that a large part of civil society refuses to see environmental, cultural or human heritage treated as a good. The same is true in a number of other countries that have chosen not to assign monetary values to such impacts and to rank criteria by involving the public directly in the decision-making process[36].

Value analysis

A method that sets out to satisfy user needs through a specific approach to design that is at once functional, economic and pluri-disciplinary, value analysis draws on functional roles and not ready-made solutions. It is based on group dynamics in which all stakeholders are present[37].

A mandatory requirement since the late 1980s for the decision-making process applicable to certain major transport infrastructure projects, which include major road links, this approach seeks to optimise the relationship between the satisfaction of needs and the use of resources (which naturally include financial resources). This relationship can be optimised in five different ways:

1. For a given set of requirements, seek to economise resources.

2. For a given amount of resources, seek to increase the satisfaction of needs.

3. Seek to optimise through enhanced satisfaction of needs and lower use of resources.

4. Seek to increase the satisfaction of needs through a slight increase in resources.

5. Seek to drastically reduce resource use through a slight reduction in the satisfaction of needs.

Presented far too often as a means of reducing costs, value analysis is an organised and creative approach that is wholly compatible with the objectives of sustainable development, provided that a shared hierarchy of values that integrate the principles of sustainable development in the specification of objectives is clearly established.

The *Association Française pour l'Analyse de la Valeur* (AFAV) has undertaken to breathe new life into use of this method by integrating criteria for sustainable development into it, firstly through analysis of the value applied to territories, targeted on aid to decision-making by territorial agencies, followed by analysis of the value applied to transport in partnership with the *Club des Concepteurs Routiers* run by the SETRA.

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Cost-benefit analysis (CBA)

A mandatory requirement in France for major transport infrastructure projects since the 1960s to allow decision-makers to "rationalise their budgetary choices", cost-benefit analysis, also referred to today as cost-efficiency analysis, has been constantly improved and enhanced with a view to internalising as many external costs as possible in the socio-economic assessments made of projects. The latest assessment method for use in the evaluation of road projects, made mandatory under a Circular issued in 1998, is described in the ECMT report "Assessing the benefits of transport"[38] published in September 2001.

In 1994 the *Commissariat au Plan* established a number of models and values, subsequently updated in 2000, to take account of the environment and safety in the choice of transport investment[39]. This major work undertaking made it possible to propose "'standardised and unitary values for these nuisances based on a precise economic calculation[40]", for use in a number of fields, on which there was a fairly broad consensus among economic experts.

As the rapporteur noted "many problems still remain". The question of economic values and social values has already been touched upon in section 3.2 on approaches to ranking, sub-heading "value sharing", to which the reader is asked to refer. Two values play a particularly important role in the economic calculation of benefits, namely the monetarised values for time and safety, in which any variation will produce highly significant changes in the evaluation of benefits. In particular, "the weight of the value assigned to time gained (or lost) usually occupies a predominant position in socio-economic assessments of transport[41]".

Since these two values vary substantially between different modes of transport within the same given country and also between different Member States of the European Union, it is clearly of the utmost importance to harmonise these values, as well as others, at the European level in order to share a common vision that will allow better account to be taken of the environment in transport infrastructure investment projects and in the determination of taxes on nuisances and pollution.

The utility of cost-benefit analysis is clearly apparent for three major reasons:

1. It ensures the financial viability of projects through returns in terms of advantages and benefits afforded by the direct impacts and thereby allows calculation of operating costs and the corresponding usage charges, including tolls.

2. By sending a strong signal (in the form of a tax, for example) translated into market costs, it transforms the nature of the moral pressure exerted on firms to remedy nuisances and thereby encourages equalisation of the marginal avoidance effort.

3. It internalises the indirect impacts of nuisances on production costs in order to apply "polluter pays" principles through reference to values set by government.

The new value balances proposed by the group chaired by Marcel Boiteux, particularly with regard to time and safety, provide a firm basis in this respect on which to harmonise these values at the European level and to prefigure the restructuring of tax charges, in accordance with one of the objectives for action set out by the ECMT[42]. Furthermore, to ensure that certain nuisances are not excluded from marginal social costs and accordingly reported as zero in economic accounts, oil

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prices[43] would also have to be harmonised at the European level, including the *Taxe Intérieure sur les Produits Pétroliers* (TIPP)[44] (domestic duty on petroleum products and products treated as such), the price of a tonne of carbon, the costs of interaction between private cars and public transport, the costs of severance effects, the social cost of noise and the cost of air pollution[45].

It should be noted that, in addition to the harmonised calculation of social costs relating to safety, attention also needs to be focused on the issue of the taxation of non-sustainable policies pursued by manufacturers with regard to the safety of vulnerable road users and the populations exposed. While car manufacturers have made major efforts in the areas of the safety of passengers and the environment, notably through the auto-oil programme and the ACEA and OICA agreements[46], their policy of designing increasingly fast, and hence increasingly lethal, cars, increasingly robust 4-wheel drive cars for town use that are increasingly dangerous to pedestrians, cyclists, two-wheelers and all vulnerable users and residents, cannot be accepted as a socially sustainable policy. The supply of such vehicles by manufacturers, who hypocritically decline any responsibility for the way in which they are driven by their owners, is no longer acceptable and calls for the introduction of harmonised regulatory measures and taxing at source of the vehicles produced by incorporating the social costs of the loss of safety attributable to such vehicles suffered by vulnerable road users and the populations exposed to such risks. Harmonising road safety values at the European level would provide a common approach to this thorny issue.

Tariff analysis

A direct outcome of cost-benefit analysis, tariff analysis is designed to integrate marginal social costs into the costs of investment, maintenance and operation, in order to ensure the financial viability of a project through user charges (intercity tolls, zoning tolls, kilometric charges).

It does pose two major problems, however:

- Tariff analysis may discourage investment that goes against the current flow of political aspirations: this is the case in particular for developments resulting from the desire to implement the Kyoto protocol; it is reasoning of this nature which led to the dismantling of the rail network after the second World War.

- The disparity in financial returns from different types of mode. HGV traffic is generated through spontaneous and uncontrolled growth yielding an immediate financial return through tariffs; rail freight traffic, on the other hand, can only grow if network capacity is ensured or increased beforehand, and therefore generates no immediate financial return that can be attributed to a tariffs policy.

Analysing the trial schemes that have been introduced in Austria, Germany, the Netherlands and the United Kingdom will also provide an invaluable guide to the introduction in France of tariff policies aimed at sustainable development. It should be noted that the trial use of GPS-GSM systems in other countries for the collection of tolls based on the number of kilometres travelled by HGVs poses a problem of data privacy in France under current legislation.

Another possible avenue other than taxation currently being explored in France is that afforded by the potential applications of negotiable emissions permits based on market laws to combat the

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greenhouse effect in the transport sector and drive a shift towards cleaner and less polluting modes of transport[47].

The analysis and discussion of these issues, which are far from being resolved, are currently focused on:

- Free permit allocation, together with negotiable permits applicable upstream of the carbon introduced into the economy awarded to producers and importers of fossil fuels.

- A free annual and identical lump-sum allocation for each vehicle, together with downstream negotiable permits for the carbon consumed by vehicles, awarded to hauliers.

- A free annual and identical lump-sum allocation for each vehicle, together with downstream negotiable permits for the carbon consumed by vehicles, awarded to hauliers.

- A free allocation based on the technical characteristics of transport supply, population distribution and exogenous determinants, together with downstream negotiable permits for greenhouse gas emissions in the conurbation in relation to daily transport movements, awarded to the authorities organising transport services.

- A free annual lump-sum allocation, the same for all individual vehicles, together with a downstream negotiable permit for unit CO2 emissions consumed by private cars (per litre of fuel), awarded to motorists.

- A free annual lump-sum allocation, the same for all individual vehicles, together with a downstream negotiable permit for the carbon consumed by private cars (per litre of fuel), awarded to motorists.

Obviously such alternative schemes, provided they were feasible, could only be introduced under joint European regulations on a restructuring of the charging regime.

This system, in combination with regulations, could also be used to tackle the safety issues described above, particularly with regard to "luxury" cars, as part of the sharing of responsibilities between car manufacturers and car owners with regard to the loss of road safety suffered by vulnerable road users and the populations exposed to such risks.

4. LESSONS LEARNED AND POSSIBLE FOLLOW-UP

Present-day France in 2002 possesses the legislative means and a wide array of methods and tools of evaluation for use in the decision-making process to be able to implement integrated transport policies and projects for sustainable territorial development.

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A number of these methods and tools have proved their effectiveness in the long run: contract-based policies, public-private partnerships in concession regimes, and the development of Environmental Impact Studies. Some have already won over the administrations of other countries, such as the *"1% Paysage et Développement"* partnership-based approach to major road infrastructure projects.

The most recent methods and tools which represent a genuine sea-change in the approach to issues with regard to sustainable development, such as multi-modal collective services schemes, are still too new to be able to assess their long-term impacts.

Evaluation is a necessary part of the decision-making process. Some forms of assessment have been briefly discussed in the paper. In the case of transport projects, value analysis incorporating the principles of sustainable development is a useful operational tool with which to satisfy a maximum number of needs through minimal use of resources, including financial resources. Work conducted in France on cost-benefit analysis is also producing a number of useful elements that could be used for a future restructuring of the charging system.

The main methodological challenges that must currently be met in France in the decision-making process for the implementation of sustainable transport policies concerns the fostering of a genuine form of co-operation through subsidiarity that is free from sterile competition, the ranking of challenges with regard to the new values of civil society, the collective appropriation of the challenges involved in ensuring full control of mobility, particularly with regard to urban trips and air transport.

While this paper has considered methods and means in detail, it has only addressed the decision-making process *per se* within the context of a particular method. But the proper assessment of actual needs in relation to demand, the intelligent and transparent use of methods and tools, the personality of decision-makers and public trust, cannot be dictated by guides or methodological description.

As part of its strategic plan for the period 2002-2003, the World Road Association has undertaken a series of studies on decision-making processes applicable to the implementation of road transport policies; these studies are due to be finalised and published in October 2003.

As matters stand at present, this work places the decision-making process within the interactive conceptual framework of power and dialogue. The legitimacy of decision-making is ensured by the various levels of government, and appropriated collectively through dialogue. The equally interactive concepts of responsibilities, structures and expert opinion are also part of the decision-making process. Responsibilities ensure the mutual respect for commitments within the process for the implementation of decisions. Structures frame the individual stages and ensure follow-up of the process from the standpoint of evaluations. Expert opinion provides the basis for the work of analysis and assessment required for the process to proceed.

These five concepts exhibit strong interactions with the methods discussed in section 3, namely: powers with ranking approaches; responsibilities with partnership-based approaches; dialogue with the consultation process; structures with preliminary evaluation methods; expert opinion with the tools of analysis.

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The successive stages in the decision-making process are as follows: the sharing of a common vision of the future based on dialogue; the specification of needs from the standpoint of the responsibilities of individual partners; the setting of objectives by the executive and the decision-makers concerned; the deployment of resources through appropriate structures; the exploration of possible options through open dialogue; production of forecasts through the use of expert advice and simulation models; review of feasible alternatives based on shared responsibilities; evaluation of outcomes through structures assisted by appropriate expert advice; selection and choices by those with decision-making powers; implementation through technical and administrative structures; follow-up and evaluation in a context of dialogue and consultation.

This general scheme can be efficient irrespective of the structures in place in individual countries. This paper will not describe this process in detail here, particularly in view of the fact that the World Road Association has not yet completed its work and the methodology this process draws upon would require an entire guidebook in its own right[48].

Its aim is to draw up, for publication in autumn 2003, a guidebook on decision-making processes of a dozen or so pages for use primarily by management and heads of service, but also by project managers and operations managers working in the field, illustrated with examples showing how good practices in co-operation, public participation and communication in countries with very different backgrounds can help to generate sustainable transport policies and projects and how bodies with different powers and responsibilities can facilitate the use of such good practices by providing the requisite structural basis, despite the variety of their respective configurations. In its publication of September 2002. *"Débat public: l'Equipement vers un aménagement plus durable", the Conseil Général des Ponts et Chaussées* set out, beyond the sole decision-making process, the issues of citizenship, governance, democratic concertation, future risks and structural reforms that go beyond the strict framework of transport sustainability and that are set to be crucial issues for France and Europe in forthcoming years.

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Details of Internet sites, which are continuously updated, are given at the end of this chapter with details of date on which they were last consulted. Only the statutes consulted (prior to September 2002) on the Légifrance[49] website are listed according to their date of enactment. Obviously these statutes are continuously updated on the Légifrance website.

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6. ACRONYMS USED OR MENTIONED

ACEA:	European Automobile Manufacturers Association
ACNUSA:	Autorité de Contrôle des Nuisances Sonores Aéroportuaires
AFAV:	Association Française pour l'Analyse de la Valeur
AMORES:	Alliance pour un Monde Responsable, pluriel et Solidaire
AVV:	Adviesdienst Verkeer en Vervoer (Netherlands Transport Research Centre)
CBA:	Cost Benefit Analysis
CCR:	Club des Concepteurs Routiers (administered by SETRA)
CEDIDELP:	Centre de Documentation Internationale pour le Développement des Libertés et de la Paix
CENA:	Centre d'Etudes de la Navigation Aérienne
CERTU:	Centre d'Etudes sur les Réseaux, les Transports, l'Urbanisme et les constructions publiques
CETE:	Centre(s) d'Etudes Techniques de l'Equipement
CETMEF:	Centre d'Etudes Techniques Maritimes et Fluviales
CETU:	Centre d'Etudes des Tunnels
CFDD:	Commission Française du Développement Durable
CGPC:	Conseil Général des Ponts et Chaussées
CIEL:	Centre Intermodal d'Echanges de Limoges
CIFP:	Centre Interrégional de Formation Professionnelle
CLCBE:	Comité de Liaison des Comités de Bassin d'Emploi
CNDP:	Commission Nationale du Débat Public
CNB:	Conseil National du Bruit
CNE:	Conseil National de l'Evaluation
CNT:	Conseil National des Transports
COLIAC:	Comité de Liaison pour l'Accessibilité du cadre de vie aux personnes handicapées et à mobilité réduite
CPER:	Contrat(s) de Plan Etat – Région
DATAR:	Délégation à l'Aménagement du Territoire et à l'Action Régionale
DNO:	Directive Nationale d'Orientation
DPH:	Dialogues pour le Progrès de l'Humanité (International network for exchanging experiences and constructive discussion)
DUP:	Déclaration d'Utilité Publique (Declaration of Public Utility)
ECMT:	European Conference of Ministers of Transport
EIE:	Etude d'Impact sur l'Environnement (Environmental Impact Study)
EIS:	Etude d'Impact Social (Social Impact Study)

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ESD:	Evaluation Stratégique de Durabilité (Strategic Assessment of Sustainability)
ESE:	Evaluation Stratégique Environnementale (Strategic Environmental Assessments)
FGF:	Fondation pour les Générations Futures (Public Utility Foundation under Belgian law)
FNAUT:	Fédération Nationale des Associations des Usagers des Transports
FPH:	Charles Léopold Mayer Foundation for the Progress of Humankind (Independent Foundation established under Swiss law)
GART:	Groupement des Autorités Responsables des Transports
IDS:	Institute of Development Studies, United Kingdom
INRETS:	Institut National de Recherche sur les Transports et leur Sécurité, France
ITS:	Intelligent Transport System
IVHS:	Intelligent Vehicle Highway System
LAURE:	Loi sur l'Air et l'Utilisation Rationnelle de l'Energie
LCA:	Life Cycle Analysis
LCPC:	Laboratoire Central des Ponts et Chaussées
LET:	Laboratoire d'Economie des Transports
LOADDT:	Loi d'Orientation pour l'Aménagement et le Développement Durable du Territoire
LOADT:	Loi d'Orientation pour l'Aménagement et le Développement du Territoire
LOATR:	Loi d'Orientation sur l'Administration Territoriale de la République
LOTI:	Loi d'Orientation des Transports Intérieurs
LOV:	Loi d'Orientation pour la Ville
LREP:	Laboratoire Régional de l'Est Parisien
MSC:	Marginal Social Cost
MATE:	Ministère de l'Aménagement du Territoire et de l'Environnement (before June 2002) (French Ministry of Territorial Development and the Environment)
MEDD:	Ministère de l'Ecologie et du Développement Durable (after June 2002) (French Ministry of Ecology and Sustainable Development)
MES:	Ministère de l'Emploi et de la Solidarité (before June 2002) (French Ministry of Employment and Solidarity), after June 2002 renamed Ministère des Affaires Sociales, du Travail et de la Solidarité (French Ministry of Social Affairs, Labour and Solidarity)
METL:	Ministère de l'Equipement, des Transports et du Logement (before June 2002) (French Ministry of Public Works, Transport and Housing)
METLTM:	Ministère de l'Equipement, des Transports, du Logement, du Tourisme et de la Mer (after June 2002) (French Ministry of Public Works, Transport, Housing, Tourism and the Sea)
MEZ:	Ministerie van Economische Zaken (Netherlands Ministry of Economic Affairs)
MVW:	Ministerie van Verkeer en Waterstaat (Netherlands Ministry of Transport, Public Works and Water Management)
NEI:	Nederlands Economisch Instituut (Netherlands Economics Institute)
OECD:	Organisation for Economic Co-operation and Development

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OICA:	International Organization of Motor Vehicle Manufacturers
PDU:	Plan(s) de Déplacements Urbains
PIARC:	World Road Association
PREDIT:	Programme national de Recherche et d'Innovation dans les Transports terrestres
PTU:	Périmètre de Transport Urbain
RCB:	Rationalisation des Choix Budgétaires
RFF:	Réseau Ferré de France
RSCI:	Renforcement et Simplification de la Coopération Intercommunale
SCoT:	Schéma(s) de Cohérence Territoriale (devant remplacer les SDAU)
SDAU:	Schéma(s) Directeur(s) d'Aménagement et d'Urbanisme (prédécesseurs des "SCoT")
SETRA:	Service d'Etudes Techniques des Routes et Autoroutes
SIVOM:	Syndicat Intercommunal à Vocation Multiple
SIVU:	Syndicat Intercommunal à Vocation Unique
SNCF:	Société Nationale des Chemins de fer Français
SRU:	Solidarité et Renouvellement Urbains
SSC:	Schéma(s) de Services Collectifs
STBA:	Service Technique des Bases Aériennes,
STNA:	Service Technique de la Navigation Aérienne
STRMTG:	Service Technique des Remontées Mécaniques et des Transports Guidés
TEN:	Trans European Networks
TEN-T:	Trans European Networks - Transport
TERM:	Transport Environment Reporting Mechanism
TIPP:	Taxe Intérieure sur les Produits Pétroliers (French domestic duty on petroleum products and products treated as such)
TRL:	Transport Research Laboratory, United Kingdom
UN:	United Nations
UNCHS:	United Nations Centre for Human Settlements
UNDP:	United Nations Development Program
UNEP:	United Nations Environment Program
VT:	Versement Transport
WERD:	Western Europe Roads Directors
ZNIEFF:	Zone Naturelle d'Intérêt Ecologique, Faunistique ou Floristique
ZPPAUP:	Zone de Protection du Patrimoine Architectural, Urbain et Paysager
1%P&D:	1% Paysage et Développement
4D:	Association « Dossiers et Débats pour le Développement Durable »

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NOTES

1. L'Utilité Publique aujourd'hui, Conseil d'Etat, 1999.

2. To quote the exact terms used in the section on expropriation in the Civil Code.

3. Or many other comments of a similar nature made in various publications and reports on the transparency of public decisions from the 1980s to the turn of the century.

4. Conseil d'Etat, Ass., 20 October 1972.

5. *L'Utilité Publique aujourd'hui*, Conseil d'Etat, 1999.

6. Mandatory development of collective services schemes (SSC) applies to: higher education and research, culture, health, information and communications, multi-modal passenger and freight transport, energy, wilderness and rural areas, sport.

7. Apart from a few Articles still remaining from 1982, the provisions of the current LOTI are drawn from the Acts of 1986, 1990, 1991, 1996, 1997, 1998, 1999, 2000 and 2001.

8. *"Dix propositions pour un développement durable du transport combiné"*, President Pierre Perrod, Rapporteur Michel Savy, Mission sur le transport combiné, July 1998.

9. The aim in France, as in other countries, is to tackle "a more general crisis in democracy, in the legitimacy of the State and a certain form of scientific rationalism, a crisis in which conflicts over infrastructure are merely an initial skirmish and which therefore can only be overcome through far more radical reforms of the way in which institutions work in France", (*"Project d'infrastructure et débat public"*, METL, 1996 and 1997).

10. The publication *"Approche Territoriale du Développement Durable -- Repères pour l'Agenda 21 local"* given in the bibiography at the end of this paper lists all such instruments available. This publication is designed for use by municipal officials and local actors.

11. Larousse dictionary.

12. "Factor 4 -- Doubling wealth, halving resource use", E.U. Von Weizsäcker, A.B. Lovins, L.H. Lovins, report to the Club of Rome, 1997. Chapter 3 is entitled: "Ten ways to revolutionise transport productivity".

13. "Factor 4 -- Doubling wealth, halving resource use", Chapter 12: Green economics.

14. "Valuing the costs and benefits of road transport towards European Value Set -- The appraisal of road projects in WERD Member States", James Odeck, report submitted by Norway to the Western European Road Directors, October 2000.

15. ACB & DD, *"L'intégration du dévelopmmement durable dans le méthodes d'évaluation économique des investissments routiers"*, Jean-Charles Poutchy-Tixier (France) and Trude Schistad (Norway), March 2001.

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16. Including the following in particular:
    - *"Construire un project de territoire -- Du diagnostic aux stratégies"*, Olivier Mazel, Pascal Vazard, Klaus Werner, DATAR, CLCBE, MES, METL, Ed. METL, September 1997.
    - *"Elaboration et conduite d'un project de territoire"*, Didier Minot, Ecole des Territoires, November 1999.
    - *"Le développement durable -- Approche méthodologique dans les diagnostics territoriaux"*, Françoise Rouxel, Dominique Rist, Ed. CERTU, September 2000.

17. Car pooling and car sharing are local schemes under which vehicles are made available, according to needs, to the population within a given locality in order to reduce the number of trips and travel costs. These vehicles may be either vehicles owned collectively by a number of persons (car pooling) or vehicles owned by a private firm, charged for on an hourly or daily basis, with or without a season ticket, or a fleet of freely available vehicles parked in a number of local stations (car sharing).

18. PREDIT: Programme national de Recherche et d'Innovation dans les Transports terrestres (National programme for research and innovation in inland transport.

19. *"Approche Territoriale du Développement Durable -- Repères pour l'Agenda 21 local"*, Laurent Comeliau, Nathalie Holec and Jean-Pierre Piechaud, September 2001; published jointly with the Association 4D (Dossiers et Débats pour le Développement Durable), the Ministry of Territorial Development and the Environment, the Délégation à l'Aménagement du Territoire et à l'Action Publique (DATAR) and the Caisse Des Dépôts.

20. Partnership comprising the Ministry of the Environment, the réseau international d'échanges d'expériences et de réflexions utiles à l'action DPH (Dialogue pour le Progrès de l'Humanité, the Centre de Documentation Internationale pour le Développement des Libertés et de la Paix (CEDIDELP), the 4D association mentioned previously and the Fondation Charles Léopold Mayer pour le Progrès de l'Homme (FPH).

21. The Centre d'Etudes sur les Réseaux, l'Urbanisme et les constructions publiques (CERTU), the Centre d'Etudes Techniques Maritimes et Fluviales (CETMEF), the Service d'Etudes Techniques des Routes et Autoroutes (SETRA), the Service Technique des Bases Aériennes (STBA), the Service Technique de la Naviation Aérienne (STNA). This backbone is supplemented by more specialised agencies such as the Centre 'Etudes des Tunnels (CETU) or the Service Technique des Remontées Mécaniques et des Transports Guidés (STRMTG).

22. Including the 7 Centres d'Etudes Techniques de l'Equipement (CETE) and the Laboratoire Régional de l'Est Parisien (LREP).

23. For example, the Fédération Nationale des Associations d'Usagers des Transports (FNAUT).

24. For example, the Groupement des Autorités Responsables des Transports (GART).

25. In addition to the Conseil Général des Ponts et Chaussées, examples include the Conseil Supérieur de l'Aviation Marchande, Conseil Supérieur de l'infrastructure et de la Navigation Aérienne, Conseil Supérieur de la Marine Marchande, Conseil Supérieur de la Navigation de Plaisance et des Sports Nautiques, Conseil Supérieur du Service Public Ferrovaire; the Conseil National des Communautés Portuaires; Commission Interministérielle du Transport des Matières Dangereuses and other specialised standing bodies (nuisance abatement, operational safety of rail transport, lighthouses and beacons, cable cars, ski-lifts, etc.).

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26. The sixty or so "route files" are divided into six main sections, all mutually interactive: "Preliminary questions", "Listening to needs", "Local development", "Sustainable development", "Dialogue and appropriation", "Creative synergies".

27. For example *"Concertation / Débat Public -- Quelques leçons de l'expérience"*, Ed. METL, Conseil Général des Ponts et Chaussées et Service de l'Information et de la Communication, January 2002.

28. *"La concertation en aménagement -- Eléments méthodologiques"*, published by CERTU, June 2000, can be downloaded from the CERTU website: http://www.certu.fr

29. *"Méthodologie des études d'impact stratégiques sur l'environnement appliquées à des corridors"* and *"Optimisation de la méthodologie d'évaluation stratégique environnementale développée par les services du Ministère de l'Equipement et du Logement pour les réseaux d'infrastructures multimodales"*, Bureau d'études Ingérop, SETRA, Direction des Routes, February 1999.

30. Strategic Environmental Assessment in the Transport Sector, European Conference of Ministers of Transport (ECMT), Ed. OECD, July 2000.

31. *"L'évaluation environnementale des plans et programmes de transport -- Enjeux, indicateurs d'effets et outils d'évaluation"*, Patrick Michel, Thierry Monier, BCEOM, Ed. MATE, late 2001.

32. This methodology draws on ISO standard 14 040 with regard to the principles analytical framework of Life Cycle Analysis in environmental management.

33. "*Donner du future aux territoires -- guide de prospective territoriale à l'usage des acteurs locaux"*, Fabienne Goux-Baudiment, Ed. CERTU, September 2000.

34. Scoping prospective studies (based on retrospective analysis), normative prospective sutdies (based on pathways and "backcasting"), operational prospective studies (based on changes to be effected), strategic prospective studies (based on producing alternatives and reducing uncertainty through reference to a given end).

35. Including the series of manuals *"Les études d'environnement dans les projets routiers -- Guide méthodologique"* published jointly by SETRA and CERTU, each dealing with a specific topic such as noise, air, water, landscape, etc.

36. For example, under the 1997 Norwegian Law No. 58 on an environmental policy for a sustainable future, which integrates the decision-making process in the transport field into an overall planning process within the legal framework provided by the "Act on Terrritorial Development and Construction, a complete separation is made between monetarised criteria that can be used for cost-benefit analysis and criteria to which no monetary value is to assigned and which are used in multi-criteria qualitative analysis.

37. *"Glossaire des concepts liés au développement durable"*, METL, Direction Générale de l'Urbanisme, de l'Habitat et de la Construction, Direction des Routes, Centre d'Etudes Techniques de l'Equipement, CERTU, October 2001; can be downloaded from www.certu.fr

38. Annex 6: "The New Guide to Assess Road Investment Projects", Jean-Pierre Orus, SETRA, Ministry of Transport, France.

39. *"Transports: pour un meilleur choix des investissements"*, Groupe sur l'actualisation du rapport, President Marcel Boiteux, Rapporteur Luc Baumstark, Commissariat Général du Plan, April 2000.

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40. "*Quelles valeurs monétaires attribuer aux externalités ?"*, Luc Baumstark, July 2002.

41. *"Quelles valeurs monétaires attribuer aux externalités ?"*, Luc Baumstark, July 2002.

42. Sustainable transport policies, European Conference of Ministers of Transport (ECMT), Ed. OECD, June 2000.

43. Such harmonisation would also make it possible to restrict the size of fuel tanks on HGVs that travel through a country without refilling their tanks due to disparities between fuel prices and duties, a veritable armada of potential fire bombs that pose a constant threat to the safety of the populations exposed.

44. The European Union intends to harmonise the TIPP on 1 January 2009 on the basis of 350 € per 1 000 l.

45. Recommendations set out in the Boiteux report: Transport: towards a better choice of investment.

46. ACEA = Associaiton of European Car Manufacturers; OICA = International Car Manufacturers Association.

47. *"L'effet de serre et les transports -- Les potentialités des permis d'émission négociables"*, Conseil National des Transports, June 2001.

48. The US government has issued a "Decision Process Guidebook" -- How to get things done in Government" which describes structures in the United States and which can be consulted on-line at www.usbr.gov/guide This very comprehensive guidebook describes a methodological process that is highly comparable to the work of the World Road Association on the decision-making process for the implementation of road transport policies.

49. The Légifrance website was reorganised in September 2002. It is possible that the direct addresses given here to Légifrance databases may have been modified as part of this reorganisation, however the dates and numbers of the statutes mentioned here should allow users to readily find the updated versions of these statutes.

50. Manual published solely in Norwegian.

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ITALY

Improving economic and environmental assessment to support decision making*

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Acronyms

CBA	Cost-Benefit Analysis
CSMPT	Computer System for the Monitoring and Planning of Transport
EC	European Commission
ECMT	European Conference of Ministers of Transport, Paris
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
GTP	General Transport Plan
ICEP/CIPE	Interministerial Committee for Economic Programming
INTS	Integrated National Transport System
MCA	Multi-Criteria Analysis
MEF	Ministry of the Economy and Finance, Rome
MIT	Ministry of Infrastructure and Transport, Rome
MoE	Ministry of Environment, Rome
MoPW	Ministry of Public Works (now MIT), Rome
MoTN	Ministry of Transport and Navigation (now MIT), Rome
RTP	Regional Transport Plan
SEA	Strategic Environmental Assessment
TAV	Treni Alta Velocità
TCP	Territorial Coordination Plan
UVAL	Evaluation Unit, Ministry of the Economy and Finance

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1. INTRODUCTION

It is important to make clear what is meant by 'decision-making' for the purpose of this report. Decision-making is taken to refer to a number of decisions that can be made during the process of designing a project, programme, plan or policy, up to the 'final' decision that leads to the approval or rejection of the proposal. Hence, this study considers the extent to which assessment procedures can influence decision-making in three main stages in project development in Italy:

During the planning process

For example, providing support in terms of the flow of information linked to the various stages of planning and contributing data and analysis during the phase(s) of open debate (be it public participation or consultation amongst various authorities).

In this case, assessment procedures can be expected to influence the process at both the macro scale (for example in terms of discussion over alternative options and scenarios) and the micro scale (for example in terms of fine tuning a project or defining the precise mitigation measures needed).

In relation to the decision of the EIA Commission and of the Minister of Environment

Italy's Environmental Impact Assessment (EIA) procedures include an important legal [1] requirement for an EIA Commission to review the adequacy and quality of an Environmental Impact Statement (EIS) late in the process of project development.

The Commission produces an expert opinion (parere motivato), which can include significant technical recommendations and regulations. The Minister of Environment takes this opinion into consideration (having consulted the interested region, and together with the Ministry for Cultural Heritage) and makes a final decision (giudizio) on the environmental compatibility of the project. This will be translated into an obligatory and binding Ministerial Decree that can be either positive (usually including technical regulations), partially negative (in cases where the provision of documentation is deemed insufficient), or negative.

At the stage of the final decision

The competent authority, for example the Ministry of Transport and Infrastructure, will make a final decision approving or rejecting the initiative proposed.

This review of practice in Italy addresses the following themes:

- Section 2 – The context: recent changes in Italy's transport policies.
- Section 3 – Assessment procedures for transport.
- Section 4 – The challenge ahead.

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Methodology

The report is based on a set of open-ended interviews carried out in July 2002, in Rome and Milan and on a review of key policy and legal documents related to transport and assessment (see References). The interviewees belong to four main categories:

- Central Government:
  - Ministry of Infrastructure and Transport (MIT).
  - Ministry of Economics and Finance (MEF).
  - Ministry of Environment.
  - Senate's Infrastructure Commission.
  - Senate of the Republic.
  - National agency for Environmental Protection.
  - EIA Commission.
- Local Government.
- Academia.
- Consultancies.

2. THE CONTEXT: RECENT CHANGES IN ITALY'S TRANSPORT POLICIES

This Chapter provides a brief overview of the most recent and significant developments in the Government's policy on transport as background to the discussion of the role of assessment procedures in transport sector decisions.

The following paragraphs consider three themes:

- The General Transport Plan of 2001.
- Trends, including the greater emphasis on implementation.
- The Government's recent focus on infrastructure projects.

The General Transport Plan of 2001

The General Transport Plan[2] (GTP) of 2001 is a significant policy document, both in terms of planning for the transport sector and in terms of progress towards environmental integration. It

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signalled the end of almost 10-years uncertainty[3] over the strategic direction of the sector in Italy and represents an important attempt at integrating environmental concerns in transport policy and planning. This was reflected in the emphasis on collaboration and teamwork given by the then Ministry of Transport that worked closely with the Ministry of Public Works (now merged in the new Ministry of Infrastructure and Transport - MIT) and the Ministry of Environment (MoE).

A framework for planning – the national and regional levels

The GTP revitalised national transport planning, improving knowledge of transport demand and proposing infrastructure strategies more closely related with land use strategies. It abandoned the traditional logic of acting in response to an emergency and of focusing on an individual project out of its context (Pancheri 2001). It focuses on improving the efficiency of the existing transport system, ensuring it responds to the demand for mobility and that it contributes to reducing external costs.

The GTP adds to the traditional objective of satisfying demand, two additional objectives: reducing the levels of environmental pollution and increasing the levels of safety in transport, especially road transport (MoTN 2001:2). It recognises a need to develop demand management policies aimed at optimising the use of resources and reducing environmental impacts and other negative externalities associated with transport (MoTN 2001:3). This inclusion of environmental concerns within a transport policy document represents a broadening of the scope of transport and infrastructure ministry responsibilities.

At the national level, the GTP identifies an Integrated National Transport System (INTS),[4] which will provide the essential backbone for the country's sustainable growth and integration in Europe, and will strengthen its naturally competitive position in the Mediterranean. Given its strategic importance for national and international transport services, state funding will be directed at ensuring the functioning of the INTS (MoTN 2001).

During the formulation of the GTP a new modelling instrument was employed, the Computer System for the Monitoring and Planning of Transport (CSMPT).[5] This was used to assess the effects of different strategic infrastructure and fiscal options on the entire transport system, using the following variables:

- Transport supply data.
- Macroeconomic scenarios.
- Socio-demographic scenarios.
- Demand scenarios.
- Distribution of traffic over the network;
- Impact calculation, including CO_2 emissions (see Chapter 3 'Assessing Strategic Environmental Implications').

The data gathering and modelling effort behind the GTP provides a new framework for transport projects, which earlier had to create their own reference scenarios with little support in terms of strategic framework. The Plan also introduces for the first time a rigorous approach to planning for the transport sector, requiring the use of transport models (taking the national CSMPT as a reference) and

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the support of all initiatives by quantitative analysis. This will be important for the future Regional Transport Plans and other instruments such as the Operational Programme for Transport,[6] which will contribute to implementation of the GTP.

The growing relevance of transport's regional dimension

All infrastructure that is not included in the Integrated National Transport System (INTS) falls under the responsibility of Regional Transport Plans (RTPs), thus leaving the management of a significant part of the transport network to the Regions. This reflects a more general development in Italy's political and administrative framework, giving responsibility for a range of functions to the regional and local levels. As a result, decision-making for the transport sector is expected to change significantly in the coming years.

Already, several regions have defined RTPs and the GTP calls for the definition of guidelines for future versions of the regional plans. Box 1 gives an example of what an RTP can include today, with reference to the case of the Emilia Romagna Region.

RTPs should overcome the traditional split between transport and land-use planning. A single transport fund will be created for such plans and the Regions will have full independence in the allocation of funds, i.e. they are not pre-allocated to specific modes (MoTN 2001).

Urban transport issues will be addressed through the recently established Urban Mobility Plans and Urban Traffic Plans:[7]

- Urban Mobility Plans cover public transport, parking spaces, modal interchanges, railways, roads and underground systems.
- Urban Traffic Plans cover the management and regulation of mobility.

Most municipalities with over 100 000 inhabitants have a mobility plan, and most medium sized municipalities have a traffic plan. Like the RTPs, these too are financially supported by the central Government, which will link funding to objectives rather than to projects (MoTN 2001:76; for more detail see: Fontana and Zatti 2001).

The growing role of the Regions is focusing attention over Regional Governments' performance in terms of planning and assessment. Opinions on this topic varied greatly amongst the interviewees. Some expressed concern that large parts of the GTP had to be implemented at the regional level and that administrations at this level were less capable of carrying out technical assessments and modelling than central government. It was also suggested that the greater direct contact between politicians and electorate leads to greater exposure to pressures from particular interest groups where there is a risk that a culture of 'favours' can determine outcomes rather than the quality of proposals. Local government representatives, or central Government experts who dealt directly with the Regional Governments, perhaps not surprisingly expressed a different view. These experts found that there was a growing demand for technical and objective instruments capable of supporting decision makers in the complex decisions and investments that they are increasingly being faced with, thanks to greater powers resulting from devolution, but also more immediately in connection with a range of investments linked to the European Structural Funds.

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Box 1. **The Integrated Regional Transport Plan for Emilia Romagna**

- The Plan (PRIT 98) was approved by the Regional Government on 22 December 1998 (Delibera 1322). It was the result of several years of planning and developments, including Traffic Urban Plans for several local authorities.

- The Plan includes an analysis of demand for mobility and saturation issues in relation to the east-west corridor. It analyses mobility trends on roads and railways, and develops scenarios for 2010 which point to an increase in mobility, especially on roads unless action is taken.

Its objectives

- The Plan aims to maximise the effectiveness and reliability of transport systems. It will seek to reduce transport costs and its environmental impacts (focus on CO2 emissions).

- The Plan seeks to shift passenger and freight traffic from road to rail. It aims to promote intermodality for the east-west corridor, and provide infrastructure which serves directly the industrial districts, urban areas and peripheral areas.

Main initiatives

- Strengthen the connectivity and logistics on the main network. Promote technological upgrade.

- Develop an integrated transport system for passengers: a new rail line (Turin-Naples) and a series of initiatives aimed at strengthening the rail network in the Region.

- Four new road routes, develop new intermodality nodes, enhance use of telematics.

- Increase transit speed on the coast: including a new light metro system (Rimini-Cattolica).

- Training and professional upgrade of the road freight industry.

For more detailed information: www.regione.emilia-romagna.it/trasporti/newPRIT/

Strengths and weaknesses of the approach to planning

The GTP was the product of both technical approaches and dialogue between interested parties. In this sense, it represents a bridge between those who want a strong technical basis for assessments and those who expect strategic plans on this scale to have a significant base in open democratic debate. There have, however, been criticisms of its likely effectiveness in providing clear direction. The important place of consultation in developing the GTP, seen by some as a strength, is viewed by others as an inherent weakness because of the inevitable compromises made. The early drafts of the Plan had a more technical and precise character. This changed as local and regional interests had to be taken on board, leading to the inclusion of a wider range of problems, scenarios, strategies and solutions. Some commentators have argued that the planning process has been undermined by the lack of a clear picture of the resources available over the next 10 years.

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Environmental integration

There are two competing views in the Ministries, and more broadly, on the way to address the integration of environmental and transport policy. Should environmental protection be treated as a legal requirement to be met by transport plans or should it instead be one of the core objectives of transport planning? The traditional view has been that environmental protection is solely the responsibility of the MoE, which executes policy through legal requirements that must be respected by other institutions. This division of responsibilities leads the MIT to negotiate with the MoE to seek the most effective solutions in the light of externally imposed limits. More recently a more proactive approach to achieving environmental objectives through transport planning has developed.

There remain tensions between the two interpretations. There is recognition that, ideally, environment should be an integral responsibility of sectoral ministries like the MIT, however, the feeling that environmental protection is still weak and needs the presence of an independent patron like the MoE remains strong. It is therefore significant that interviewees felt that the GTP represents an important cultural change, providing an example of strong collaboration between the environment and transport ministries.

The GTP includes a whole chapter on Sustainable Development where it states that: 'the development of a sustainable mobility is a central theme within the Plan. Its various proposals include the important objective of reducing current levels of pollution on a global scale as well as at more restricted territorial scales' (MoTN 2001:26). However, the essential message of the chapter is in terms of reducing environmental impacts, rather than in terms of sustainable solutions.

Towards greater focus on implementation

The problem: failure to deliver projects

Since completion of the GTP there has been a renewed political emphasis on the development of infrastructure, in particular for the transport sector. Though the significance of the 2001 GTP is undisputed, the round of interviews clearly revealed that the most influential initiative in setting the transport agenda for the coming years is the 'Legge Obiettivo' (law no. 443) also passed in 2001. The proposal for this law was included in the *First 100 Days* programme of the Berlusconi Government, highlighting the political support for reducing Italy's so called infrastructure deficit (*ritardo infrastrutturale*) and related imbalances and social costs (Pancheri 2001; *Gazzetta Ufficiale* 2001).

The main objective of the new law was to accelerate implementation of strategic initiatives, and by the end of December 2001 the Interministerial Committee for Economic Programming[8] had approved 116 measures, equivalent to approximately 250 infrastructure projects related to transport and mobility, to be developed in the coming decade (*Gazzetta Ufficiale* 2002).

The three priorities identified by Government in relation to infrastructure in the late 1990s were:

- **Strengthen planning**,[9] to abandon the emergency response logic, to avoid further projects being left incomplete, to set priorities.

- **Pass necessary legislation**, to implement the public works Framework Law of 1994.

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- **Identify and promote projects**, to ensure the availability of feasible projects for funding.

It is the third priority that has received most attention. This may be explained by the traditionally weak link between plans and projects and delays and uncertainties in decision making procedures.

The weak link between plans and projects

One of the possible reasons for a lack of projects ready for implementation could be the weak link between plans and projects. Italy lacks a tightly defined decision-making process linking individual projects to a plan. In general, plans such as regional land use or transport plans exist but, at least until recently, were considered very generic documents with little practical influence over what projects would then be promoted.

The EIA procedure has become a scapegoat for a number of inefficiencies in this development process. It has represented the single most visible and tangible moment during the life of project formulation, when a decision will have to be made, and when all stakeholders can finally express their views and concerns over a concrete initiative. As a result, EIA became more an 'overall project assessment' with a concentration of expectations and pressures around this 'moment'. Many of the concerns typically raised go beyond environmental issues, questioning the sectoral policy and origin of the individual project, and its technical validity, thus burdening the system at a very late stage of planning, when significant money and time have already been invested.

Delays and uncertainties linked to the existing decision procedures

The GTP calls for the promotion of conditions that ensure the realisation of infrastructure investments. These include the identification of projects within the frameworks of plans and programmes, the application of SEA, and the identification of a single individual to be responsible for the completion of the project within the prescribed timetable.

The Ministry of Economy and Finance (MEF 2002) stresses that the scarcity of projects 'in the pipeline' is only partly due to the lack of planning frameworks. More often it is due to the slow and somewhat excessive (though legally necessary) procedures linked to the public works sector: it is not uncommon for project planning times to be longer than those of construction (a problem also recognised in the GTP). Actors called to comment on the infrastructure initiatives can present opinions and impose vetoes throughout the whole project planning period, causing great uncertainty in terms of the time frame involved. Therefore, there is a need for a more structured planning process defining clear decision moments when strategic, and subsequently increasingly detailed issues, should be discussed and decided upon.

Searching for solutions

Innovative planning instruments

With particular reference to regional development policies and the European Structural Funds programming period of 2000-2006, the Government has invested significant effort to improve the situation described above. It has focused on the need to design innovative administrative and planning instruments to accelerate the implementation of projects and to facilitate the achievement of regional development goals.

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The instruments[10] help translate new regional strategies to projects that better reflect local conditions by merging two approaches: the sectoral and economic planning approach with land-use planning. These approaches historically ran in parallel instead of focusing on common objectives. Now, through initiatives like the PITs (Territorial Integrated Projects) there will be a merging of project design, evaluation and management mechanisms. Another example is that of the Institutional Agreement on Programmes and related sectoral Framework Agreements[11]. These instruments are based on a political agreement between the central and regional Governments. Framework Agreements place greater emphasis on the process of project approval and on their actual feasibility, in territorial, environmental, technical, financial and administrative terms (MEF 2002). The GTP itself refers to these instruments as a means for implementing its strategic priorities.

The renewed emphasis on feasibility studies, situated *between* plans and projects in order to strengthen the passage to project implementation is discussed in Chapter 3.

Some concerns for the future

The late 1990s saw a change from a culture that saw transport and infrastructure as one and the same thing. Transport policy broadened, and regulations, tariffs, liberalisation and competition, technological innovation and efficiency, integrated approaches to logistics, and environmental standards all became part of the transport agenda. This was formally confirmed in the 2001 GTP. The current Government has not proposed a new transport policy, nor denied the relevance of the GTP, but it has made it clear that the 'Legge Obiettivo' (Law 443) is the priority for the MIT, and the law only refers to infrastructure projects. Thus, Law 443 has raised questions in terms of its implications for sustainable transport and in terms of the future of safeguards such as the EIA process, which the law streamlines significantly (discussed below in Chapter 3).

3. ASSESSMENT PROCEDURES FOR TRANSPORT

Assessments (EIA and CBA) have tended to contribute to decisions taken at the local level and perhaps less at the strategic level. The capacity for using quantitative assessment tools in the administration has been limited. As discussed above this is changing. Chapter 3 focuses on the three main types of assessment: Environmental Impact Assessment (EIA), Cost-Benefit Analysis (CBA) and the more recent Strategic Environmental Assessment (SEA). It also discusses the renewed emphasis on feasibility studies for infrastructure projects, championed by the MEF, partly in connection with the new programming period of European Structural Funds.

Of the three instruments, EIA has been applied most consistently in the transport sector. Transport infrastructure projects are the most frequent type of projects subject to EIA in Italy (Alvi *et al*., 2001), providing the greatest experience from which to draw lessons in terms of how instruments can contribute to improving proposals and informing decision makers.

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This section should also be read bearing in mind that it reflects the experience of assessment during a period of 'transition' in terms of the nature of projects being funded. Such projects have changed dramatically since the 1980s, when a lot of the legislation and guidance was put together. In terms of transport infrastructure, Italy has moved from building stretches of roads and motorways to larger and more complex projects, such as high-speed railways. All these changes, together with the gradual institutionalisation of a planning culture for the transport sector are a challenge.

Assessing environmental impacts

The timing of EIAs

EIAs can influence and contribute to the decision-making process at different stages. In Chapter 1 these were simplified into three categories: 1) during the planning process, 2) during evaluation by the EIA Commission and decision by the Environment Minister, and 3) during the final decision by the competent authority, such as the Transport Minister.

It is generally considered good practice to start the EIA procedure as soon as possible in relation to the various project development stages. The sooner started, the greater the chances of integrating environmental considerations in a constructive way, avoiding difficult and almost always expensive last minute amendments and mitigation.

The design of a transport infrastructure project can be divided into the following stages (Benedetto and De Blasiis, 1996):

- Preliminary phase (progetto preliminare) to identify the best transport solution in relation to the mobility requirements of the area.

- Final phase (progetto di massima o defininivo) to optimise the introduction of the infrastructure within the area of land identified in the preliminary phase, identifying the best technical solutions.

- Implementation phase (progetto esecutivo) to define the precise details of construction of the project, the technologies to be adopted and the various conditions which will have to be respected during construction, quantifying all financial implications which will then have to be included in the call for tender. This phase will enable contractors to start working on the project.

Different project design phases relate to different types of decisions. Some of them quite strategic (the preliminary phase), others very detailed, requiring a strong quantitative component (the implementation phase). The general rule whereby EIA good practice requires the evaluation procedure to start soon, would suggest that EIAs in Italy should apply at the *preliminary* stage. However, Italian legislation[12] states that the procedure of EIA and the Environmental Impact Statement (EIS) apply to the *final* phase (progetto definitivo).

This legal framework was criticised almost unanimously by the interviewees as it has severe consequences on the instrument's effectiveness in terms of influencing the overall decision-making process:

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Limits of current legislation and practice

There is 'a feeling that the effectiveness of EIA in terms of affecting general choices is essentially nil' (Alvi *et al.*, 2001:7). At the implementation stage, several financial agreements and administrative procedures have already been activated so that the network of economic and programming interests become a real obstacle to a 'radical review of choices' made (*ibid.*). The situation has been particularly bad for projects at the regional scale, since these tend to have funding approved before the EIA starts.

Influencing strategic choices

During the preliminary phase, it is possible to discuss the rationale behind the nature of the project (its '*raison d'être*') and other strategic issues such as route options. In the final phase EIA can contribute to the discussions of the project's technical details and necessary mitigation measures. This last process requires time and resources, and should not risk being wasted by taking place on projects in their final design stages, but which have not been discussed in terms of the more strategic questions.

Intervening over the many activities linked to project implementation

The timing of EIA procedures makes it virtually impossible 'to intervene effectively to control activities of project implementation' (Alvi *et al.* 2001:7). Major activities such as the management and disposal of construction materials will start long after the conclusion of the administrative procedures for project approval, and the actors involved in them are generally not involved in the EIA process. Current legislation allows companies 'to carry out the construction works with criteria that are very far from those suggested in the Impact Statement' (De Blasiis 2002:106) suggesting there is no environmental control over such stages.

Another limiting aspect of the decision-making process for infrastructure proposals is that the EIA, and the project proposal itself, are sent respectively to the MoE and MIT at the *same time*. So while the MoE assess the EIS, the MIT assess the project for its final approval. This will often allow for little integration. It also results in difficult situations where the EIS may have been amended to include several binding environmental regulations ('prescrizioni' imposed by the EIA Commission) and which will not be taken into consideration by the MIT while it assess the project.

As a result, the tendency is to modify the implementation phase to reflect the final results of the EIS. This has several weaknesses. Such a stage is effectively beyond the control and verification mechanisms currently available to environmental authorities. It also means that the integration of environmental concerns is left to the very last stage of project planning, quite contrary to the principles of good practice discussed above. Hence, the type of decision that can be influenced by the EIA/EIS will be limited to technical and mitigation options.

Different uses and effects of EIAs

There has been an extensive debate about whether instruments such as EIA should be seen as decision-support systems or decision-taking mechanisms. The difference being whether the final say on whether to build a certain transport infrastructure project or not should lie in the hands of technical tools (and therefore those who manage them), or in those of political institutions and elected individuals.

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In Italy EIA is generally considered as a technical instrument to support decisions. However, the history of EIA's application shows a rather more complex picture, where the nature of the instrument's influence over decision-making varies greatly. This is partly the result of the fact that EIA has been used and applied with different purposes, or agendas, in mind, including at one extreme raising questions about the *raison d'être* of a proposal and at the other extreme providing *ex-post* technical support to an essentially political choice.

Being the single most visible moment of decision, EIA has sometimes been used to question the up and down stream contexts of an initiative. It has offered the only tangible moment when strategic issues such as the *raison d'être* of a project could be addressed. The reason for this extension (or even misuse) of EIA's role lies in the weakness, and often absence, of planning and sectoral strategic overviews which could guide major investments such as those for transport. Hence, it has sometimes become the job of an EIA procedure to raise the fundamental question of what a transport project is actually meant to achieve, what problem it is meant to address. Using EIA in this way has been strongly criticised as the cause of severe –and expensive — delays in the process of project approval. Nonetheless, it has also been viewed as a necessary measure in order to address some crucial shortcomings in the decision-making process especially in terms of linking planning to projects.

As a result, EIA has contributed to the improvement of several high profile projects, including high-speed rail. It has made a significant contribution in terms of improved project design and securing integration with land use plans as well as defining crucial mitigation measures. However, even when used to raise difficult questions about the project's *raison d'être,* EIA has rarely if ever been able to contribute to the selection and discussion of alternatives, or to introduce a zero-alternative scenario.

Restricting EIA to an ex-post examination of a decision already taken, 'considering it a document that justifies the project rather than a precautionary investigation meant to guide its technical choices' is considered still common (De Blasiis 2002:108).

Significant trends for the future of EIA in Italy

The practice and legislation for EIA procedures in Italy is constantly changing and, in some ways, improving on the basis of a 'learning by doing' process. However, the overall impression is not encouraging. This section focuses on of five themes that were raised by the various interviewees:

- The potential of the 'Conferenza di Servizi'.
- The persistent weakness of public participation.
- The strengthening of monitoring and transparency.
- The likely implications of the *Legge Obiettivo*, Law 443

The potential of the 'Conferenza di Servizi'

Despite the requirements of the EIA legal framework, which focuses on the final stage of the project, there are increasing examples of early assessments being carried out on a voluntary basis or even as part of a request within a specific 'terms of reference' or ad hoc legislation (usually at regional level). In these cases, assessments are carried out on the preliminary project proposal, thus influencing the strategic choices of what to do, where. This approach is taken particularly in the case of projects likely to trigger severe conflict.

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Such assessments involve procedures for wide discussions amongst key authorities and stakeholders. An example is the regional law in Lombardy which calls for structured discussions and confrontations on the preliminary projects, the so called: 'Conferenza di Servizi sui Progetti Preliminari'. The law involves two main stages:

- Stage 1 on the preliminary project proposal – identifies critical issues, including environmental issues, and possible major modifications to the initial proposal, for example in terms of location.
- Stage 2 on the final project proposal – full EIA procedure.

In both cases the Conferenza di Servizi will play a major role. The authority responsible for the development will call the Conference to ensure consultations, discussions and wide participation of key actors and stakeholders, particularly in terms of local authorities affected. The EIA Division is included as a member of the Conference and it is the Conferenza di Servizi that is responsible for the EIA (Belvisi *et al.* 2000).

Such early assessment procedures are becoming common practice in some regions of Italy. Although time consuming and resource intensive processes, projects that have been through them have tended to be implemented more quickly overall.

The procedural innovation that introduced the Conferenza di Servizi,[13] was meant to do more than simply co-ordinate various administrative activities related to EIA. It introduced a different timing within the EIA process and, partly as a direct result of this, promoted greater sectoral integration throughout the process. The 'Conferenze' ensure the joint participation of various administrations and government bodies on the technical level as well as the broader administrative one, allowing different parties to confront each other throughout a range of decisions where there is the possibility to integrate different opinions and values in terms of how to protect land uses, the environment and the cultural heritage. They are intended to shorten the time required for various decision-making procedures and, at the same time, make these more transparent (Belvisi *et al.* 2000).

The new procedure has also raised some important concerns. There remains a tendency amongst some administrative agencies to support solutions, which gather the greatest public consensus, and/or benefit specific interests, 'rather than those more general of real environmental protection' (De Blasiis 2002:107).

The persistent weakness of public participation

Public participation remains a weak part of the EIA process in Italy. In 2000 only two Regions in Italy (Toscana and Veneto) had included explicitly the possibility of a public presentation of the EIS by the proponent in their EIA legislation (Belvisi *et al.* 2000).

The tendency is to interpret the requirement as a responsibility and a right of interest groups, organisations or associations, rather than of the individual citizen. Alvi *et al.* (2001) propose three reasons for this: immaturity and the lack of awareness of such rights within the established procedures, a psychological difficulty –a certain resignation- in taking an initiative within a complex and technical bureaucratic process (see below), and finally, a general lack of information in terms of land uses and local development programmes which should provide a context of reference.

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Weak public participation is particularly severe with reference to linear infrastructure where isolated cases are by definition more frequent along the proposed segment. This leads to a large number of minority voices remaining unheard because they are not represented by the interest groups and organisations that are usually from urban areas.

A further problem relates to the actual quality of the EIS, its notification and distribution. Infrastructure EISs tend to be unmanageable documents in A3 format, running to hundreds of pages, and communicated in a short advert on one of the national main newspapers. Access to these documents is not easy and may require multiple visits to planning offices. What would be more useful is to distribute copies of a 300 page document in all the libraries and relevant public offices in the area concerned, to encourage more than just organisations and agencies structured enough to engage with the system to be involved.

The strengthening of monitoring and transparency

The experience of the EIAs for the high speed rail links of the 1990s led to criticism of the procedure and its effectiveness in providing adequate information to decision makers. Assessments were made for individual stretches and nodes, providing a very fragmented picture of the overall impacts. The level of detail of the EIAs was also judged insufficient. These problems were due mainly to the rapid change from small infrastructure projects to a very large scale of developments.

The Bologna-Firenze high speed rail project is one of several more positive cases. The body responsible for all high speed rail investments, TAV (Treni Alta Velocità) entered into an agreement to ensure full implementation of all the environmental regulations resulting from the EIAs carried out over the various segments of the line. The agreement involved a wide partnership: the Presidents of all regions and provincial governments involved, the Ministry of Transport and the Ministry of the Environment, State Railways (FS), and TAV. Part of the agreement involved the setting up of an environmental observatory ('Osservatorio Ambientale').

The National Environmental Protection Agency and its regional agencies[14] have been involved in the activities of the observatory. Particularly in terms of the monitoring of critical issues identified through the EIAs, and in order to find solutions to the unexpected difficulties (inevitable, it was argued, when dealing with such complex projects). The experience with observatories was judged positively by a number of interviewees. In particular, it was seen to strengthen the whole monitoring process and to increase the transparency and effectiveness of responsibilities for environmental regulations. Monitoring is also providing important in terms of the improving the quality and effectiveness of environmental regulations.

The likely implications of the Legge Obiettivo, Law 443

The wider implications of the Legge Obiettivo are discussed in Chapter 2. Here we discuss specific impacts of its proposed changes aimed at streamlining the EIA process:

- The EIA will be carried out on the preliminary project, not on the definitive project.
- A special commission (not the current EIA Commission), nominated by the President of the Council of Ministers, will give its opinion on the project's environmental compatibility within 60 days.

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- The Inter-ministerial Committee for Economic Programming (CIPE) will emit a final statement of environmental compatibility ('giudizio di compatibilità' normally the responsibility of the Minister for the Environment) and at the same time approve the preliminary project.

Inefficiencies in EIA procedures leading to planning delays resulted in widespread questioning of the value of carrying out EIAs, particularly in the business community. Law 443 responds to these inefficiencies. The introduction of EIA at the preliminary project stage is very positive as it could address the many limitations and inefficiencies discussed earlier in this Chapter. The simplification of assessment procedures introduced by the Law 443 could also be a step towards greater integration of different procedures dealing with economic, environmental and social dimensions.

Assessing economic and financial implications

Renewed demand for assessment: feasibility and cost-benefit analyses

The last two programming periods for the EU Structural Funds have pushed forward recognition of the need to plan and set out clear policy objectives. This was particularly evident during the late 1990s when the Treasury (now MEF) launched a series of innovations in preparation for the 2000-2006 period, advancing discussions between all ministries involved at both central and local levels.

A 1999 law (Legge 144)[15] introduced a requirement for feasibility studies for all infrastructure initiatives costing 20 thousand million lira or more. The Evaluation Unit of the Ministry of the Economy and Finance (MEF) then worked closely with regional authorities (mainly in Objective 1 regions)[16] to ensure the effective introduction and use of feasibility studies and a process of preliminary investigation ('istruttoria') for major infrastructure projects. More than 200 feasibility studies have been initiated since 1999. Amongst the transport initiatives, three major projects have already applied this method: the motorway 'pedemontana' in the Veneto region, the motorway Salerno-Reggio Calabria, including different charging options, and the Messina bridge. The overall trend suggests that feasibility studies will focus on:

- Economic and financial sustainability, technical, environmental, administrative and territorial feasibility (see also Box 3).
- Providing clear support to decisions through greater awareness of the contents of investment options, and the technical comparison of available choices.
- Providing a clear direction for the following project phases (predicting likely obstacles, simplifying and speeding up the overall process, reducing the risks of having to revise the project design) (MEF 2002).

According to Pancheri (2001:IX) Cost-Benefit Analysis (CBA) has a privileged position in the framework of feasibility studies, as an ex-ante evaluation of potential effects. The minimum requirements for feasibility studies are summarised in Box 2.

The generally accepted rule whereby an early start of the appraisal process is considered good practice and is likely to provide greater and more constructive opportunities to inform and influence decision-making, applies to most forms of assessment, not just EIA. It appears to be very true, at least

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in theory, for CBA applied to transport infrastructure projects. Therefore, the renewed emphasis on feasibility studies, including their reference to CBA, is very positive.

To date, however, the simple application of CBA, let alone its *early* application, is more an exception than a rule. Unlike the request for an EIA, which is based on a legally binding procedure, CBA still lacks a comparable legal status. Though some argue that it is increasingly included in specific Government calls for tender, the general perception is that CBA is rarely being applied and tends to be done 'according to whether it is convenient'.

Box 2. **The minimum requirements for feasibility study, set out by the Inter-ministerial Conference for Economic Programming**

Annex B – Index of minimum requirements

Feasibility studies should include the following chapters:

- Territorial and socio-economic context of the project, structure and objectives
- Analysis of current and forecasted demand, and detail of the groups benefiting from the initiative
- Analysis of current and forecasted supply
- Description of the investment (location, dimension, characteristics, costs of construction, etc.), verification of the availability of the most important inputs (materials, personnel) and identification of available technical alternatives
- Analysis of possible alternatives
- Analysis of management aspects, of operation costs (if applicable)
- Analysis of financial feasibility
- Analysis of economic and social costs (cost-benefit analysis)
- Description and analysis of environmental impacts *
- Contribution to the programming period 2000-2006
- Executive summary including the main results and the recommendations based on the feasibility of the infrastructure.

* It is worth clarifying that, given the early application of feasibility studies, this requirement is considered as an analysis of compatibility with existing legislation, and a qualitative description of the state of the environment, of major risks, critical impact types and priorities for further analysis during the full EIA procedure.

Source: ICEP/CIPE 1999.

Issues arising from the Messina Bridge and other recent assessments

Background to the project and assessment

The Messina Bridge is significant not only for the scale of the project but for the detail and transparency of the project's feasibility assessment. The idea of linking the island of Sicily to the mainland through a fixed bridge has been in the proposal stage for decades. In 1998 a call for tender

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was put forward for a technical feasibility study and an analysis of the financial, social, economic, environmental and territorial effects (MoPW and The Treasury 2001). This made no explicit request for a CBA.

The economic and financial consultants ('the advisors' hereafter) considered two alternatives:[17]

1. *Bridge* - The bridge and essential supporting measures.

2. *Multimodal* - Various initiatives (road, rail and sea modes) for the channel crossing, and the same essential supporting measures identified for the bridge alternative.

According to a Government report based on the consultants' executive summary (MoPW and The Treasury 2001), the Messina Bridge analysis focused on two aspects:

- Finding an efficient answer to the predicted increase in traffic demand. This meant looking at the degree of use and related profits deriving from the alternatives.

- Assessing the general economic effects (at local and wider scale), environmental sustainability effects, institutional feasibility and impacts on safety. This meant identifying those interests which benefited or suffered from a particular solution, commenting on the relevance of benefits and the remedies which could compensate costs.

The advisors' quantitative analysis of passenger and freight traffic found that both alternatives can satisfy the increase foreseen in demand and that traffic trends will not be modified significantly as a result of the bridge becoming an alternative route (MoPW and The Treasury 2001:7). This is mainly due to the fact that the demand for passenger traffic is 70% national (as opposed to local) of which almost 50% is by air and this is broadly considered an irreversible modal split, followed by 35% road vehicles and 15% rail. Of the 30% local passenger traffic, only 25% uses a car, while 75% is pure traffic by ferry involving no other vehicle. In terms of freight traffic between Sicily and the Mainland only 30% crosses the channel: 60% of this is road transport, 20% rail and 20% RO/RO (roll on roll off), (*ibid.*).

The maritime and air transport measures considered essential supporting measures for both alternatives were not considered as competing with the bridge alternative, and their cost (4 650 billion lira), being common to both, was not considered decisive. The cost of each alternative varies significantly:

- Bridge option: 6 600 billion lira for the bridge plus 2 770 billion lira for road and rail connections.

- Multimodal option: 2 040 billion lira (for new ferry, port facilities and infrastructural connection between the port and existing transport systems) (*ibid.*).

In terms of optimising the public sector's financial contribution, the analysis made the following assumptions: it could not assess the possibility of attracting private finance for the multimodal alternative, hence assumed 100% public funding; for the bridge alternative it assumed a public contribution varying between 49.5% and 60.8%.

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The second aspect of the feasibility study entailed a qualitative assessment of general economic, environmental, institutional and security effects. The Government argued that since these factors were not monetised, it would not be possible to rank the alternatives according to them. This is a qualitative summary of key issues:

General economic factors

The report concludes that:

- The bridge has positive impacts on the metropolitan area (reduced traffic in Messina will free up urban space and have a positive impact on the housing market, the 'monument effect' will favour tourism).

- The multimodal project has positive impacts on long distance travel and responds to the need to connect Sicily to the mainland by different modes.

Environmental and security factors

Here the Government report concludes that: in terms of the negative impact of both [alternatives] on the environment and security, the study confirms that these are significant… in both cases robust and innovative actions are needed to counter such impacts. However, it is not on this basis that a choice can be made' (*ibid*. Page 17). The study acknowledges that the impacts are of different magnitudes, but they were not quantified and therefore were not used to rank the alternatives.

Institutional and image factors

The report concludes that: thanks to its natural unity and the effect that such unity and the infrastructure itself have on the image of the Mezzogiorno and of the public administration, the bridge solution is preferable to the multimodal solution (*ibid.* Page 19).

The report ends with a call for a political judgement based on the results of the feasibility study.

Diverging views on the nature and scope of CBA

According to the MEF (2002) the feasibility study for the Messina Bridge and its principal alternative has demonstrated the potential of CBA for supporting decisions. The analysis produced recommendations to the public administration in terms of: the context, including the identification of complementary projects on Sicily's network (for road, rail, sea and air transport); the conditions that could reduce the overall public financial involvement; and procedures that would facilitate implementation.

However, the study also raised criticisms, especially amongst those who believe that a fuller CBA should have been carried out.[18] Brambilla (2001) suggests that the consultants' analysis is only partial as it fails to compare the benefits deriving from the bridge project with those from alternative uses of the same resources. Ponti (2001) argues for a full CBA for such projects and suggests such an analysis would have produced negative results in terms of Net Present Value. The consultants indeed acknowledge that a strict CBA of the project[19] would have negative results but this would have provided insufficient information for public decision-makers.

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One of the issues arising from the Messina bridge, but also from other examples, is that there appears to be a certain concern amongst decision makers, over the definitive nature of a CBA outcome, with the assessment acting as 'Sword of Damocles'. This is essentially a matter of attitude towards technical instruments such as CBA. An instrument can either be perceived as an aid to decision-making or as something that produces indisputable outcomes, thus limiting the freedom, or indeed the actual role of decision-makers. The alternative view is that it is the job of the political decision-maker to choose the best option, on the basis of a wide range of factors, which includes the results of a CBA.

In the bridge case, the issue appears to be mainly one of transparency. The wider impacts of the project and its relevance for broad development and social objectives in the regions involved are a prominent part of its justification, as is common for large transport infrastructure projects. The rigour of the analysis in this respect has been questioned as claims such as 'it will contribute to social cohesion' were not subject to specific analysis (Ponti 2001:4).

The high-speed rail audit

The 1990s experience with high-speed rail in Italy highlights two problems: absence of CBA and a tendency to ignore the systems dimension. By 1997 most projects had been identified and assessed, and Parliament called for a verification or audit-type review ('verifica Parlamentare') of all high-speed rail initiatives. The process, which involved several institutions and experts including the Director General of for EIA (MoE) made the following main conclusions:

- A CBA of the initiatives was needed due to uncertainty over the financing of the projects.
- High speed rail initiatives must be evaluated on the basis of an integrated system, taking account of the needs of freight transport *inter alia*.
- There should be open calls for tender.

Despite these conclusions being included in the Parliamentary audit report, they were not acted upon except for small modifications to improve integration with standard rail lines and a recognition that the high speed rail program would essentially depend on public funding.

Process integration

Despite differing opinions on the specific nature of economic and financial assessments, there is one theme that appears to underlie many of the comments made and highlights similarities with the development of EIA procedures, the need to integrate assessment throughout the critical stages of project planning:

- Preliminary phase ('progetto preliminare').
- Final phase ('progetto di massima o definitivo').
- Implementation phase ('progetto esecutivo').[20]

So far CBA tends to be limited mainly to relatively small private sector projects and limited to a single moment of analysis. Several interviewees argued for an on-going, iterative approach to the use of CBA to yield the full benefits of this technique. Viewed in this ways there are potential synergies

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between EIA and CBA procedures. At the preliminary stage the data needs of CBA and EIA overlap. When the legally required final phase EIA is complete the CBA will need to be updated if, for example, significant mitigation measures are required. This would help the project proponent and the public administration in general, the EIA Commission in its evaluation of the EIS, as well as the Environment Minister when it produces its final decision on the project. Although much of this is intuitive, current practice does not reflect this framework for a number of reasons, including the paucity of CBA-type assessments.

Who should do what?

A related issue is how the three main players around a transport infrastructure proposal can best interact. Figure 1 is based on an interview with Silvio Pancheri, Director of the Evaluation Unit of the MEF. It provides a short description of how elected decision-makers, the public administration, and external experts and consultants could work together ensuring that, where the public sector is the proponent, it maintains an effective involvement over the whole process. In particular, the framework helps ensure that the technical and political dimensions of the planning/assessment and decision processes are effectively integrated, without however losing the necessary independence of the final judgement of the elected decision-maker. The framework shown in Figure 1, below, is sometimes followed in full. Perhaps more often, some of its steps are 'collapsed'.

Assessing Strategic Environmental Implications

SEA in the regions

SEA is still a relatively new instrument in Italy. In 2000, eight Regions had included a reference to SEA within their EIA legislation, though mainly in terms of inserting a new principle rather than providing clear guidance (Belvisi *et al*. 2000). A few pilot studies have been carried out in relation to the transport sector and some more consistent experience has been gathered in relation to regional development plans funded with European Structural Funds. However, approval of the European Directive on SEA (EC 2001) has further encouraged the already significant number of regions moving to legislate for the use of SEA. There seems to be great interest amongst local transport administrations for the introduction of SEA, and this is triggering the need for legal requirements to be set up, to provide a basic framework. In parallel, discussions about SEA have strengthened the call for strategic reference frameworks such as national transport and sustainability policies in which to introduce regional initiatives.

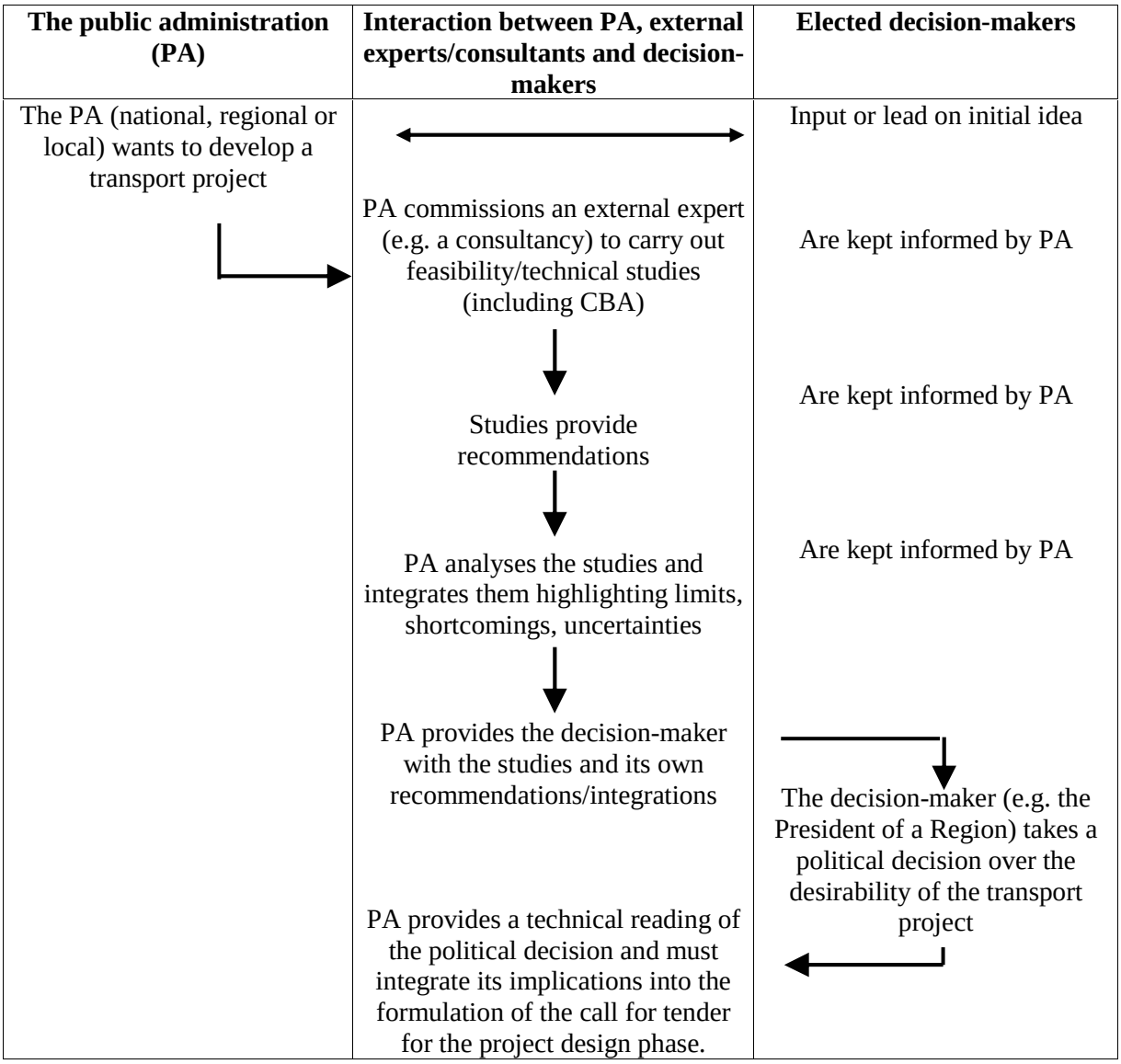
One Directive, different ways of interpreting SEA's role

At the moment it is not clear what approach will be taken when transposing the European Directive on SEA. However, the Government has legislated ('*Legge Comunitaria*') that Italy will transpose the Directive by March 2003, a date which has surprised many since it means anticipating the deadline of the Directive itself. Some interviewees saw a risk that, combined with Law 443, new SEA procedures *could* weaken the EIA system in Italy. Given the novelty of the instrument, it is not surprising that much of the debate focuses around the 'best' approach and methods to use. In this context, the complexity of transport systems is considered to pose major challenges. This concern partly relates to what is commonly described as tiering. This recognises the need to ask different questions at different stages in the hierarchy of policy and planning (down to the level of individual

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projects which require EIA) and, therefore, to adopt different approaches and tools depending on what is being assessed. A wide range of approaches are possible, see Box 3.

Figure 1. **A possible process of planning, evaluating and taking decisions**



The remainder of this section discusses the impact of SEA in decision-making with reference to two very different examples:

- The pilot SEA of the General Transport Plan (GTP).
- The SEA (or strategic assessment) of the Territorial[21] Coordination Plan for the Provincial Government of Milano.

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Box 3. **Different approaches likely to lead to very different results**

Approaches to SEA in transport:

- A generic assessment of the policy choices, for example, whether they will contribute to the Kyoto targets.
- An assessment of the coherence between a plan or programme linked to a particular territory and an environmental policy.
- An assessment of a plan or programme which identifies those projects that, for their significance or synergetic importance should be subject to an EIA.[22]
- An assumption that the plan or programme is a political choice which can be assessed only very generally, then the focus of the SEA would be in the testing of the real possibility of implementing the plan in relation to certain environmental conditions (for example, using cumulative impact assessment), ensuring that the environmental costs of the plan are compensated through the planning process.[23]

Source: Interview, Carlo Benedetto.

The pilot SEA of the General Transport Plan

The challenges of quantification and tiering

The Sustainable Development chapter of the GTP summarises the experience of the pilot SEA of the Plan. This was more a contribution towards an SEA than a full assessment. The assessment made an initial attempt to quantify potential impacts of the Plan with reference to a single indicator: energy consumption and related CO_2 emissions. The selection of the objectives and indicators/criteria for evaluation are fundamental to an SEA and the choices made can have a great influence on the decisions taken. In the case of the GTP, the choice of the single environmental issue, CO_2 emissions, was explained in several ways:

- The GTP was being finalised at the same time as the Government was preparing the new Structural Funds planning period and the European Community was placing great emphasis on the need to contribute to the Kyoto targets.
- The issue was chosen because it is by far the most complex environmental problem that the transport sector faces.
- This was the only objective that could be treated quantitatively given the data and modelling tools available.

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The results of the assessment suggested that the Plan would make it possible to reach the maximum objective to stabilise CO_2 emissions to 1990 levels, by 2010 (MoTN 2001:28). However, this result is based on at least two 'difficult' assumptions:

- Very low growth rates for road transport, which were supported by no explicit policy which could have explained such moderate trends.

- The Plan is essentially for long-distance traffic. It uses a level of aggregation of traffic at the inter-provincial level, which means that almost 70% of traffic remains outside the range of the GTP, with clear implications for the overall meaningfulness of the impact calculations.

- The evaluation of impacts applied to the draft plan and draft list of interventions. The final GTP included a very different, and longer list of projects, which was not based on the strategic criteria of safety and congestion identified in the early stages of the Plan's formulation (in other words, a list that had little to do with the strategy itself).

The quantitative results themselves are therefore likely to be misleading. But the SEA exercise produced other findings of interest.

One interviewee reflected that the SEA of the GTP was first Italian experience of a assessing a high level, strategic proposal (see also Debernardi, 2001). In his view it showed that it is not possible to verify overall positive or negative impacts to such strategic plans. Instead, the aim should be to assess the coherence and compatibility between the plan and international and European strategies for environment and transport sustainability, as a sort of sustainability audit. This approach, though often not quantitative, would provide a common language for environment and sustainability issues across the planning process, and across various phases, from broad strategies to the final project level, where EIA is then applied. SEA would thus provide support to decision-makers and help overcome local conflicts, providing a negotiation path that aims towards sustainable development.

The recent experience of SEA-type[24] evaluations carried out on the Regional and Sectoral Development Programmes for European Structural Funds followed this kind of rationale but had mixed results (see Box 4). They certainly helped to get a broad understanding of the level of coherence between development and environmental strategies, but the lack of quantitative information meant that a number of projects were given the go ahead without an analysis of their specific merits or impacts.

This suggests that the tiering concept often promoted in SEA literature has not so far been successfully developed and instead there is an abrupt jump from very strategic level evaluations to individual projects. Part of the reason for this is the weakness of the planning step, which should exist between these two levels.

Overall, however, the experience of SEA for the Structural Development Programmes is regarded positively for its role in identifying indicators and co-ordinating data, which will make on-going monitoring and evaluation more transparent.

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Box 4. **The SEA-type evaluation of the National Transport Programme**

Article 41 of the European Regulation for Structural Funds (1260/99) requires all Programmes (regional and sectoral) to be subject to an *ex-ante* environmental evaluation as a condition for the approval of the programme.

In the case of the National Transport Programme (NTP), the assessment was carried out by the Ministry of Infrastructure and Transport. It included:

- A description of aspects of the environmental situation relevant to the transport sector, providing information (often not quantified, or when quantified, not updated beyond 1985 or 1990) of certain environmental components.

- Prediction of likely impacts of the NTP strategy and its measures. The objectives of the NTP are identified and described (modal shift in favour of rail, reducing pollution etc.), then each NTP measure is assessed qualitatively (positive, negative, neutral) against the environmental components selected above.

- Measures aimed at the integration of the environmental dimension in the NTP. This involves a qualitative analysis of coherence between the types of measures and interventions proposed in the NTP and the environmental issues identified above.

The European Commission made the approval of the NTP conditional, amongst other things, on a change in the Programme to bolster the modal shift objective. It imposed a reallocation of financial resources so that at least 60% would go to rail and no more than 40% to road.

The Environment Authority was not involved in the early planning phase but at the time of writing the ex-ante evaluation was being reviewed by the Environment Authority. By the end of 2002 this review will provide the basis for the next assessment phase of the European Regulations for Structural Funds, the intermediate evaluation (half way through the programming phase).

Source: F. Bella, personal comment (12/9/02).

The difficulty in defining SEA's impact on the GTP

Perhaps the most significant result of the assessment was to show that the various strategies proposed in the GTP are not in competition, indeed, they are *all* necessary in order to meet the objectives proposed. The CO_2 emissions calculation showed that modal change was going to have little impact in terms of meeting Kyoto targets, whilst technology improvements seemed to be more promising (see Debernardi 2001 for details of the recommendations produced by the SEA).

However, a number of interviewees expressed scepticism over the real weight that the SEA had in determining the final form of the GTP. Moreover, Debernardi concludes that 'Perhaps we should be asking ourselves whether the GTP in itself has influenced the political choices of the sector, and not whether the SEA influenced the GTP' (*Ibid.* p.5.*)*.

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Looking at settlements, infrastructure and the environment – an example from the Provincia di Milano

The GTP placed great emphasis on the need, and benefits, of integrating transport initiatives within the wider context of land-use planning and territorial management. The Territorial Coordination Plan (TCP) for the Province of Milan provides an interesting example for a range of issues:

- It shows how transport has had a crucial role in land-use planning within an urban context.
- It represents an innovative approach in terms of how to manage the assessment process.
- It emphasises the need to integrate planning and assessment.
- It gives a concrete example of how an SEA can influence decision-making and the implementation phase of a plan.

What makes the example particularly interesting is the approach taken by the local authority in terms of how to manage the process itself. It is common practice for local authorities to outsource the background studies and the formulation of plans. In this case, a significant part of the work was carried out with direct involvement of a team of internal staff. When Marco Pompilio, Director of the Land Use Planning Directorate at the Provincia ('*Assetto del territorio*') joined the local authority, a very preliminary draft plan already existed. An initial methodological study was completed in 1998 in an early version of the TCP developed by consultants commissioned by the local Government of the time (Provincia di Milano, 1998, '*Primi elementi per valutare la compatibilità del Piano*', *Sesto Volume dei Quaderni del Piano per l'Area Metropolitana Milanese. Milano: Provincia di Milano*). The Director's interest in SEA led to an initial methodological study, carried out in-house. This led to the setting up of an internal team and close ties with other crucial divisions within the Provincial Government. This arrangement was to last throughout the whole planning period, leading to a significant learning experience within the public administration.

The Plan's framework is based on the idea of three systems representing three essential territorial components: settlements, transport infrastructure and the environment. This helps rationalise the complexity of the characteristics and uses of the territory and provides the essential structure for both the formulation and assessment of the plan, ensuring correspondence between them (Baldizzone *et al.* 2002:8).

The Plan was subject to an SEA that was designed to be fully integrated into the planning process and influence final decisions, including the content of legislation for the Plan's implementation. The SEA was interpreted as a tool to promote sustainable development and was eventually called a Strategic Assessment.

The TCP relates to over 100 municipalities. These had to be involved in the process and part of the effort was to design a way to work together on the three systems framework. This raised the issue of who should do what and what was the righet balance between technical inputs and political decision-making, in this case complicated by the large number of local authorities involved. The key steps can be summarised as follows:

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- The municipalities were grouped into 12 areas. The 12 areas became the basis on which to reason in terms of alternatives for the three systems: settlements, infrastructure and environment/conservation.

- Each area produced a document (documenti di intesa) agreeing broad priorities in co-ordination between all political representatives, with the assistance of technical experts. The combination of these documents was the basis of the TCP.

- As these documents were being formulated and agreed the first analysis of the state of the environment (SoE) of the whole Provincia was being carried out (this was partly outsourced); the SoE was to provide the basic data for the Plan and its SEA (see also Box 5 below).

- A set of objectives and indicators was selected for the SEA. The 24 indicators were grouped according to the three systems (settlements, infrastructure and environment/conservation). The infrastructure/mobility indicators included:
  - Average time of car use per person.
  - Average time of public transport use per person.
  - Modal share for commuters.
  - Availability of cycling routes.
  - Availability of parking spaces at modal interchanges.

- Each political group representing the 12 areas was asked to weigh the indicators, which were then calculated and presented for each area (see Box 5 below).

SEA's influence over decision-making and implementation

The Director of the Land Use Planning Division characterised the new approach to planning by noting that subsidiarity is no longer defined by restrictions but by developing the TCP in co-operation with the Municipalities. The role of the Provincial Government now focuses round the concept of compatibility and hence requires a great negotiating effort, rather than the more traditional control or verification effort.

It is this new concept of planning and of the relation between different levels of Government that underlies the whole assessment rationale. The legally binding regulations (*Norme di Attuazione*) that are the product of the CTP represent the final decision-making stage of the Plan. They indicate the overall strategic direction for policies and choices in matters of land-use planning, landscape, environment and urban infrastructure not related to individual municipalities (*Provincia di Milano 2002*). Hence, the SEA process was designed to influence these regulations by providing sustainability indicators, objectives and policies, and linking these to financial incentives. If local authorities chose to prioritise these measures they receive additional financial assistance.

By including in the regulations a clear framework of sustainable development indicators and having developed the necessary information network to support them, the Provincial Government has ensured an effective evaluation and monitoring mechanisms for the implementation phase and related municipal planning phases. It plans to carry out repeated assessments *in itinere*, to monitor the progress and effects of implementation against the sustainability objectives and indicators used in the

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SEA. In particular, the results of the SEA provide the Provincia with the baseline information it needs to formulate its binding opinion on all municipal land-use plans.

This experience shows the potential strength of an integrated approach to planning and assessment. The SEA was tightly linked to planning and can now be used as a monitoring tool by the Provincial Government to assist implementation. Planning Director Marco Pompilio concluded that the real function of an SEA is in the implementation phase.

Box 5. **The qualitative and quantitative approaches**

The SEA had two main phases:

Phase 1 – Qualitative assessment

This focused on three criteria for potential land-uses: residential use, conservation, and production. Each was expressed geographically using Geographical Information Systems (GIS).

Once the reference maps were produced, proposed projects for each of the 12 areas were overlayed. The result was a set of new maps showing the critical or conflict areas. On this basis, mitigation measures were studied.

Project alternatives were not discussed as part of the SEA. They had been discussed and approved at political level and would not be questioned at this stage.

This stage was useful in terms of fixing on paper certain objectives and principles, and in providing an overview of how the Province would change and develop as a result of the combined initiatives.

Phase 2 – Quantitative assessment

This focused on the use of indicators to assess the likely impacts of the Plan. Indicators were chosen with reference to the Plan's objectives (over 100).

This phase used the European Dashboard system, developed by the European Joint Research Centre (Ispra, Italy), considered a very effective tool for communication: its strength lies in its power of communication through graphic summaries of what changes will occur as a result of the Plan. It also proved useful when new and alternative policies were discussed during the later stages of planning.

Sources: Baldizzone *et al*. 2002; and various interviewees.

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4. THE CHALLENGE AHEAD

The objective of this study was to discuss the role of assessment instruments in improving decision-making processes in the transport sector. The remit of the investigation therefore implicitly recognises a link between instruments such as EIA, CBA and SEA, and the quality of decision. The instruments' effectiveness is, at least partly, related to their ability to influence decisions. This however, should not lead to confusing the effectiveness of an instrument with the type of political decision taken: it is essential to distinguish between the process of planning,[25] with its many minor or major decisions, and the final choice of elected decision-makers.

When we argue that assessment instruments are meant to support decisions, and not take decisions, we are in fact referring to their role, and effectiveness, in contributing to the planning process. This final section of the report reflects on the meaning of the three aspects of the debate on assessment, planning and decision, discussed in chapters 2 and 3:

- The characteristics of the context in which assessments are applied.
- The attitudes towards assessment.
- The problems affecting the role and effectiveness of assessments.

It ends with some recommendations.

Context

The effectiveness of assessment instruments is linked to how well they have been conceptualised and designed, but also to their context of application. Hence, this section summarises aspects of the Italian context considered particularly relevant to such effectiveness.

The brief overview of the most recent developments in Italy's transport policy suggests that there is still a struggle between the tendency to work in emergency response mode, focusing on projects out of their context, and the increasing pressure to define strategies, provide frameworks and targets, address transport systems rather than individual projects and increase the rigour of planning by making use of transport models and quantitative analysis.

The approval of two very significant, yet very different, policy measures in the same year is a case in point. In January 2001 The General Transport Plan (GTP) was approved, giving the country a strategic framework after almost a ten-year gap. In December 2001 Parliament approved Law 443 (the *Legge Obiettivo*), identifying public and private infrastructure and strategic production areas as priorities for the modernisation and development of the country. Most interviewees felt the two measures were incoherent and probably incompatible. However, the list of infrastructure projects annexed to the GTP is in some ways a precursor of the approximately 250 infrastructure projects related to transport and mobility identified as strategic priorities in Law 443.

The GTP itself has been found wanting. Despite being the result of a widely discussed and open procedure, or perhaps precisely because of this, the GTP provided few of the necessary strong signals for the future direction of transport in Italy. It made the important contribution of expanding the range

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of strategies to be considered, particularly in terms of logistics, alternative modes and technical improvements.

Law 144 of 1999 could prove fundamental to changing the evaluation process for infrastructure projects as it re-introduced feasibility studies that provide a good basis for integrated procedures for financial, economic, social, environmental and technical assessments. By definition, feasibility studies are carried out early in project planning and can be used to develop a strategic overview of the project's raison d'être. They can also ensure smoother progress in planning and implementation, reducing some of the problems and obstacles characteristic of the past. The *Legge Obiettivo* also brings assessment to an earlier stage: the preliminary project phase. This is discussed below.

There are some other aspects of the context of application for assessment instruments that also need to be summarised here. The decision-making process for infrastructure projects has been found complex and fragmented by institutions as different as the National Agency for Environmental Protection and the Ministry of Economy and Finance. Assessment processes, especially EIA, are often singled out for causing disruptive and expensive delays in the already complex administrative procedures that lead to development permission. However, several interviewees expressed the view that project quality is often the first cause of such delays and the "environmental problem" is essentially a problem of "project quality". In practice, however, EIA in Italy has developed into a set of procedures that favour the rationalisation of decision-making processes (Belvisi *et al*. 2000: Chapter 6). Similarly, the revived feasibility studies, including CBA, are seen as crucial in improving the quality of projects, ensuring early dialogue between the various components that define the project, and seeking coherence with other analyses and studies required for such definition process (Pancheri, 2001:X).

Finally, as already noted, there persists a tension between those who see the environment essentially as a constraint and legal obligation and those who would see improving the environment as one of the objectives of transport institutions and expect to take on responsibility and an active role in the field. In part, this can be related to the inheritance of a Napoleonic tradition based on the idea of legal requirements rather than the more Anglo-Saxon approach based on setting objectives.

Attitudes

For a range of reasons, technical tools are not always popular amongst developers, or within the public administration. In the case of politicians (be they representatives of national or regional and local institutions) and developers, their attitude to assessment was characterised by a mixture of intolerance and impatience, an obligation and a constraint, which had to be (in the case of EIA at least) complied with before getting approval or simply getting on with the job. The image of assessments as an obstacle to the politician's freedom of action remains surprisingly dominant amongst elected decision-makers. The instruments are in place but are not being used because they are seen as binding. There is also a feeling of frustration as people blamed assessment procedures, rightly or wrongly, for increasing delays, or simply found them inadequate given the complexity of transport issues. When asked about the attitude of decision-makers towards instruments like EIA and CBA, the almost all of the twenty-six interviewees reported general scepticism or hostility.

Notwithstanding, there is wide recognition that the most common of the assessment tools reviewed here, the EIA process, has had a positive impact on the environmental and overall quality of transport projects. Encouragingly, this has not been only a one-way system of imposing the final

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decision of the Environment Minister over developers. In a growing number of cases major proponents, including FS (the state railways) and ANAS (the road association), see EIA as a constructive instrument, one that can propose solutions as well as simply evaluate projects.

What interviewees were not able to support is the idea that, over the last ten to fifteen years the growing experience in the use of different assessment techniques has led to a great cultural change. There remains a persistent scepticism over the benefits of EIAs. Partly due to the procedural complexity and uncertainty over the time required to complete an EIA, especially due to the wide range of approvals required from local authorities. However, the EIA procedure has also become a scapegoat for a number of inefficiencies in the project development process. It is the single most visible process where all stakeholders express their views and concerns, many of which go beyond environmental issues.

Finally, it was felt that assessment procedures are used to support decisions by either corroborating and legitimising decisions or placing the brakes on a decision already taken. They should instead be used to improve the process of knowledge acquisition, contributing towards the right choice without pretending to be a panacea that provides 'the answer'. Many interviewees stressed the need to clarify how instruments should be integrated within the decision-making and planning processes.

Problems, challenges and recommendations

Integrating assessment instruments

The discussion of all three instruments, EIA, CBA and SEA, has stressed the link between the stage of planning at which an assessment is made, and the role of the instrument.

Current EIA laws require EIA to be carried out on the definitive project, making it difficult to integrate with, albeit rare, CBAs. This makes it harder for the MIT and MoE to collaborate in the crucial phase of identifying and discussing alternatives. Therefore, timing is one of the main obstacles to the integration of CBA and EIA procedures. The two are perceived as two distinct phases, CBA preceding the EIA by several months. Deficient planning and design in the early stages can result in very expensive alterations late in the process of project development in response to recommendations from the EIA Commission. The Commission is *de facto* left with the job of managing problems that might have been avoided. It would be better to carry out a good CBA, in combination with an early EIA at the preliminary project phase.

There are promising trends in this area as EIA is being applied increasingly early, mainly on a voluntary basis, especially in some of the Regions. In these cases considerable emphasis is placed on mechanisms and tools for dialogue, negotiation and conflict resolution amongst stakeholders. The early start should also result in greater integration of economic, social and environmental issues at the preliminary stage, especially when feasibility studies are undertaken.

The changes to the EIA procedures proposed in Law 443 could contribute to improving this situation by shifting the moment of the EIA to the earlier stage of the preliminary project. However, if such changes were to mean that EIAs are not also carried forward to the final project phase, this would result in a major loss rather than a benefit; as the level of detail at the preliminary stage is simply not adequate for the necessary quantitative assessment of environmental impacts and mitigation measures.

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Integration of roles and planning phases

There is a need to strengthen the transfer of knowledge from one phase to another of the planning process, from the preliminary, to the final and implementation stages of a project, or plan. At present, there is significant and unnecessary repetition of work, due to gaps in the chain of planning and in the communication between public administration, external experts and elected decision-makers.

This type of integration will become even more relevant after 2003, when the Government is expected to approve legislation for the formal introduction of SEA procedures. The emphasis on strategic planning levels, and related assessment, could improve transport projects. Much will depend on the way SEA is related to EIA in the legislation, however, and there is some concern that the new law may weaken existing EIA arrangements.

More generally, there more transparent and systematised interaction between the different public administrations, external experts and elected decision-makers will be needed and this relates to strengthening the capacity of public administrations to increase their involvement in technical studies.

Integration of assessment, planning and decision-making

The need for integration of roles and planning phases, is a recurrent theme across all three methods investigated. EIA, where there is the greatest experience, has been criticised for being carried out almost independently of some of the crucial planning and decision-making stages. This is partly thanks to the procedure laid down in the law, which requires the approval of the project and the evaluation of the EIS to take place in parallel.

The answer is clearly to integrate the two procedures. This is partly happening, in an *ad hoc* way, through mechanisms such as the *Conferenza di Servizi* (formal discussions on the preliminary project) and the feasibility studies. These studies are also rehabilitating the use of CBA in the Italian project planning system. Where formerly CBA was relegated to being used as an instrument that certified the value, mediocrity or impossibility of realising projects already defined, it now has the potential to be used as intended, to influence choices, in all the crucial phases of a project.

In terms of SEA, the integration of assessment and planning procedures is crucial to its effectiveness. Experience is still limited but demand for this type of procedure is growing steadily, particularly at regional level.

Transparency, procedural certainty and traceability

Clarity and certainty in the timing and requirements of assessment and administrative approval procedures were among the criteria most strongly upheld by interviewees for effective decision making. They also represent the most urgent area in need of attention.

Transparency has generally so far been neglected but making clear who is responsible for what assessment steps could reduce delays. Very little progress has been made in terms of traceability of decisions and the logical sequence of studies underlying an EIA. There is an urgent need for shorter, clearer documents, structured in a way that allows reviewers to follow the logical sequence of the analysis, its assumptions and conclusions. Crucial choices tend to be hidden under mountains of paper.

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More traceability would also enable authorities to re-run the analysis according to different assumptions or policy scenarios.

At the same time the credibility of assessments could be enhanced by making the limits to assessment tools and to evaluations clearer. This would contribute to reduce perceptions that assessment outputs like net-present value are a Sword of Damocles. Decision makers should be presented with clear, qualitative summaries of the strengths and weaknesses of the proposal and its alternatives rather than a definitive conclusion on its absolute value. Assessments should also aim to propose solutions as much as identify problems.

Complexity

The general impression seems to be that instruments, no matter how sophisticated, remain limited in their ability to provide support for the very complex structural changes that often result from transport initiatives. This has sometimes been the reason for decision-makers' scepticism towards assessment.

Complexity was also raised in terms of imbalance between certain techniques and the quality of data they use. There is a tendency to run sophisticated models on the basis of very approximate data, and this can be distorting, even misleading.

Expertise

The complexity of both the area of investigation, namely transport with its many direct and indirect interactions with the inhabited and natural world, and the growing sophistication of assessment techniques, requires a range of skills. Technical expertise is one of them, and interviewees highlighted the inadequacy of many institutions in this respect. This is particularly important at regional level.

Devolution, which is leading to an increasing role for the regional governments in the planning and implementation of transport strategies (notably the Regional Transport Plans and Urban Mobility Plans), needs to be accompanied by an effort to equip local administrations with staff trained in the use of technical support tool and analytical approaches.

Assessments of major infrastructure usually involve external advisors. Greater competition and transparency in the procedures for their selection and submitted results to wide publicity and open debate by the community of experts would probably improve the quality of advice and have the additional advantage of strengthening the independence of consultants.

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CONCLUSIONS

The results of the overview and interviews carried out suggest that action to improve the overall process of planning and decision-making in the transport sector could focus around two main themes: integration and institutional strengthening.

There is a clear and urgent need to integrate all forms of assessment into the whole process of planning, be it for projects or more strategic initiatives. This implies starting assessment early. It places an emphasis on the need to see planning and assessment, and their various moments of decision, as iterative and dynamic.

To be effective and efficient, the integration of planning and assessment processes should be accompanied by integration of the different evaluations that are being carried out. The aim should be to co-ordinate and optimise the contribution to the development of ideas, alternatives and solutions between the ranges of required evaluations: economic, social, financial, territorial, environmental and technical feasibility.

Institutional strengthening is a condition for effective integration. The promotion of sustainability is undermined by a traditional tendency to view the environment as a constraint and legal obligation. This needs to be balanced with new responsibilities and capacities that favour interdisciplinary approaches to planning and policy making.

EIA has been the most common form of project assessment routinely applied in Italy. It has also been the most tangible and visible moment when a decision has to be made during project formulation. As a result all of the pressures and expectations associated with the project focus on the outcome of the EIA rather than wider economic and planning assessments. Since EIA is applied late in the process, opportunities to address strategic issues at the outset have often been missed, resulting in conflicts and cost escalation.

The recent and planned changes in the legal and institutional framework could lead to improvements. Since 1999, Law 144 requires that major projects be subject to a range of financial, economic, social and environmental assessments at the stage of feasibility studies. This revival of feasibility studies, together with the new law on SEA expected in 2003 and the new generation of Regional Transport Plans, could contribute to correcting some of the problems of timing and integration, enhancing prospects for delivery of infrastructure projects to schedule, and delivery of the benefits they are designed to produce. The growing role of regional governments and the importance the current Government has attached to delivery of infrastructure projects through Law 443 of 2002 could provide a unique opportunity to develop integrated planning and assessment procedures for transport projects in Italy. In a country that has seen little infrastructure investment in the last decade, these changes are welcome.

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Table 1. **Interviewees**

Name	Category	Organisation
1. Dr. Oliviero BACCELLI	Academia Consultancy	CERTET – Centre for Regional Economics, Transport and Tourism University Luigi Bocconi, Milan
2. Dr. Francesco BELLA	Central Government	Directorate General for Sustainable Development Ministry of Environment
3. Dr. Marisa BELVISI	Central Government	National Environment Protection Agency (ANPA)
4. Eng. Andrea BENEDETTO	Central Government Academia	Commission Member, EIA Commission - Commissione Valutazione di Impatto Ambientale
5. Prof. Carlo BENEDETTO	Academia Consultancy	Professor, University of Rome 3 Dept. Sciences of Civil Engineering
6. Dr. Carlo BOERI	Central Government	Director, National Environment Protection Agency (ANPA)
7. Arch. Susi BOTTO	Local Government	Unit for major infrastructures and EIA Provincia di Milano
8. Eng. Fabio CROCCOLO	Central Government	Director, Relazioni internazionali Ministero delle Infrastrutture e Trasporti
9. Eng. Pasquale Ing. Pasquale D'ANZI	Central Government	Ministero delle Infrastrutture e Ministero dei Trasporti
10. Prof. Maria Rosario DE BLASIIS	Academia Consultancy	Professor, Ingegneria Civile University Rome 3
11. Senator Anna DONATI	Central Government – politician	Senator, Senato della Repubblica Gruppo Verdi
12. Dr. Marco FELISA	Local Government	Unit for major infrastructures and EIA Provincia di Milano
13. Dr. Francesco LA CAMERA	Central Government	Director, Directorate General for Sustainable Development Ministry of Environment
14. Prof. Eliot LANIADO	Academia	Professor, Faculty of Engineering Politecnico di Milano

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15. Dr. Elio MANTI	Central Government	Directorate General for Sustainable Development Ministry of Environment
16. Dr. Andrea NARDINI	Central Government	Directorate General for Sustainable Development Ministry of Environment
17. Dr. Silvio PANCHERI	Central Government	Director, Unità di Valutazione Mininstero dell'Economia
18. Dr. Manuela PANZINI	Local Government	Assetto del Territorio (land use) Provincia di Milano
19. Arch. Roberto PARMA	Local Government	Director, Unit for major infrastructures and EIA Provincia di Milano
20. Dr. Cristina PICCARDI	Central Government	Infrastructure Commission Servizio Studi, Ufficio ricerche nei settori delle infrastrutture e dei trasporti Senato della Repubblica
21. Eng. Marco POMPILIO	Local Government	Director, Assetto del Territorio (land use) Provincia di Milano
22. Prof. Marco PONTI	Consultancy Academia	Director, Consulenza trasporti e territorio – TRT and Professor, Politecnico di Milano
23. Dr. Mauro RAVASIO	Academia Consultancy	CERTET – Centre for Regional Economics, Transport and Tourism University Luigi Bocconi, Milan
24. Dr. Aldo RAVAZZI	Central Government	Directorate General for Sustainable Development Ministry of Environment
25. Dr. Andrea RICCI	Consultancy	Istituto di Studi per l'Informatica e i Sistemi (ISIS) - Consultants
26. Prof. Maria Rosa VITTADINI	Academia	Professor, Architecture Faculty Università di Venezia (previously President of the EIA Commission and Director of the EIA Directorate General of the Ministry of Environment 1997-2002)

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NOTES

1. The Commission was established with Law 67/88, which has its legal basis in Article 6 of Law 394/86 establishing the Ministry of Environment in Italy.

2. Piano Generale dei Trasporti, March, 2001. Adopted by the Government, 14 March 2001.

3. The 2001 GTP replaces the previous Plan, updated 29 August 1991.

4. Sistema Nazionale Integrato dei Trasporti (SNIT).

5. Sistema Informativo per il Monitoraggio e la Pinaificazione dei trasporti (SIMPT).

6. Programma Operativo Nazionale Trasporti, 2001.

7. Piani Urbani della Mobilità (PUM), Piani Urbani del Traffico (PUT).

8. Comitato Interministeriale per la Programmazione Economica, CIPE.

9. Note that in Italian, the equivalent of 'planning' tends to be the term 'programming', used to indicate a higher level of activities designed to shape future directions and investments. In this report the term planning is used to refer to the Italian equivalent of 'programmazione'.

10. This includes: Intese di programma (IIP), Accordi di Programma Quadro (APQ), Patti territoriali, Progetti integrati territoriali (PIT), Piani d'area.

11. Intesa Istituzionale di Programma (IIP) and Accordi di Programma Quadro (APQ).

12. Decreto del Presidente del Consiglio dei Ministri – DPCM 27/12/1988 and subsequent amendments.

13. The Conferenze were introduced by law in 1996: 'Atto di indirizzo e coordinamento', DPR 12 April 1996.

14. Agenzia Nationale per la Protezione dell'Ambiente, ANPA, and Agenzie Regionali per la Protezione dell'Ambiente, ARPA.

15. The overall legal framework for infrastructure projects and feasibility studies includes: Framework Law for public works, 109/94 (and related regulation, DPR 21 December 1999 no. 554), Ministerial Decree 21 June 2000 on the three year planning process dictated by the Framework Law 109/1994, and Delibera CIPE 106/1999 and 135/1999, annex B on minimum requirements for feasibility studies.

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16. Objective 1 regions is a classification derived from the European Structural Funds regulations, one of the principal financial instruments of the European Union's Regional Policy. For more information visit the following web site:
http://www.europa.eu.int/comm/regional_policy/funds/prord/sf_en.htm

17. The issue of alternatives to the Messina Bridge raised some challenges. The bridge option itself had been the object of extended analyses over a long period of time, worth several billion lira. Given the timing for the study, it was not possible to study any alternative with equivalent detail, therefore the consultants compared the bridge to a complete reorganisation of the existing ferry system, considering infrastructural, organisational, and commercial issues.

18. The issue of incomplete CBAs was raised by several interviewees in connection with different high profile cases in the last few years. One such case was the underground for the city of Bologna. During the preparation of the call for tender there had been great discussions as to whether it should include a request for a full CBA. Eventually it was decided that there would not be a specific reference to CBA. Bologna had a well developed network of surface trams. With the change of Government the underground option came to the forefront and this was supported by an analysis 'which simply translated costs in benefits', or, in the words of another interviewee: 'the principal benefits identified were those of employment creation'.

19. Where benefits included savings on overall transport costs and impacts on real estate values, and costs would have included investment and maintenance (Baccelli, pers. comment).

20. These are described in detail earlier in Chapter 2: 'Assessing Environmental Impacts'.

21. In the English language, the term 'territorial' relates to the ownership pf an area of land. Here it is used to refer to the area of land under the jurisdiction of the Provincial Government.

22. An example of this interpretation of SEA is the assessment done of the hydrological plan for the Valtellina in the late 1990s.

23. An example of this interpretation is the SEA of the 'Romea', developed by Benedetto and De Blasiis in 1998-99 as part of five pilot studies co-funded by the European Commission. For further details, see: Bina, O. (2001) *Strategic Environmental Assessment of Transport Corridors: Lessons learned comparing the methods of five Member States.* Final Report, prepared by Environmental Resources Management for the European Commission, DG Environment, January 2001.
Published on the web [http://europa.eu.int/comm/environment/eia/sea-support.htm (01/06/01)].

24. The SEA being applied to European Structural Funds Plans was criticised for not including the essential dimension of public participation.

25. The term is used here to refer to the range of activities supporting the definition of any transport initiative: policy, plan, programme or project.

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THE NETHERLANDS

Context and content of a research program on the effects of infrastructure (OEI) put into practice*

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* Report written by Freddie Rosenberg and Jan Prij, Transport Research Centre, and Nathalie de Koning, Ministry of Transport and Water Management, the Netherlands.

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INTRODUCTION

In 1998 a large-scale research programme On the Effects of Infrastructure (OEI), was started at the behest of the Ministry of Transport, Public Works and Water Management and the Ministry of Economic Affairs. In 2000 the results of OEI were brought together in a manual and eight report sections. OEI has resulted in the establishment of a comprehensive evaluation framework. That is a framework not only focused on economic effects or one-dimensional criteria such as the net present value in standard cost benefit analysis but instead an integrated assessment procedure, followed in order to inform policy makers on different economic, environmental and social aspects of transport projects. OEI is now required for major transport projects, by government decision. This paper gives (1) an historical outline of OEI, (2) a description of the framework, (3) implementation of OEI recommendations, (4) the main lessons in working with OEI, (5) and recommendations for assessing transport projects.

1. HISTORICAL OUTLINE OF OEI

Over the last few years, a large number of Dutch economic research institutions, commissioned by the Ministry of Transport, Public Works and Water Management and the Ministry of Economic Affairs, have worked on a research programme called OEI (On the Effects of Infrastructure).[26] The reason for calling this programme into being were heated discussions among experts about the social return of large transport projects such as the Betuwe rail freight line and a wide range of incompatible approaches used to appraise the benefits of transport.[27] Differences in method and definitions used explained in part why appraisals of the economic impacts of projects varied so much. These differences undermined public confidence in the assessments of the projects, which in turn impeded reliable social assessment. Politicians do have to made decisions on transport projects. Such decisions are inevitably associated with risks, which among other things relate to uncertainty about future developments and impacts. Under such circumstances, reliable and policy-relevant information is needed. Against this background, the aim of OEI was twofold:

1. To obtain a greater degree of agreement about the methodological framework for social evaluations of transport projects and the kind of effects to be included in that framework.

2. To provide research instruments for determining the effects of transport projects and their contribution to welfare and equity.

The programme led to the recommendation that, in respect of transport projects, an encompassing evaluation framework should be applied and this framework should be one within which an integrated and transparent description of impacts is possible. This recommendation was widely supported by

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participants and research institutions involved in OEI. Within the framework invented for OEI all social impacts directly or indirectly linked to the project are looked at and procedures offered for determining their contribution to national welfare and their distributive effects. OEI provides tools to describe and, wherever possible, to quantify these impacts and the uncertainties surrounding them.

Such analyses can never replace political decision-making. However, they try to ensure that political decisions are taken on the basis of relevant information, using unequivocal terms and solid foundations for evaluations. More than anything else the framework for assessment of transport projects should be regarded as a process tool: it structures the process and focuses discussions among research workers. Its aim should always be to generate objective information, not present one absolute truth. The primacy of politics must always remain paramount.[28]

2. DESCRIPTION OF THE FRAMEWORK

The results of OEI were written up in eight sectional reports and integrated by the CPB (Netherlands Bureau for Economic Policy Analysis) and NEI (Netherlands Economic Institute) in a Report called "Evaluation of Infrastructure projects; guide for cost-benefit analysis". A summary of these reports is given in this section, describing the framework they adopt. To a large extent the results are based on the contributions of other research institutes that participated in the OEI project.[29]

Encompassing Evaluation Framework based on welfare economics

In a pure financial assessment of transport projects only the effects of transport projects on users and investors are dealt with. This is the standard approach of entrepreneurs in the private sector: that is a standard CBA is made. However, as an evaluation framework for society the scope of this approach clearly is far too narrowly defined. That is why in several countries frameworks have been developed to widen the evaluation. One way to do this is to present an encompassing evaluation framework for society as a whole in which the wider economic impacts, environmental effects and social effects, are taken into account. This is the approach taken in the Netherlands and its scope goes beyond what is normally termed 'social cost benefit analysis'.

The OEI framework requires an overall picture of all the effects, including the distributive impacts and the social and environmental effects that can't be monetised. These should be included precisely because of their consequences for welfare and equity. The effects include for example the impact on an exceptional landscape and the incidence of benefits and costs on different groups in society.

The most important recommendation of the guide is that in respect of transport projects this broad approach of welfare economics should be used. This implies that for national government investments concerning transport, an encompassing evaluation framework should be used for appraisal.

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The framework adopted aims at a comprehensive assessment, which can only be made on the basis of complete information. There are interesting parallels here with the evolving practice in the UK towards widening the appraisal practice in order to capture the politically important impacts of transport on society and the environment which are not included in standard economic assessment procedures.[30]

Table 1. **Summary of the OEI assessment scheme for a fictitious project**
Amounts in net present values

	Financial	**Relating to**
Benefits		
Direct effects		
- operating revenue	EUR 3 to 4 billion	
- user benefits	EUR 2.25 to 3 billion	75 to 100 million hours journey time
Indirect effects / wider economic impacts	EUR 0 to 2 billion	Scale and efficiency benefits
Environment: emissions prevented	EUR 0.25 to 0.5 billion	2 to 4 million tonnes CO_2
Total benefits	EUR 5.5 to 9.5 billion	
Costs		
Direct effects		
- Investment	EUR 4 to 4.5 billion	
- Maintenance	EUR 1 billion	
- Operation	EUR 1 billion	
Total costs	EUR 6 to 6.5 billion	
Memo Items		
Distribution effect	+ M1	10% smaller income difference
(between groups and regions)	- M2	500 ha
Landscape and nuisance		1 000 people suffering nuisance
Conclusion: in the political appraisal, the balance in Euros must be weighed up against the Memo items which cannot easily be expressed in monetary terms.		

One single rate of return?

In a standard CBA approach and in social CBA there is a tendency to focus on one criterion, such as the net present value or rate of return. The basic idea is to bring together all kinds of impacts in a profitability analysis. However, when decisions on transport projects are to be taken a profitability analysis is not sufficient for decision-making. Moreover, it is often impossible to constitute a reliable one. In case distributive issues are involved or a unique landscape is affected, it is impossible to determine useful 'prices'. In addition, there are many uncertainties surrounding the project itself and

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the environment in which the project is to be implemented. Therefore, it is neither possible nor desirable to capture the value of transport projects in one single rate of return. Uncertainty would not be reflected in it and this would also be the case for the non-priced effects for which no reliable monetary value can be found. Using different scenarios one can capture uncertainty. OEI recommended recording impacts that cannot be expressed in monetary terms separately. Although these impacts are not included in the profitability calculations, as much quantitative information as possible is provided on these. In this way, a systematic overview of all the effects of a transport project on society is created. In the table below we give an example of such an overview.

Some important general issues about the comprehensive evaluation framework

Details of the several sub items in the overall OEI framework are not given here, and the box below only briefly indicates their content. Some general elements should, however, be discussed for interpreting the framework.

1. The assessment framework should be seen as the final stage of a large number of analyses being brought together within the comprehensive framework. The steps involved are not taken just once. The way cost benefit analysis is carried out can be seen as an iterative process. Some parts, which have been analysed roughly at an earlier stage in the research process, may need to be revised at later stages as additional information is obtained from other studies during the research process.

2. The formulation of the base case and project alternatives is crucial in the analysis. Project effects can be defined as the differences between the development with the project (project alternative) and without the project (base case). Thus the construction of the base case is just as decisive for the outcome of the assessment as the configuration of project alternatives (that is the expected development in terms of welfare effects and equity in case the project is carried out in any alternative).

3. Within the framework the issue of uncertainty should be dealt with. Standard cost benefit analysis gives net present values and a cost benefit ratio as an outcome. Often, uncertainties connected with these outcomes are not recorded. In our approach of going beyond pure economic assessment it is recommended to deal with the uncertainties with lie beneath the surface of the accounting of prices and quantities and report on these. One way to do this is to use scenario- analysis to get an idea of uncertainties about possible developments in the far future. Another way to deal with uncertainty is to carry out a test of robustness on crucial parameters and values used. Implementing a project in phases or postponing the project can also be a possibility to limit risks; this gives more time to obtain clarity on certain developments. It also creates flexibility because choices between possibilities remain open at later stages.

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Box 1. **Topics within the evaluation framework**

Estimation of the direct effects

The user benefits, the so called 'direct benefits' of transport projects are to a great extent given by effects of the project on transport flows and the value users of transport attach to the transport opportunities offered by the project. Within the evaluation framework use of a model to estimate the transport flows is recommended. The reactions of both the suppliers and those demanding the project services should be estimated in a consistent way. The transport prognosis does not only form the basis of the direct effects; the indirect effects and external effects of the projects are closely related to the direct transport effect. Thus for a reliable estimation of the indirect effects the relation with transport benefits should be shown.

Estimation of the indirect effects

Transport projects do not only affect users and operators. Since users pass on a part of their benefits to others, the economy as a whole is affected. Standard costs benefit analysis is based on assumptions of perfect competition: that is the impact of a project is perfectly reflected in the user benefits prices. Impacts on the economy as a whole just mirror these changes in user benefits. In the encompassing evaluation framework used in the Netherlands we acknowledge the fact that this is not true in reality for two reasons: The incidence of benefits and costs can accrue across national borders and could therefore be either favourable or unfavourable for the Netherlands as a whole. There can also be impacts on welfare in cases where market imperfections are reduced, for example by improving the functioning of the labour market through new transport opportunities. Such indirect effects can be estimated by using a production functions approach with case studies, sophisticated fieldwork or models.

Estimation of the external effects

It is recommended to start with a checklist of all relevant external effects (for example effects on 'noise' and 'emissions' and 'safety'), which are to be taken into account. Moreover, it is recommended to use uniform ways to value them in monetary terms. The guideline gives an overview of methods used to value environmental impacts.

Costs

Among the important elements in the assessment are the costs involved in implementing a project.31 Compensating people who suffer as a result of the project can lead to additional costs. In practice, costs often increase during the decision-making process because the costs of additional provision to limit negative impacts are not initially well understood. This uncertainty should, as far as possible, be taken into consideration in the project evaluation.

Effects on equity and distribution

For evaluation purposes from a society's welfare point of view, information about the effects of transport projects on investors and users (the so called 'direct effects'), the wider economic impacts (the so called 'indirect effects) and the external effects are needed. However, in order to get political support for transport projects, the effects on distribution and equity are at least as important. OEI therefore requires additional information on the incidence of benefits and costs to be provided, covering how the benefits and costs accrue across users, residents in the area and across regions and what the impact for the public and private sector is likely to be.

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3. IMPLEMENTATION OF OEI RECOMMENDATIONS

Guidelines for the implementation of OEI results were completed in 2000. The research institutes involved agreed to use the main framework created in their assessment practices. Government has approved the guidelines and the methodology set out. The Government considers these to be useful in getting a clear overall picture of the costs and benefits of projects. During the research process several project managers of large transport projects tested interim results. The guidelines consist of two parts: part 1 is aimed at project managers and policy makers and part 2 is aimed at specialists who are supposed to work with the assessment framework in practice themselves.

The guidelines provide a methodological framework for assessment of infrastructure projects. They go beyond traditional cost-benefit analysis, presenting a wide, multidimensional and transparent survey of project impacts. The survey tries to express effects as much as possible in monetary values, and if this cannot be done defines them either quantitatively or qualitatively. In addition to the economic effects attention is also paid, for example, to environmental effects and also safety. The survey sets out the effects at national level, as well as distributive effects among, for example, certain groups of people or geographical areas. In addition, it shows potential risks and uncertainties explicitly. The result of all this is an integrated and transparent survey of all the effects of the project.

In a ministerial letter to the Dutch Parliament directives were given for the implementation of OEI. In this letter a distinction was made between three categories of project:

1. Large transport projects. That is new projects which are considered of national importance, such as the construction of a high speed railway link or the development of the main "ports" of Rotterdam and Schiphol.[32]

2. Other transport projects for which national government is accountable.

3. Projects of local or regional importance for which no project specific money is allocated by central government.

Projects of national importance

For projects of national importance, the OEI framework has to be applied in 2 phases during the decision making process.

- In the preliminary phase, at which a specific problem definition has yet to be completed and there is only a broad idea of issues to be addressed and possible solutions for them, a quick scan assessment is required on the basis of global information and statistical indicators.

- A more thorough assessment is required in a later stage of decision making. At this stage the structure of the assessment process described in the guidelines has to be followed and within this framework as many effects as possible should be reported on.

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For these projects of national importance formation of a commission of experts is recommended to safeguard the quality of the assessment procedures and the methods used. The commission can also enhance trust in the assessment procedure and the acceptability of its results.

Other transport projects for which central government is accountable

For other transport projects for which central government is accountable the use of OEI is recommended in both stages of the decision making process to support decision-making by the minister. To see whether OEI works for this kind of project several test-projects were selected to be evaluated according the OEI assessment method.[33]

Transport projects on which local governments can decide for themselves

Not all transport projects require decision by the national government. For small project (<250 million EURO) local governments can decide for themselves. In contrast with the first two categories the application of OEI is not intended to be compulsory. Use of OEI is recommended only as a preparation tool for decision-making.

4. ACHIEVEMENTS AND LESSONS IN WORKING WITH THE OEI FRAMEWORK IN THE NETHERLANDS

Over the last two years the guidelines were used for the assessment of several national infrastructure projects. These include, for example, the development of the Maasvlakte, the expansion of Schiphol Airport and the proposed Southern See Railway Line, which is a rail link between the west and the north of the Netherlands. In the beginning of 2002 the use, role and position of OEI was evaluated.[34] The evaluation shows that among those interviewed there is broad support for OEI. The surveys of effects have contributed to making the decision-making process objective, with information presented in a more structured way. By using OEI from an early stage of decision making the most promising alternatives can be selected and worked upon more thoroughly.[35] Furthermore the use of OEI resulted in the development of a common language among the various research institutes.

There were also some critical notes, related to process as well as to content. In total the evaluation resulted in sixteen points of recommendation.

Process

1. The development of shared knowledge among stakeholders about the scope of OEI needs to be worked on and especially the relationship between standard cost benefit analysis and the overall assessment of effects within OEI should be clarified.

2. Only a small number of research institutes are capable of working with OEI. More competition could stimulate the development of new methods and models of estimation and

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valuation and could reduce the risk of a monopoly of expertise developing in only a few hands.

3. Knowledge management, for example the 'codification of tacit knowledge' is necessary to make use of the project-experience of others.

4. A systematic, overall evaluation of effects should not be restricted to transport solutions alone. The risk of too narrowly defined project-definitions is not imaginary. In general the assessment should not start to analyse alternatives that are too narrowly defined but keep an open view for promising solutions to problems from a broad welfare point of view. Thus alternative interventions to pure transport projects should be included in the evaluation whenever appropriate.

5. In theory, a quick scan assessment is required in the preliminary stage of decision-making and a more thorough assessment is required at a later stage. In practice there is a tendency to make thorough assessments in early stages of decision-making. As a result decision-making processes are lengthened. It is questionable whether this tendency is to be preferred.

6. The methodological fit between the environmental assessment procedure and the overall assessment of effects according to OEI should be strengthened and ways to do this should be examined. A special point of attention is a clear-cut definition of the base case.

Content

7. Active knowledge sharing is important. There is still a lot of discussion about the scope and content of the assessment procedure. There is a need for knowledge about OEI among a broader list of participants. Sharing of best practices and the creation of 'knowledge pools' will be helpful.

8. Further development of a number of content related aspects is required, for example the valuation of risk.

9. Theoretical and empirical knowledge about the indirect economic effects of transport should be strengthened.

10. The importance of developing methods and existing national and international experience concerning the valuation of external effects (environmental effects, safety, noise) is acknowledged.

11. A uniform way to present the distribution of effects among different regions and groups of people in the evaluation framework should be developed.

12. The development of a clear-cut definition of the base case, well founded in theory and workable in practice as well is important.

13. Knowledge and information management, for example by developing a database, is important concerning effect assessment.

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14. Knowledge about the assessment of freight transport projects needs to be strengthened.

15. Further research regarding the specific effects of point-infrastructure is required.

16. Guidelines for a well-balanced presentation of assessment results are needed.

The sixteen topics of improvement have been translated into an action programme for the coming period. The action programme will focus on the process, while simultaneously will start with the exploration of the issues related to the content. A topic of specific interest is the communication of OEI. For the past two years the focus has been on the use of OEI. Participants made up their own mind about OEI, each of them focussing on issues of interest to themselves. As a result, there are several interpretations of what the scope of OEI should be, ranging from only economic effects to all effects relevant to an integrated overview. There is also a lot of misunderstanding surrounding OEI, such as: 'only money matters' and the idea that 'book-keeping' takes over strategic decision-making, or that 'the benefit-cost ratio is decisive'.

It is important to realise that surveys of effects can never replace political decision-making. The aim of the surveys is to provide all relevant information on which political decisions are based. This means that all the effects are presented with equal weight. Looking back on the start of OEI, we have developed a method that has contributed to a better and more transparent foundation for infrastructure projects. But, as pointed out, there remain some steps to take.

5. RECOMMENDATIONS FOR THE ASSESSMENT OF TRANSPORT PROJECTS

In the Netherlands an encompassing evaluation framework has been developed to inform policy makers on the different economic, environmental and social effects of transport project in terms of welfare and equity. This framework has been approved by cabinet and has been applied for several large transport projects in the Netherlands such as the HST-line and the development of the main ports of Rotterdam and Schiphol. The OEI framework devised has been outlined though it is important to note here that evaluation of working with OEI is an ongoing process. However, the achievements and lessons reached in this stage could be of importance for other countries as well.

Sustainable development

The Ministry of Transport and Water Management is convinced that the widening of assessment practices to encompass environmental and social effects is an essential element in order to promote efficiency, equity and sustainability. Within OEI much attention has been paid to the content of the framework to achieve this. Its aim is to generate information about the economic, environmental and social effects of transport projects in terms of welfare and equity in order to give politicians the opportunity to decide what is best.

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A standard encompassing evaluation framework

The assessment of transport projects is a complex issue. Therefore it would not be of much use for policy makers to pretend that this complexity can be reduced enormously by presenting some net present values. The scope of the analysis should be to inform politicians on all kinds of economic social and environmental effects that transport has on society. This means that not only direct cost and benefits of transport are reckoned but that also the social, environmental and economic impacts of transport should be taken into account.

Based on a uniform presentation of effects

A uniform presentation of effects will generate trust in the evaluation procedure and safeguards a reliable social assessment. This also requires the effects of transport projects to be reported as accurately as possible. In the general framework some effects are monetised and some are not. The non-monetised effects should be given equal space in the overall assessment. The reliability of the assessment procedure requires a report on risks and uncertainties surrounding the analysis. In order to deal with structural uncertainty the use of relevant scenarios can be helpful.

The assessment of transport projects should be considered as an iterative process

The assessment of a transport project is not a task that can be done in one simple exercise. The assessment should be perceived as an iterative process instead. That is, using quick scan assessment procedures in earlier stages of decision making and making a more in depth assessment further on in the process of supporting decision making. In that way the political process is fed with relevant information at the relevant time.

The management of 'context' is as important as the 'content' of the assessment framework

To be successfully applied, effective communication of the scope and purpose of the assessment framework is vital in order to get agreement among its main users on what the assessment framework is and what it is not. This is as important as the content of the assessment. Understanding of what an encompassing evaluation framework is and what it is not cannot be taken for granted; it is not something that spreads of its own accord. Frameworks for assessment of transport projects should be regarded as a process tool: it structures the process and channel discussions among research workers and those interested in the impact of transport investment.

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NOTES

26. The results of this program have been published in the Netherlands under the agronym OEEI which stands for 'Onderzoeksprogramma Economische Effecten infrastructuur (Research program On the Economic Effects of Infrastructure) . While this name could suggest a small scope of analysis, we would like to emphasize the broader encompassing scope of the analysis instead, which is exactly to go beyond the assessment of pure economic benefits.

27. OEI has not been applied to the Betuweline (a dedicated rail line for freight between the Netherlands and Germany).

28. See also Gerbrands en Hiddink (2001).

29. BCI; Buck Consultants International, CE: Centre for Energy Saving and Clean Technology, IOO; Bureau for Economic Research on the Public Sector, KPMG; Bureau for Economic Argumentation, MuConsult; Bureau on Transport Research and land use planning, NYFER; Forum for Economic Research, RUG; University of Groningen, TNO Inro; Research Institute on Transport, regional economics and physical planning, VU; Free University Amsterdam).

30. See for example in: Tomlinson, (2001).

31. These involve preparation costs, investment costs during the construction period, development costs during the life span of the project and the costs of removal.

32. Other main projects of national importance (named in Dutch) are the 'Zuiderzeelijn', 'HSL-Oost', 'VERA CRANT'', Rondje Randstad 'Zeesluis IJmuiden'.

33. First, It is required to make feasibility study in order to get an idea of possible solution for certain bottle-necks. After the feasibility study a selection is made of projects, which are going to be studied in more detail. Second, The results of these more detailed studies serve as an input for the decision on the exact design of the project.

34. Study which took place in January- April 2002 on behalf of the ministries of Transport and Economic Affairs Buck Consultants International (may 2002), Evaluatie OEEI Leidraad ('Evaluation of OEEI guideline).

35. For example: In an early stage of the research process on the rail system in the case of HSL-Oost large investments in new rail systems were proven not be very promising ideas. Instead. it was concluded to focus on more promising alternatives concerning the efficient use of existing capacity.

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UNITED KINGDOM

The evolution of strategic environmental assessment, integrated assessment and decision making in transport planning*

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* Report prepared by Paul Tomlinson, TRL Limited. The views expressed are the authors and do not necessarily represent positions of the Government.

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1. INTRODUCTION

Over the years as a response to public interest, governments have invested in the development of extensive guidance manuals and modelling methodologies to assess the economic and environmental consequences of transportation projects. The use of systematic environmental and economic appraisals during all stages of highway and rail projects is now increasingly common and the coverage of topics has greatly expanded.

In response to difficulties with project level intervention in transport infrastructure it is increasingly acknowledged that transport is only one of many possible mechanisms to meet community objectives. Hence transport no longer can only concern itself with its own narrow time, cost and safety objectives, instead transport planning must operate within a broader community objectives-led planning process.

As a consequence of recognising that single infrastructure fixes are no longer appropriate to the needs of society so a plan-led approach has developed which explicitly considers the contribution that non-infrastructure measures can make along side all modes of transport. A multi-modal focus is now an accepted norm. This change has required transport planning to confront the diversity and inconsistency in appraisal practice between different modes and hence there has been a desire for a holistic and uniform approach to appraisal that does not perpetuate a bias towards major investments in roads.

In moving transport planning into the policy and plan appraisal stage, a more explicit and agreed definition of the transport problem itself is needed. Consequently there is a need to consider the needs of the users of the transport network as expressed by the users themselves rather than inferred by the transport professionals. Stakeholder involvement in defining the problem and suggesting potential multi-modal solutions is a further dimension for appraisal practice to accommodate.

In taking forward Multi-Modal Studies within transport plans the emphasis is on an unbiased, robust and transparent evaluation of all alternatives in order to set the context for individual transport proposals to follow. However, the appraisal methodologies being used have suffered from a project level rather than plan level focus and therefore difficulties have been experienced in dealing with the uncertainties that exist at the strategic planning level. Only recently has new guidance begun to emerge.

In parallel with these trends in transport planning the European Union Directive on the Assessment of the Effects of Certain Plans and Programmes on the Environment (the SEA Directive), further increases the imperative to formulate new assessment methodologies. Not only does the SEA Directive formalise many of the changes in transport planning, but it also brings with it additional

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requirements such as consideration of mitigation, enhancement and monitoring, as well as greater opportunity for stakeholder involvement.

Both the EIA Directive and the SEA Directive have as their justification not the delivery of eloquent Environmental Statements or Reports, but that environmental considerations are properly integrated into decision-making processes. As this paper discusses, the integration of environmental and economic appraisals, let alone social and health appraisals into decision-making extends beyond the delivery of a report; requiring close examination of the role of technical and elected decision-makers.

A key component of the desire to improve the provision of information to decision-makers is the belief that better decisions will result and that increased transparency in the decision-making process will prove an adequate response to public pressure associated with the planning of individual transport measures. This perspective tends to regard decision-makers as a single entity acting as sole arbiter. In reality, this is far from the truth as both transport planning and development of individual schemes rely upon a series of decision-makers most of whom are removed from any democratic accountability, namely the project managers from the client and consultant bodies.

This paper explores the relationship between the wider group of decision-makers operating within the technical appraisal sphere and the elected decision-makers that are empowered through legislation. In this context, the paper examines the manner in which technical information is assembled across different disciplines to inform what might be termed the technical decision-makers, i.e. the project managers of the client and contractor organisations. A further dimension is the process of simplifying such technical appraisals in a manner that the elected decision-makers can assimilate; one in which benefits and costs are traded against each other.

Through two UK case studies (the M4 Relief Road in South Wales and the Channel Tunnel Rail Link) in which fundamental decisions altering the original proposals were taken, the paper explores the manner in which decisions were made. The 1998 English Roads Review (A New Deal for Trunk Roads in England) is also examined as it used the 1998 New Approach to Appraisal to provide decision-makers with a wider set of information on the economic, transport and environmental performance of individual schemes. This approach was designed to inform the process of determining which schemes were to proceed, which were to be subject to further study and which should be discarded. In examining the case studies, the objective is not to consider the merits of individual decisions, but rather the manner in which technical information was employed in the decision-making process.

As the case studies illustrate, there is a fundamental distinction between the role of technical decision-makers and the elected decision-makers that extends throughout the transport planning process at a plan, programme or project level. As elected decision-makers are seldom involved in the process of defining the technical objectives for the plan, programme or project so they tend to become somewhat disconnected from the exercise and hence are less able to assimilate the array of technical issues.

The New Approach to Appraisal was instrumental in changing the basis of transport planning in that it set out the need to appraise transport investment with a clear understanding of the objectives to be met. It recognised that proposals may contribute to the achievement of one objective but compromise the achievement of others and that it is the decision-maker's role to determine the

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appropriate balance between these objectives. Hence transport planning now must operate within a broader community objectives-led planning process rather than purely those of travel time and accident savings etc. The new approach also recognised that single infrastructure solutions are not always appropriate to the needs of society leading to the development of plan-led methods of appraisal which explicitly consider the contribution that non-infrastructure measures can make along side all modes of transport. Chief among these is the Guidance on the Methodology for Multi-Modal Studies issued by the Department for Environment, Transport and the Regions in 2000. The so called "GOMMMS" is proving successful in producing clearer definitions of transport problems; clearer exposition of the social, economic, environmental and accessibility objectives transport projects are expected to contribute to meeting; a more multi-modal and multi-measure focus; enhanced stakeholder involvement and more integrated appraisals.

The paper ends by discussing the manner in which the technical decision-making process may be enhanced in the light of both the SEA and EIA Directives. As much of the effort that has been directed towards improving the technical appraisal activities is potentially devalued if it does not provide effective communication of its findings to the political decision-making process, it is appropriate to address this interface and explore opportunities for improvement at this key stage.

Finally, a series of key conclusions of relevance to other countries are provided based upon the analysis.

2. EVOLUTION OF TRANSPORT APPRAISAL IN THE UNITED KINGDOM

This section explores the evolution of transport appraisal in the UK to establish the reasons why the process of appraisal is now increased in complexity, but yet is potentially able to deliver a radically more efficient and improved system. It also provides the context within which further actions to improve appraisal practice, mainly enhanced decision-maker involvement, improved guidance and training, can be proposed later in the paper.

2.1 Role of the environmental lobby in the 1970's

Over the last 30 years, transport has been perhaps one of the most high profile development activities that has stimulated an integrated approach to appraisal. During the 1970s, the transport policy community operated from an entrenched position within the Department of Transport and beyond lay the hazardous Public Inquiry process frequently dominated by John Tyme the anti-motorways campaigner. During this period the environmental lobby was able to combine with local protest groups to embarrass the government at several highway inquiries not only disrupting the specific plans, but also establishing a public debate on the values underlying the trunk roads programme. As public debate commenced so new considerations emerged and the relative importance of others changed. Essentially, John Tyme and others were able to make roads a policy "problem".

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The 1976 M3 motorway inquiry at Winchester into side road and compulsory purchase orders, proved to be a watershed for the appraisal of road schemes as objectors were able to turn the inquiry into a test case for the government's trunk roads policy itself. The objectors had exploited the lack of statutory rules for inquiries to re-focus the debate and to transmit their ideas directly to decision-makers and the public. This scheme was to again prove a further watershed for transport policy in the 1990s.

2.2 Government responds to public pressure

In response to the objections to highway proposals, the government reacted by with a review of the highway inquiry procedures introducing the concept of a statutory objector in 1976. The Leitch Committee was established in December 1976 to review the methods of appraising trunk road schemes and traffic forecasting. The Committee concluded that a shift of emphasis was needed away from valuations in monetary terms and towards a comprehensive framework which would embrace all the factors and groups of people involved in a scheme assessment (Department of Transport, 1977). A year later a Transport White Paper (HMSO, 1997) abandoned the concept of a strategic trunk roads network in favour of a more flexible and selective approach based on economic and environmental criteria.

In 1983, the Department of Transport introduced the Manual for Environmental Assessment that commenced the systematic environmental investigation of road schemes. It was not until the introduction of a six page Departmental Standards HD 18/88, however, that the requirements of the EIA Directive 85/337/EEC were addressed. This standard required the preparation of an Environmental Statement for all new motorways and for roads under a variety of other circumstances.

2.3 Economic appraisal dominates separate appraisal practice

At that time, still founded upon the "predict and provide" approach, the appraisal of transport projects had generally been dependent on the concept of economic efficiency based upon a valuation of all costs and benefits in monetary terms. A project was deemed to be economically efficient if the benefits exceed the costs; the most efficient project was that for which the difference was greatest (Nash, 1997). An economically efficient allocation of resources is achieved when it is impossible to make one person or group in society better off without making another group worse off. In other words, if projects could be found and undertaken which would make everyone better off, those projects would serve to promote economic efficiency this includes compensating those disadvantaged by the project.

The appraisal of economic efficiency, however, struggles to provide a single measure of the net benefit of a project as the valuation of some benefits and costs, particularly those of an environmental character are intractable. There is also the added difficulty that decision-makers may wish to look at a broader range of criteria than economic efficiency. In particular, equity, and the distribution of costs and benefits cannot be viewed simply as a part of the search for economic efficiency since a variety of possible economically efficient allocations of resources exist, each with its own distribution of costs and benefits. In some cases, a few people may be very well off and everyone else very poor; in others everyone might be equally well off. Preferences consequently exist between alternative economically efficient positions in terms of their distribution of costs and benefits that are all equally efficient in economic terms. Also, based upon the welfare of an individual in terms of their willingness to pay for their own choices, the economic efficiency approach fails where individuals are not fully aware of the

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long-term consequences of their actions, a frequent situation for environmental effects (Nash, 1997). This suggests the need for other appraisal techniques.

Until the early 1990s, most policy and project appraisals had consisted of a financial or economic assessment and a largely separate environmental assessment. Given the lack of a framework by which to combine the assessments as well as a poor focus to the Environmental Statements, there was always the risk that the environmental information was not given due weight in forming the overall judgement on whether to proceed with the project.

2.4 Expansion of the roads programme

During the late 1980's and early 1990's, the UK was embarking upon the vision set out in the White Paper "Roads to Prosperity" (HMSO, 1989). The railways were undergoing their dramatic metamorphosis into the private sector, with the Channel Tunnel Rail Link being at the leading edge of new rail projects such as Crossrail and Thameslink in London. Transport was regarded as being vital to the achievement of the nation's economic and social objectives that in turn dictate how activities are organised and demands are placed upon transport systems.

Through an assessment of problems and opportunities of the highway network on a route by route basis, an expanded programme of over £6 billion was identified with targets set for reducing by four years the average time taken to progress a scheme from programme entry to opening.

As the proposed schemes from the Roads for Prosperity White Paper emerged, so public opposition to the fallacy of building to meet the demand projections appeared particularly in relation to some high profile schemes such as the M3 motorway at Twyford Down. After the 1976 M3 inquiry, the Inspector recommended that the government should reconsider the proposed alignment of the M3. Following appointment of consultants in 1980, the 1983 report recommended a new route through Twyford Down. Failing at the Inquiry, the objectors embarked upon an uprising against road building.

The environmental concerns were legitimised within government by Margaret Thatcher with her 1988 speech on preparations for the Rio Earth Summit (Grove-White, 1993). The Thatcher government also saw that there were votes in roads. Consequently by 1987, growth in traffic led the Department of Transport to take the initiative in trunk roads policy. The Treasury was offered a deal in which the Department would forgo an increase in roads expenditure if the Treasury would agree to a joint review of roads policy (Dudley and Richardson, 2000). Significantly, in 1989 John Major announced that plans by the Treasury to relax public spending rules constraining how private money could be used to improve the congested road network were unlikely to result in a larger numbers of privately financed motorways and toll roads. Similarly, shadow tolls were also ruled out, hence the Treasury would control the size of the road programme spend.

The "predict and provide" approach at least to roads was fatally wounded by publication of a report by Goodwin *et al*, (1991) "Transport the New Realism" which called for a variety of policy instruments such as traffic management systems to be used alongside road building.

The European Commission also became involved as a result of public lobbying with the UK being accused of not preparing satisfactory Environmental Impact Statements (EISs) for the M3, the East London River Crossing and the M11 link in east London with a threat of the European Court of Justice. Although the Commission withdrew its objection for the M3 at Twyford Down, it continued to

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threaten government over the lack of an EIS for the East London River Crossing at Oxleas Wood. With more than 3,000 people pledging to use non-violent civil disobedience to protect Oxleas Wood, in July 1993 the government abandoned the scheme despite spending £31 million to this point. Construction of the M3 at Twyford Down did commence and a mass trespass and civil disobedience followed fundamentally damaging the political credibility of the roads programme (Dudley and Richardson, 2000).

2.5 HM Treasury leads calls for systematic appraisal

Integration of environmental and economic impacts was the domain of the most important document on economic appraisal in government - the "Green Book" (HM Treasury, 1991). The Green Book provided guidance on the analysis of impacts that did not involve market transactions and a common methodology for economic appraisal across all government departments driven by a desire to improve economic efficiency. It also provided the following definition for systematic appraisal:

> *"Systematic appraisal entails being clear about objectives, thinking about alternative ways of meeting them, and estimating and presenting the costs and benefits of each potentially worthwhile option. Used properly, appraisal leads to better decisions by policy makers and managers. It encourages both groups to question and justify what they do. It provides a framework for rational thought about the use of limited resources" (HM Treasury, 1991).*

A review of how environmental costs and benefits of policies were assessed within Government departments concluded that there was scope for a more systematic approach and resulted in the Department of the Environment publishing guidance in 1991 under the title "Policy Appraisal and the Environment: A Guide for Government Departments". The main purpose of this guide was to extend the advice on the environment contained in the HM Treasury's "Green Book" with the intention of ensuring that environmental effects were fully considered during policy appraisal. This advice was to apply across all government policies and programmes, and not just to those with direct environmental objectives. A 1997 update of the Green Book (HM Treasury, 1997) increased attention given to the evaluation of actual outcomes of decisions among other topics.

In the 1994 guidance (Department of the Environment, 1994), good policy decisions were stated to be dependent on the effective analysis of alternative options. A systematic appraisal was to ensure that the objectives of a policy were clearly laid out, and that the trade-offs between options were accurately identified and assessed. Appraisal was defined as the process of identifying, quantifying and weighing up the costs and benefits of the measures that are proposed to implement a policy. All the implications of options were to be analysed, not just those addressing financial issues.

Transport planning had partly responded to the new appraisal agenda set by the government, but the assessments still lacked integration and the ultimate use of the economic and environmental information in the decision-making process was neither transparent nor integrated.

Early attempts to establish common appraisal frameworks for the different transport modes commenced with Cost Benefit Analysis (COBA) studies undertaken in the 1970's. Historically, however, the appraisal of different transport modes had been on a separate and non-comparative basis. Criticism had been levelled at the bias of appraisal methods in favour of road based infrastructure and against rail projects.

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In the early 1990's, the City of Birmingham and Centro, a transport provider, led the search for a framework to appraise urban transportation proposals on a common basis. Development of the package approach to transportation planning within Transport Policies and Programmes then led the Department of Transport to encourage the use of common appraisal frameworks in 1993. As a result, appraisal techniques widened from their COBA roots and began to address the environmental and social dimension in a more robust and integrated manner. Nevertheless, strategic transport planning initiatives often failed because of their inability to accommodate the many complex and transient socio-political, economic and environmental factors that surrounded the decision-making process (Richardson and Haywood, 1996). Hence there has been increasing efforts being made by transport economists, transport and environmental planners to develop new appraisal tools that address the task of practically applying the concepts of sustainable development.

2.6 Government response to the EIA Directive

In response to the EIA Directive and the expanded road building programme, the 1993 Design Manual for Roads and Bridges Volume 11 – Environmental Assessment was issued. Although the 1983 Manual of Environmental Appraisal recognised the importance of considering environmental issues alongside engineering, transport and economic factors, it was not until the DMRB Volume 11 that a wider range of impacts were considered in an integrated manner with engineering issues throughout the route planning process. This guidance sought to deliver improved consistency in the reporting of the assessment of highway schemes.

For each scheme there was a requirement to prepare Environmental Impact Tables (EITs) that would aid the reporting to decision-makers (see Table 1). The EITs were to provide a mechanism for summarising the largely quantitative findings of the environmental assessment. It is important to note that this was a fixed format unable to respond to the significant effects generated by specific schemes. Indeed, the tables were used as a bolt-on additional reporting line to the Environmental Statement and Non-Technical Summary.

2.7 Changing hearts and minds

Arising from the Oxleas Wood and Twyford Down experiences, anti-road lobby groups forged new alliances and tactics. Apart from the public image of lobbying, insider techniques were employed. The machinery of Parliament was engaged and informal dinner parties were hosted by "pillars of the establishment" to which Ministers and environmentalists were invited in order to convey the messages that transcended individual policy streams (Dudley and Richardson, 2000). The seeds of "joined up" government began to take hold. While within the roads policy community, an apparent lack of awareness of external events meant that they were progressively isolated within government as the policy debate shifted onto new territories.

In August 1993, the Government announced measures to speed-up implementation of the "Roads for Prosperity" programme by changes to the public inquiry rules and by integrating anti-road campaigners more into the planning process. A review of over 500 trunk road schemes to establish priorities signalled that some road schemes might be less of a priority. Also, responsibility for trunk road building was given to the Highways Agency under the "Next Steps" reform of government, leaving the Department of Transport to focus upon devising and implementing a coherent strategic transport policy.

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It was also recognised by the National Audit Office that funding could not match the demand for new infrastructure. National Audit Office report claimed that the plan to widen 600 miles of motorway was now expected to cost nearly twice the original £3.4 billion estimate. The National Audit Office also noted that financial and environmental constraints would mean that some stretches could not be designed to meet forecast traffic demand and that some projects would have an expected life of fifteen years instead of the normal forty years (National Audit Office, 1993).

The 1993 Budget announced cuts in the planned trunk roads construction budget, although it was expected that spending would be maintained at around £2 billion a year. The government also proposed that not only would motorway tolling be introduced once the electronic technology was ready, but Ministers were also prepared to pay 'shadow tolls' to the promoters of privately financed roads a reversal of previous policy.

2.8 Widening the appraisal and stakeholder involvement

With the appointment of Dr Brian Mawhinney as Transport Secretary in 1994 bringing a particular awareness of transport and health issues, an inclusive approach towards environmental issues gained momentum. He also launched a debate on finding a balance between the economic, social and environmental criteria of road building policy (Dudley and Richardson, 2000).

The environmental consequences of increasing road traffic as exemplified by the M25 motorway around London gained renewed prominence with concerns about links between vehicle emissions and health, sustainable mobility and greenhouse gas emissions highlighted by the Royal Commission on Environmental Pollution report on transport (HMSO, 1994a). The issue of road schemes themselves generating traffic was also given wider attention as a result of a report from the Standing Committee on Trunk Road Assessment (SACTRA, 1994).

With publication of a series of White Papers in January 1994 sustainable development and mobility issues were gaining position in government. The four White Papers on sustainable development (HMSO, 1994b, 1994c, 1994d and 1994e) enabled the government to establish goals for transport policy, which were not governed by the Department of Transport's earlier adherence to roads as the policy "solution". As a result, the main goal for sustainable development in the transport sector was to meet the economic and social needs for access to facilities, with a reduced need to travel in ways which did not place unacceptable burdens on the environment. Among the policies required to obtain these objectives were those of influencing the rate of traffic growth and providing a framework for individual choice in transport which enabled environmental objectives to be met (HMSO, 1994b).

Also in 1994, the Department of the Environment issued Planning Policy Guidance Note 13 in which the new transport and land use planning policy framework aimed to reduce the need to travel was provided. Until then land use and transport planning were essentially disconnected from each other.

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Table 1. **Environmental Impact Table**

Group 1 : Local people and their communities

SUB GROUP	EFFECTS	UNITS	PREFERRED ROUTE	DO-MINIMUM	COMMENTS
Commercial buildings used by people : Retail premises	Properties demolished	Number	0	0	
	Noise DB LA10, 18h	Number of properties experiencing an increase of more than 1 < 3			The changes in noise are the difference between the forecast for the Published Route for 2010 and the existing levels. The units are dB (A) L10 18h 6 am to midnight.
		3 < 5	0	12	
		5 < 10	0	0	
		10 < 15	0	0	
		>15	3	0	
		Number of properties experiencing a decrease of			
		1 < 3	5	No change	
		3 < 5	7	No change	
		5 < 10	0	No change	
	Visual impact	Number of properties subject to visual impact :			
		Substantial	0	No change	
		Moderate	1	No change	
		Slight	0	No change	
		No change	0	No change	
	Severance :	-			
	(a) Relief to existing severance		(a) None	(a) None	
	(b) Imposition of new severance		(b) Slight for DIY city	(b) None	
	Disruption during construction	-	3 premises within 100 m of site both slightly affected	None	

The outcome of the 1994 Roads Review (Department of Transport, 1994) was the withdrawal of schemes with particular environmental disadvantages. Hence 49 of the 371 schemes scheduled for delivery in the next 10 years were withdrawn, with 8 schemes given top priority, 137 schemes given priority 2 status and 69 allocated to a pool for long term completion. It was also announced that all new trunk roads in the planning stages (270 out of the 360 schemes in the programme) would be subject to an "extra assessment to determine their overall impact on traffic".

In 1995, the go ahead was given to the Newbury bypass that then unleashed a further round of direct action by the environmental lobby and over 900 arrests (Dudley and Richardson, 2000). While the 1995 budget removed 77 schemes from the roads programme mostly from the long-term pool, in the following budget a further 110 schemes were deleted with 114 remaining in the programme.

2.9 Sustainable development and integrated transport

The government established the UK Round Table on Sustainable Development in 1995 leading to a report on "Defining a Sustainable Transport Sector "in 1996 (UK Road Table on Sustainable Development, 1996). This report recommended that road transport policy should be based on setting national targets for reducing levels of traffic over the short and medium term as well as suggesting possible measures.

The new Labour government quickly introduced the concept of integrated transport. A 1997 consultation paper (DETR, 1997a) declared that the trunk roads review would seek long-term solutions and give more weight to environmental considerations while promoting sustainable economic development. The resulting White Paper "A New Deal for Transport - Better for Everyone" (HMSO, 1998a) set new objectives for transport and defined an integrated transport policy as providing:

1. **Integration within and between different types of transport** - so that each contributes its full potential and people can move easily between them.

2. **Integration with the environment** - so that our transport choices support a better environment.

3. **Integration with land use planning** - at national, regional and local level, so that transport and planning work together to support more sustainable travel choices and reduce the need to travel.

4. **Integration with our policies for education, health and wealth creation** - so that transport helps to make a fairer, more inclusive society.

The New Deal for Transport also was to deliver:

1. Cleaner air to breathe by tackling traffic fumes.

2. Thriving town centres by cutting the stranglehold of traffic.

3. Quality places to live where people are the priority.

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4. Increasing prosperity backed by a modern transport system.

5. Reduced rural isolation by connecting people with services and increasing mobility.

6. Easier and safer to walk and cycle.

7. Revitalised towns and cities through better town planning.

In order to deliver this new agenda the government called for local people and business to have a real say and real influence over transport. The government set about reorganising the way in which transport was planned regionally and locally to secure integration between transport and land use. The government also expected local authorities to consult widely and involve their communities and transport operators in setting priorities for improving transport. In approving Local Transport Plans, the government desired that the plans fully reflect this consultation and that the views of local people make a difference.

In this changed context, the White Paper set new objectives for the Highways Agency, its strategic aim now being to contribute to sustainable development by maintaining, improving and operating the trunk road network in support of the integrated transport and land use policies. Henceforth the Agency's main purpose would be as a network operator rather than as a road builder.

The performance of the highway network in meeting the new objectives would be measured by a series of indicators to be developed by the Agency and published each year in its annual report (HMSO, 1998a). In addition, the Agency would work with local authorities and public transport operators to explore sustainable transport options, including those that could be achieved through the use of planning conditions and planning obligations.

The White Paper also addressed environmental appraisal, highlighting that the full agenda of sustainable development, including tackling social exclusion, was to be addressed through a consistent approach to appraisal. Prospects for further guidance on the assessment of development proposals including site accessibility by all modes reinforce government policies to see the new development located within a framework of regional and local accessibility criteria.

Alongside the transport White Paper, the government published its review of national roads policy (DETR 1998b) which comprised a programme of 147 schemes many of which were regarded as being difficult and which were proposed before the major changes in transport policy and appraisal had taken place. A total of 68 schemes were seen as transport problems requiring a solution rather than automatically requiring a road solution (DETR, 1998b). Of these "transport problems" 37 schemes entered the targeted programme of investment, costing £1.4 billion with the intended start within the next seven years. A further 36 schemes were withdrawn from the programme, although this included nineteen schemes on roads to be removed from the national network where the decision was passed to the local highway authorities. The new strategy was also reflected in the approach to appraisal as the government had sought the views of English Nature, English Heritage, the Environment Agency and the Countryside Commission on individual schemes within the programme.

The White Paper on Transport "A New Deal for Trunk Roads in England" (DETR, 1998b) highlighted the political imperative for transport to contribute to the quality of life through an integrated transport policy. It also heralded a shift in the approach to appraisal by establishing a new

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framework for assessing transportation schemes. This new planning context is designed to draw together the under the following five criteria:

1. To protect and enhance the built and natural **environment**.

2. To improve **safety** for all travellers.

3. To contribute to an efficient **economy**, and to support sustainable economic growth in appropriate locations.

4. To promote **accessibility** to everyday facilities for all, especially those without a car.

5. To promote the **integration** of all forms of transport and land use planning, leading to a better, more efficient transport system.

From the perspective of appraisal practice, these new themes needed to be reflected in new techniques and procedures in order to:

1. Ensure that transport costs reflected the wider costs of transport decisions for the economy and the environment.

2. Develop land use policies that would enable people and business to take advantage of locations which meet their needs for access with less use of transport or less polluting means of transport.

3. Appraise a wide diversity of measures to transport problems.

4. Assess social exclusion and the distribution of the consequences of investment in transport.

5. Consider health, social, economic and environmental issues on a consistent basis.

6. Seek wider involvement of all stakeholders in the assessment process with clearer definition of objectives.

7. Provide for greater transparency and openness in the assessment and decision-making processes.

2.10 Integrated appraisal

To help inform the prioritisation of trunk road investment proposals in the Roads Review in terms of the new criteria, the 'New Approach to Appraisal' (NATA) was developed. The new approach as applied to road investment is set out in 'A New Deal for Trunk Roads in England: Guidance on the New Approach to Appraisal' and the companion document 'Understanding the New Approach to Appraisal' (DETR, 1998c). The new appraisal methods sought to provide greater transparency and equal weighting amongst the different impacts.

While transport appraisal has expanded, this increasing sophistication and complexity creates its own problems of how to communicate the results in a manner that can be taken on-board by decision-

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makers in a single presentation. This suggests the need for a systematised delivery of information that is sufficiently flexible to accommodate the range of quantitative, monetised and qualitative data that has been generated. The black box nature of transport and environmental models also contribute to concerns over a lack of transparency in the appraisal process.

The New Approach to Appraisal (NATA) sought to address the following communication issues:

1. Providing immediate access to disaggregate information according to the groups affected such as by mode, investor, benefits and costs over time, etc.

2. Allowing sensitivity testing on key assumptions that affect the robustness of the outcome.

3. Providing a range of summary outputs likely to be of interest to different stakeholders.

4. Providing a summary output in a form that is clear, concise, transparent and assists decision-making in a user-friendly manner.

By addressing the way in which existing information was used to inform the decision-making process NATA built upon the Environmental Impact Table concept to produce a streamlined one page tabular summary, the Appraisal Summary Table (see Table 2). The Appraisal Summary Table (AST) provides a summary in one page of the main economic, environmental and social impacts of a transport strategy or individual measure, alongside a clear statement of the problem. Fundamentally, the AST aims to:

1. Assist understanding of the problem and to ask what priority it deserves.

2. Identify a range of options with clear trade-offs among the key issues.

3. Appraise options to determine the extent to which they meet government objectives as cost efficiently as possible.

4. Help to avoid double counting of impacts and deals with varying level of detail in the assessment of objectives and impacts.

5. Accommodate both qualitative and quantitative measures.

6. Employ a multi-criteria approach without explicit weighting of issues, but uses a system of scoring impacts according to their beneficial or adverse effects.

7. Provide a flexible but consistent tool that can be used across all levels of decision-making, modes, plans and projects in a consistent manner.

8. Support transparency: audit trail, worksheets, and supporting detailed reports.

The AST does not make judgments about the relative weighting to be put on the criteria, nor does it provide a mechanistic means of delivering a decision. Instead, the AST simply summarises the effects in each area so that decision-makers have a clearer and more transparent basis on which to make such judgments.

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While the AST is the main means of communication with the elected decision-makers in government, it is supported by a series of reports including the Environmental Statements or other environmental assessments in order that Ministers may explore particular issues in further detail where appropriate.

Being flexible in their content the ASTs are able to accommodate different levels of appraisal information depending upon the stage in the design process the proposal has reached. Hence unlike the EITs, the ASTs are used within the appraisal process to record the performance of the transport alternatives considered through economic, environmental, accessibility, safety and integration indicators.

The success in applying ASTs to the high level appraisal of schemes within the national Roads Review has led to ASTs now being required for all forms of transport proposals including application of funding by local transport authorities.

While the AST broadens the assessment criteria, Jones and Lucas (2000) suggest that its structure makes it difficult to link it directly with other sector responsibilities and initiatives and thus acts as a barrier to "joined-up" policy appraisal. Other criticisms of the AST approach made by Jones and Lucas include:

1. No assessment of energy or resource use - this is an important factor in considering sustainability;

2. No assessment of modal split;

3. A focus upon the numbers of people with access to transport rather than the number of people with access to certain facilities.

It is perhaps too early to say whether the AST would be a barrier to "joined-up" policy appraisal given that transport can legitimately claim to be in advance of most other sectors when it comes to a rigorous appraisal process. However, the limited space in which a diverse range of issues associated with integration, inevitably mean that integration will tend to be reported in terms of integration between different types of transport rather than integration with land use planning or other sectoral policies.

The criticism associated with energy and resource use is only partly valid. As there is a limited amount of space in which to present a diverse array of issues, those that are regarded as having a lower profile inevitably have to give way to those of greater importance to decision-making. Bearing in mind that such issues of resource use are subsumed within the economic appraisal also tends to lessen the importance of its omission. Nevertheless, this does highlight a tension between the desire of economists to provide an all-encompassing aggregate view of performance that contrasts to the disaggregated appraisal practice favoured by the environmental assessment community.

The lack of reporting of modal split information is also a matter to be considered under integration in that there is no explicit reporting of performance against the government's transport policy objectives. Alternatively it may be reported under access to the transport system.

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Table 2. **Appraisal Summary Table - New Approach to Appraisal**

Proposal name		**Option description**		
PROBLEMS		Statement of problems		
OTHER OPTIONS		List of other options that have been, or could be, tested		
OBJECTIVES		**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
Environnement CO_2 : *xxxx* tonnes added or removed	**Noise**		Number of properties experiencing: - increase in noise *xxx* - decrease in noise *xxx*	Net *xxx* properties experience *higher* noise levels
	Local air quality		Number of properties experiencing: - better air quality *xxx* - worse air quality *xxx*	+/- *xxx* MP10 +/- *xxx* NO_2
	Landscape		Not applicable	*Moderately adverse*
	Biodiversity		Not applicable	*Neutral*
	Heritage		Not applicable	*Moderately beneficial*
	Water		Not applicable	*Largely adverse*
Safety			Accidents Deaths Serious Slight *xxxx* *xxx* *xxx* *xxxx*	PVB £*xx* million *xx %* of PVC
Economy	**Journey times and vehicle op. costs**		Trunk road journey time savings: Peak: *xxx* mins Inter-peak: *xxx* mins	PVC £*xx* million *xx %* of PVC
	Cost		Not applicable	PVC £*xx* million
	Journey time reliability		Stress on key trunk road link: Before: *xxx %* After: *xxx %*	*Moderately beneficial* *Small* rel. to PVC
	Regeneration		Serves regeneration priority area? Development depends on scheme?	Yes No
Accessibility	**Pedestrians and others**		Not applicable	Slightly beneficial
	Access to public transport		Not applicable	*Moderately beneficial*
	Community severance		Not applicable	*Largely adverse*
Integration			Not applicable	*Positive*
Version of (date)		Cost benefit analysis:	PVB £*xxx* million PVC £*xxx* million NPV £*xxx* million BCR *x.x*	

The final criticism on access to the transport system rather than access to services is valid highlighting the issues associated with accessibility and mobility and the traditional view that it is transport that is important rather than the underlying reasons why movement is necessary. There is no emphasis placed upon reducing the need to travel, instead the need to provide access to transport dominates.

Other more deep-seated problems have emerged with the AST that are primarily associated with the scoring of individual impacts and their aggregation for entry on the AST. Unlike environmental assessment practice, the appraisal process places a high reliance upon professional judgement particularly at the plan rather than project levels. Consequently scores are assigned to impacts that both lack a unifying scale and are open to considerable interpretation. Hence some individual impacts have been assigned assessment scores that are lower than would be expected from the description of the impact. Also, the aggregation process has tended to provide a levelling down of the scores such that the true environmental implications of the proposal re underplayed. Cumulative effects have also been poorly addressed.

Such issues of scoring would not be so important if it were not for the importance placed upon the AST in the communication of information to decision-makers. As there is only space for a single score and a line of text it is vital that such information is a fair and balanced representation. Also, there must be a clear audit trail that allows both the decision-makers and interested parties to confirm that the appraisal is fair and balanced. Progress remains to be made in this area.

2.11 Performance-based planning and stakeholder involvement

As it is increasingly impractical, impossible or undesirable to increase highway capacity due to physical barriers, environmental impacts and regulations, community opposition or simply cost, so it has become more important to view capacity problems in a multi-modal context. At the same time that the search for multi-modal strategies has taken hold, so there has been a change in the approach towards transport planning in which legislators and the public are holding transportation agencies accountable for measuring the performance of the transportation system.

Planners are expected to develop measurable goals or objectives and also to report upon progress in meeting those goals. Hence there has been a change from measuring operational aspects, such as the number of miles of new infrastructure, to that of measuring the performance of the entire system in terms of system outcomes or effectiveness. Performance-based planning has emerged as an important strategy in addressing these changing demands.

The emerging focus upon outcomes should mark a change from a view that time spent on planning and communication gets in the way of plan development, scheme design and the important task of project implementation. Increasingly customers of transport services are no longer simply commenting upon the plans prepared by transport planners, but are also becoming involved in identifying and examining the issues and assisting in the development of the plan itself.

Increasingly, decision-making is no longer the domain of a single organisation capable of ignoring dispute. Instead problems must be defined according to the different perspectives of stakeholders and presented in a manner that informs public opinion in order to aim for consensus. This suggests that assessment practice needs to be considered in terms of three different levels:

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1. **Aggregate Policy Level**: Addressing the economic and social effects concerning economic efficiency, cost of public expenditure, distributional effects and sustainability.

2. **Stakeholder Level**: Addressing the social acceptability effects as perceived directly and indirectly by various social groups.

3. **Practical Feasibility Level**: Addressing legal, regulatory, technical and managerial issues associated with implementation.

Increased stakeholder involvement will require new mechanisms to access members of the public not normally involved in transport planning to ensure that the issues are defined from a community rather than transport perspective. New tools are also needed for analysing and presenting transportation solutions to the public.

Such a customer focus places a new obligation upon elected and technical decision-makers, in that they must now ensure that all interests are equitably involved in the planning process, particularly those social groups that have been previously under represented. Hence transport planners need to work with diverse partners to reach consensus on contentious and complicated issues to arrive at win-win solutions that do not compromise the fundamental objectives of any group. Effective stakeholder involvement will be critical to success in the new era of transport planning.

2.12 Evolving tensions associated with economic appraisal

While the traditional appraisal focus has been upon assessing the overall consequences for society i.e. local communities must bear the local costs for the greater, often perceived, economic benefits that are to come to the wider society, this situation is changing. With transport planning moving on to a wider agenda reflecting the role of transport in society, so this simple test of whether the transportation measure results in a positive net present value or performs well for some other economic indicator is no longer sufficient. Not only has this narrow approach to evaluation given way to a multi-criteria approach, but also there is increasing recognition that it is important to understand how the costs and benefits are distributed in terms of location and the different communities.

While economists would have systems of full compensation to those who experience the costs, voluntary compensation rarely happens, hence elected decision-makers need to be informed of the distribution of impacts as part of the transport planning and appraisal systems. In recent years several transport economists have been challenging the economic appraisal orthodoxy. The work of Goodwin and the Standing Advisory Committee on Trunk Road Assessment (SACTRA) deserve particular acknowledgement in this regard.

Most traffic and transport activities do not have an intrinsic value, instead the value has to be derived from generalised assumptions associated with the activities which travel has enabled. Thus the indirect benefits of transport are derived from time and other cost changes for goods and passenger travel. Also as part of an economic appraisal, it is recognised that opportunity costs should be captured, i.e. the costs which arise when a project affects alternative uses of another resource.

To gain a complete picture of the effect of transport investments it is, at least in theory, necessary to consider what other investment may otherwise have been undertaken. In practice this is rarely done, instead reliance is placed on some form of "pass mark" (Goodwin and Persson, ECMT, 2001).

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However, when transport is used to deliver wide community objectives, it is sensible to confirm that for example environmental, regeneration or safety improvements could not be made by other most cost-effective means instead of constructing new infrastructure. This provides the economic underpinning of why clarity in problem definition and objectives is vital.

The economic appraisal of transport must also include the economic consequences of any effects upon environment, health and safety. While it is often argued that a transport project is worthwhile due to the anticipated safety and environmental benefits, the environmental effects are not usually included in the economic appraisal. This arises partly due to difficulties in assigning monetary values and the effects of discounting which devalue the quality of life experienced by future generations.

The role of transport in economic development and regeneration in particular has become a key theme in the UK with the SACTRA Report (SACTRA, 1999). Transport may be seen as promoting economic growth/regeneration through the following mechanisms:

1. Broadening access of employers to qualified labour.

2. Expanding the market areas for goods and services.

3. Help attract inward investment.

4. Improve the image of an area by reducing travel times beneath a critical threshold.

5. Accessing suitable development sites.

6. Stimulus to employment and income.

Counter arguments are linked with the view that the benefits may not actually accrue to target area, but accentuate the problem by enabling migration of people and businesses with increasing economic polarisation.

SACTRA recommended that the appraisal process for assessing the economic impact of transport interventions should focus upon the following four issues:

1. **What is the rational for the intervention:** At an early stage the need to correct a market failure, or achieve a public good must be demonstrated along with an appreciation of why transport can deliver the desired outcome;

2. **What are the benefits and disbenefits:** Assuming perfect competition in the economy and consideration of induced or suppressed traffic, these should be examined using "best-practice" cost benefit analysis;

3. **What are the wider economic impacts:** What features of the area and economic sectors affected by transport cost changes depart from the assumptions of perfect competition to judge whether the cost benefit analysis is likely to over or under-estimate the wider economic effects;

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4. **What is the pattern of gains and losses:** Consideration should be given to the specific nature of competition between locations and sectors in order to identify the stronger and weaker parties and thus those most likely to benefit.

While a detailed review of economic appraisal is presented in Goodwin and Persson, ECMT, 2001, it is evident from the above that traditional economic appraisal mechanisms are increasingly being challenged as part of this wider debate of the role of transport in delivering an appropriate quality of life.

2.13 The transport White Paper - The ten year plan

The 10 year transport plan (DETR, 2000a) was launched as the first plan to provide the scale of resources needed to deliver integrated transport. The Plan explicitly recognised the need to ensure that transport plays its full part in delivering wider objectives, contributing in particular to the renaissance of cities and the revitalisation of the countryside. It also was seen as an essential building block for the urban and rural white papers and would support regeneration and economic growth.

By taking a long-term view, the Plan was intended to bring greater certainty and coherence in decision-making thereby providing a stable framework against which planning and investment decisions can be made. Apart from delivering transport objectives, the Plan was intended to help promote sustainable development and support many of the government's long-term objectives. In particular it was intended to:

1. Sharpen the competitiveness of British industry.
2. Boost the economic development of all regions.
3. Promote the renaissance of towns and cities.
4. Enhance access and opportunity in rural areas.
5. Reduce social exclusion.
6. Lessen the impact of transport on the environment at both local and global levels.

The 10 Year Plan extols the comprehensive policy framework for transport that is being put in place in which an emphasis is being placed upon:

1. Integration of the departments of environment and transport;

2. Focusing road investment on maintenance, making better use of existing roads and reducing environmental impact.

3. A Targeted Programme of Improvements to the national road network within a clear timetable, together with a programme of 'Multi-Modal Studies' to develop sustainable solutions for the most congested parts of the network.

4. Establish a separate strategic rail authority and the Commission for Integrated Transport as well as user group fora.

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5. Transfer of transport planning to regional organisations with the responsibility for preparing regional transport strategies.

6. Plan led approach to local transport maintenance and investment in new infrastructure.

7. Hypothecation in order that fuel duty revenues and local congestion charging can be used for investment in transport.

The 10 Year Plan noted that a series of Multi-Modal Studies were to be undertaken that moved away from the practice of focusing on one-dimensional solutions and instead looked at the contribution that all modes of transport and traffic management might make. In particular, the Multi-Modal Studies should:

1. Address the most severe problems in specific transport corridors or areas.

2. Be driven by regional and integrated transport objectives.

3. Deliver long-term and sustainable solutions.

4. Provide an open process, with the opportunity to build consensus.

5. Consider ways to minimise environmental impacts.

The White Paper avoided taking a decision on the role of charging in reducing congestion on the inter-urban road network. Instead the government is to wait until the conclusions of the Multi-Modal Studies, which are to consider charging, are available and it is satisfied that charging would not create problems of excessive diversion onto unsuitable roads, and that appropriate standards can be achieved for electronic systems.

From an appraisal perspective, the 10 Year Plan increased the importance of monitoring the performance of those involved in delivering the Plan through a series of performance indicators. The government also made a commitment to evaluate its policies, programmes and projects, to support the review process and also to make improvements in the assessment of impacts. Improvements in modelling capability, including the National Road Traffic Forecasting model, to provide a fully multi-modal approach were also highlighted.

2.14 Multi-modal transport appraisal

The Roads Review concluded that some transport problems merited a wider study in order to determine whether changes to the highway network were required to address the current and future anticipated problems. This then stimulated the need for the development of a new approach to appraisal that is set out in the "Guidance on the Methodology for Multi-Modal Studies" (GOMMMS) (DETR, 2000b). This guidance builds upon that of the New Approach to Appraisal with the establishment of four appraisal strands:

1. A new Appraisal Summary Table designed for Multi-Modal Studies to report the degree to which the five Central Government objectives for transport (environment, safety, economy, accessibility and integration) would be achieved (see Table 3).

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2. Performance against local and regional objectives established for the study.

3. An assessment of the extent to which problems would be ameliorated.

4. Provision of supporting analyses of distribution and equity, affordability and financial sustainability, and practicality and public acceptability.

A radical element within the approach to Multi-Modal Studies is the explicit coverage of social inclusion as the AST provides for the reporting of specific effects upon different social groups albeit from a national perspective of overall public interest. The revised AST also omitted explicit reporting of the cost benefit analysis since a wider variety of quantified and non-quantified information is being reported.

While GOMMMS does not seek to meet the requirements of the proposed SEA Directive or address the links with project delivery, it does mark yet another turning point for transportation planning. GOMMMS results in the following changes in the philosophy of transport appraisal:

1. **Clear Definition of the Transport Problem:** It calls for a thorough understanding of the transport problem to be addressed, recognising that the problem is to be set in relation to all of the objectives rather than simply in terms of traffic.

2. **Clear Exposition of Objectives:** It recognises that highway design and transport planning objectives need to be set within a wider set of social, economic, environmental, accessibility and integration objectives.

3. **A Multi-Measure and Modal Focus:** It provides a methodology for change from a road building mentality to one where multiple transportation measures involving multiple modes and novel solutions need to be brought to bear on the transport problem. These solutions are clearly to encompass the full array of infrastructure and non-infrastructure measures including the use of fiscal instruments such as road pricing.

4. **Exploration of all Reasonable Alternatives:** It enables a wide range of strategy or plan components and the synergy between combinations of components to be investigated in a cost-effective manner such that all reasonable alternatives are to be explored instead of leaping to the "obvious" solutions.

5. **Enhanced Stakeholder Involvement:** The role of stakeholders in defining the transport problem, identifying local goals and objectives, as well as identifying potential solutions and reviewing of outcomes is enhanced.

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Table 3: **Appraisal Summary Table - GOMMMS**

Option		**Description**	**Problems**	**Present Value Cost to Government £m**
Objective	**Sub-objective**	**Qualitative impacts**	**Quantitative measure**	**Assessment**
Environment	Noise			Net properties win / lose with scheme
	Local Air Quality			Concentrations weighted for exposure
	Greenhouse Gases			Tonnes of CO_2
	Landscape			Score
	Townscape			Score
	Heritage of Historic Resources			Score
	Biodiversity			Score
	Water Environment			Score
	Physical Fitness			Score
	Journey Ambience			Score
Safety	Accidents			PVB in £m
	Security			Score
Economy	Transport Economic Efficiency			Users: NPV in £m
				Public providers: NPV in £m
				Public providers:NPV in £m
				Other Government: NPV in £m
	Reliability			Score
	Wider Economic Impacts			Score
Accessibility	Option Values			PVB in £m
	Severance			Score
	Access to the Transport System			Score
Integration	Transport Interchange			Score
	Land-Use Policy			Score
	Other Government Policies			Score

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6. **Integration:** The integration objective has the following three sub-objectives:

   - Integration within and between different types of transport - so that each contributes its full potential and people can move easily between them.
   - Integration with land use planning - at national, regional and local level, so that transport and planning work together to support more sustainable travel choices and reduce the need to travel.
   - Integration with policies for education, health and wealth creation - so that transport helps to make a fairer, more inclusive society.

7. **Integrated Appraisal:** The degree to which all objectives are achieved is to be summarised, along-side the extent to which problems are ameliorated, and the implications for distribution and equity, affordability and financial sustainability as well as practicality and acceptability.

8. **Robust Appraisal:** The appraisal should be sufficient detailed to ensure that a robust decision can be made and hence not be susceptible to change when key assumptions are challenged.

9. **Transparency in the Appraisal and Reporting:** It is essential that the appraisal is undertaken at a level of detail sufficient to compare options and to inform decisions as to whether a strategy or plan should be taken forward and that this is performed on a clear and transparent manner.

Unfortunately, GOMMMS relies upon the project level appraisal tools developed under NATA for the Roads Review. Consequently it assumes that project level information is available and hence often demands more effort in assembling information than is both realistic and needed for strategic level studies. As a result, many of the Multi-Modal Studies are seeking to follow the "spirit of GOMMMS" rather than its specific guidance.

2.15 Evolving appraisal practice

Apart from Multi-Modal Studies, local authorities are now required to deliver integrated transport through new Local Transport Plans. The importance of appraisal to this process has been highlighted in guidance issued for the preparation of Local Transport Plans (DETR, 2000c). The guidance states that in seeking specific funding for major public transport and road schemes, the local authority must demonstrate that the scheme is necessary for achieving the objectives of the Local Transport Plan and *that it cannot be done in other ways*.

Schemes are also to be properly integrated with measures to promote modal shift. Local authorities are expected to demonstrate that they have explored the scope for alternative solutions that do not involve major new construction, e.g. demand restraint and have taken account of the strong presumption of avoiding environmentally sensitive sites. Central to the new approach is:

1. A fundamental review of transport strategy.
2. Demonstration of consistency with the Government's transport objectives.
3. Establishment of local transport targets.
4. Extensive participation by transport operators, business, health and education sectors as well as the public.

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5. Emphasis upon management rather than construction of major schemes.
6. Demonstration that alternatives have been examined.

The appraisal of transport plans and projects has taken on a wider range of policy objectives with the explicit recognition of core target user groups across most areas of government policy allied with "joined-up" policy development and implementation. This policy agenda has generated an array of new appraisal exercises and documentation. Guidance for the new core target user groups includes:

1. Women and Public Transport: The Checklist (DETR, 2001a).

2. Social Exclusion and the Provision and Availability of Public Transport (DETR, 2001b).

As the political interest in social exclusion has come to the fore, so the technical appraisal of such issues has been found wanting, revealing key weaknesses in the understanding of how different groups use transport, and a lack of robust appraisal techniques. Efforts to strengthen the policy links between transport, land use and the environment, as well as between health and transport are underway to build upon the growing recognition of their importance to social exclusion.

Other transport modes are also being provided with advice on appraisal practice now being available on the following topics:

1. Major Public Transport Scheme Appraisal in Local Transport Plans: Detailed Guidance (DTLR, 2001).

2. The Appraisal Framework for Airports in the South East and Eastern Regions of England (DETR, 2000).

3. A Project Appraisal Framework for Ports – A Consultation Document (DTLR, 2001).

The guidance for Major Public Transport Schemes is of interest since it places a requirement on local authorities to undertake an assessment of risk for all major public transport schemes. Where there are major risks, promoters will have to demonstrate that such risks are understood and can be actively managed within the public sector or transferred at an appropriate cost to the private sector. The guidance identifies the following three-stage approach:

1. **Step 1:** Prepare a risk register of the main risks likely to affect the delivery and operation of the scheme. The risk register should start from construction risk, from timescale and cost perspectives, and then move onto operational risks and factors likely to affect patronage, revenues and delivery of scheme benefits.

2. **Step 2:** Assess a range of possible outcomes that may occur due to combinations or different levels of the risks identified in the risk register. For example, it is likely that a combination of reduced journey time and increased frequency of competitive bus services would have a larger impact on light rail scheme patronage than if each item were considered separately.

3. **Step 3:** Assess the likelihood of occurrence for each of the possible outcomes. For smaller schemes it will be acceptable to assess the probability of any one outcome occurring using a simple four point scale, expanded to more levels if appropriate. For larger major schemes the

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assessment of risk should be based on a numerical probability that allows an 'expected' value and the variation around that value to be developed.

The DTLR appraisal framework for airports in the South East adds two further considerations to the five presented in GOMMMS and used for other modes. These are a) to ensure that the commercial viability of schemes is met; and b) to ensure that the operational requirements and service planning standards are delivered.

The framework for appraisal for ports has been derived from that established for other modes, for example the Guidance on the Methodology for Multi-Modal Studies (GOMMMS). Although there is a degree of standardisation across the modes, as ports have particular characteristics to do with market structure, financing and regulation of investment as well as environmental effects and links with surface transport, so separate guidance is being produced. A key part of the consultation document reflects upon the differing legislative regimes under which ports operate, the surface and marine aspects, as well as the implications of the Habitats Directive given the importance of many coastal areas for wildlife.

There has also been work undertaken in the rail sector with the Strategic Rail Authority's "Planning Criteria – A Guide to the Appraisal of Support for Rail Passenger Services (SRA, 2000). In taking decisions on proposals to support passenger services, the Franchising Director is to consider performance against the Government's five key criteria: Environment, Safety, Economy, Accessibility, and Integration. In addition, due to the statutory duty to secure value for money, the Franchising Director is obliged to compare schemes using, where possible, an objective assessment of the benefits a scheme would deliver. This will require schemes to be ranked in terms of the *net present value of benefits per £ of OPRAF support.* The allocation of risk, incentives on sponsors to deliver planned outputs and that the intervention of the Franchising Director is necessary for the proposed change to occur are other factors.

In 1999, London Transport established a multi-criteria evaluation framework for public transport that used 50 separate indicators although not all were reported in a quantitative manner. In order to develop a suitable framework for evaluating scheme options for two new rail lines in London and the implications for regeneration, a recent study by Transport for London has been undertaken. Although not yet reported, a different structure to that of the former framework or that of GOMMMS has been adopted with a focus upon project objectives as a means to judge between different options. The indicators have been selected to enable identification of a preferred scheme from a large number of scheme options and also to reflect the available data. While the method is preferred by Transport for London to the traditional cost benefit approach, difficulties remain in assigning the relative scores to the impacts and in the aggregation process.

2.16 Cross-sector appraisal practice

While the appraisal of transport plans and projects is extending its remit to explore the consequences of actions of transport on other sectors of the economy, this process is, however, not being reciprocated in other sectors (Jones & Lucas, 2000). This lack of consideration of transport by other sectors is partly a result of transport appraisal practice having recognised its role in serving wider community interests ahead of the other sectors.

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As health more than education is beginning to recognise the importance of other sectors to the achievement of its own objectives, so it has been developing the preventative side of health care as a means of reducing demands on the service. This is evident by the new health promotion initiatives that are beginning to make links with transport planning, given that road accidents are a significant drain of health service resources. Recent interest in Health Impact Assessment by government is an indicator of a desire to ensure that health issues are considered during plan and project level decision-making. Nevertheless, health and other sectors continue to organise their activities, such as through centralisation of services, with little regard to the transport consequences of their actions. Initiatives such as Safe Routes to School etc remain primarily lead by the transport profession.

What is needed is for other sectors to learn from the transport appraisal practice and to deliver appropriate procedures that allow for the integrated assessment of their plans and projects. The adoption of the Appraisal Summary Sheet as a reporting vehicle with the support of some guidance as to how their actions impact upon transport would be a step forward in this regard.

As the UK progresses towards integrated appraisal, it is increasingly evident that its focus on objectives explicitly places environmental and community issues at the heart of the appraisal. Issues of distribution and equity also necessitate an appreciation of environmental and community impacts, while those of practicality and acceptability or the ability to deliver the proposed action are fundamentally linked to the anticipated impacts. This realisation was recognised by DTLR in relation to transport, it appears that other government departments and more particularly those responsible for policy, plan and project delivery have yet to recognise or respond fully to this fundamental change in appraisal philosophy.

2.17 The SEA directive and emerging appraisal guidance

While addressing changes in appraisal practice that have been internally generated, government has also anticipated the requirements of the SEA Directive, at least in regard to transport planning through the preparation of a guidance manual on SEA for Multi-Modal Studies. In part, the evolution of this guidance can be traced back to the 1991 Government advice on policy appraisal (Department of the Environment, 1991). Further reasons for the more rapid roll-out of SEA practice in transport than other sectors has been the high public profile as summarised earlier alongside its traditional emphasis upon quantified appraisal techniques and increased reliance upon appraisal techniques to help establish consistency in choosing between competing options.

As NATA and GOMMMS established the change in appraisal practice, preparation of the SEA guidance for Multi-Modal Studies did not require a fundamental re-shaping of appraisal activities. Indeed, the development of the SEA guidance has enhanced and supplemented existing appraisal practice rather than introduced entirely new procedures. A new philosophy is emerging that requires a quantified and qualitative approach to decision-making. This new approach seeks a clear appreciation of the problem with a set of objectives, a review of alternatives and selection of the preferred approach based upon an understanding of the economic, environmental and social consequences, all undertaken in a transparent and robust manner.

In bringing new issues into the appraisal, some of the concerns about the AST raised by Jones and Lucas (2000) will be addressed. For example, natural resources and access to facilities rather than access to transport are likely to be assessed along with health impact, cumulative and distributional effects across communities.

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As more topics are examined so the problem of double counting will increase as many issues are often at least partly subsumed within other topics. For example, the use of natural resources is captured in the construction and operational costs of the particular transport proposal, while air quality, noise and accident costs also relate to health effects.

While double counting should be minimised it does not present a fundamental obstacle to appraisal provided its occurrence is clearly indicated. Double counting can be acceptable where it provides additional understanding or explanation. For example, taking the headline economic indicators, decision-makers are not able to judge the relative performance of measures in terms of consumption of resources; a key element of sustainable development as such information is assumed to be aggregated into the overall economic figures.

2.18 Vertical integration

While this strategic approach to appraisal can be seen as providing enhanced horizontal integration in decision-making, it is also recognised that the vertical links between policies, plans, programmes and projects also need to be addressed if national policies are not to fail due to difficulties in implementation. As an example, the 10 Year Plan for transport has established a set of deliverables that the appraisal system must be capable of accommodating. The appraisal activities undertaken during the Multi-Modal Studies not only need to meet the new appraisal requirements for academic reasons, but also to ease the delivery of transport measures as they cascade through to project delivery and implementation. Table 4 illustrates the different levels of the transport appraisal system extending through to ex-post evaluation to complete the cycle.

Table 4: **Ten levels for transport appraisal**

Level 1	Regional Transportation Strategy/Regional Planning Guidance cycle commences
Level 2	Multi-Modal Studies & Integrated Appraisal
Level 3	Prepare Regional Transport Strategy/Regional Planning Guidance
Level 4	Evaluate location, design and implementation alternatives of selected transport measures
Level 5	Select preferred transport measure design/implementation programme
Level 6	Undertake scheme design and prepare EIS for consent processes
Level 7	Public Inquiry and announcement
Level 8	Design of the transport measure and construction tender/implementation processes
Level 9	Construction/implementation
Level 10	Ex-post evaluation

Source : Tomlinson, 1999.

The hope for strategic appraisal is that by considering issues at a higher level in the planning process, issues associated with project delivery will be better focused preventing wider policy issues from intruding thereby speeding up the process. Essentially, the aim is to deliver an appraisal system

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that internalises the concerns of the environmental lobby since the 1970's as highlighted at the beginning of this part of the paper.

Strategic environmental assessment as part of strategic integrated appraisal practice is expected to provide the following benefits:

1. **Strengthening and Streamlining Project EIA**: By providing for a wider consideration of alternatives and their effects, SEA strengthens project EIA and improves the efficiency of decision-making through earlier stakeholder involvement potentially increasing public acceptance and support for the proposed actions. SEA addresses issues related to the justification and location of projects and also the early identification of potential effects and assessment of cumulative effects. It may also address the effects of *small projects* or *non--project* actions, for which project EIAs are not required.

2. **Promote Sustainable Development**: By addressing the causes of environmental effects, SEA can be more pro-active and may enhance the credibility and acceptability of decisions. Its assists in the design of sustainable policies and plans. Hence, it may help to clarify goals, objectives, and principles, possibly within an integrated policy framework for addressing socio-economic and environmental issues.

3. **Environmental and Sustainability Data**: While data at the geographic scales needed for SEA is often lacking, SEA does, nevertheless, offer the opportunity to identify gaps and outline opportunities for future investment in data assembly.

4. **Institutional Issues**: As the public sector will normally be responsible for SEA, so the authority exists to address institutional issues (e.g. institutional strengthening, creation of new environmental standards, and training or technological needs). This reduces the need for such debate at the project level.

5. **Transparency**: By promoting collaboration and consultation between various institutions, SEA clarifies the planning process enabling early identification of alternatives/decisions which might lead to environmentally harmful sub-projects. Thus SEA reduces negative impacts and can eliminate the need for project-EIA of such alternatives.

6. **Long-term Perspective**: SEA facilitates a longer-term perspective on development incorporating sustainable development objectives.

7. **Mitigation/Enhancement**: SEA allows the identification of a wide range of mitigation/ enhancement measures which can include changes in institutional arrangements normally a controlling influence on project level mitigation.

There are however dangers with strategic appraisal as many of its apparent virtues have yet to be proven. Among the unresolved issues are:

1. **Stakeholder Involvement**: Whether stakeholder involvement in strategic integrated appraisal will be effective in engaging those affected by scheme delivery and who traditionally have been hard to access. How to accommodate new stakeholders and

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potentially changing opinion during the transition from policy and plan through to scheme delivery?

2. **Forecasting and Appraisal Tools**: Utility of forecasting tools in defining the future baseline situation and cumulative effects given the long timescales and the external influences on outcomes.

3. **Tiering**: Whether stakeholders will accept the outcomes of strategic appraisal when schemes are assessed perhaps 5 or more years later? Whether the effects identified in strategic appraisal are seen to be "correct" or appropriate when project level assessments are delivered and the implications of project a deviating from the strategic appraisal on the overall policy, plan or programme?

4. **Institutional Capacity to Deliver Strategic Integrated Appraisal**: Whether those responsible for delivering transport plans and transport schemes are able rapidly to accept the philosophical change in appraisal practice? Whether decision-makers are able to accept a reduced flexibility to make ad hoc decisions and the need for transparency? Whether decision-makers can assimilate the increasingly complex appraisal information? Whether there is a real danger of paralysis by analysis in which the diverse interests of stakeholders leads to an excessively wide array of topics to be assessed in ever greater depth, with a risk that no decisions are actually taken and the appraisal practice becomes unsustainable?

5. **Quality Control and Monitoring**: Whether systems will be put in place that adequately address issues of quality control when the plan maker is also responsible for the appraisal and determination of its quality? Whether it is possible and politically acceptable to establish feedback loops to evaluate the outcomes of strategic integrated appraisal?

2.19 Environmental justice

The 1994 US Presidential Executive Order directed every Federal Agency to make environmental justice part of its mission by identifying and addressing the effects of all programmes, policies and activities on minority populations and low income groups. Environmental justice is founded on three principles:

1. To avoid, minimise, or mitigate disproportionately high and adverse human health and environmental effects, including social and environmental effects on minority populations and low income populations.

2. To ensure full and fair participation by all potentially affected communities in the transportation planning process.

3. To prevent the denial of, reduction, or significant delay in the receipt of benefits by minority and low income groups.

In the US environmental justice is seen as improving transportation decision-making by:

1. Making better transportation planning decisions that meet the needs of all people.

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2. Improving the design of transportation measures to better fit into communities.

3. Enhancing the public involvement process and strengthening communities.

4. Improving data collection, monitoring and analysis tools.

5. Aiding partnerships and leverage on transportation resources.

6. Avoiding disproportionate adverse impacts of minority and low income groups.

7. Identifying offsetting and enhancement measures during the planning process where unavoidable impacts are forecast to occur.

For environmental justice to be a key part of transport planning requires that all affected communities be provided with accurate, comprehensible information on the likely impacts. In order to achieve this, it is necessary for the technical decision-makers to both understand the location and characteristics of these social groups and then to discern the likely impacts. This requires a level of spatial analysis that is more detailed than that used in the transport and economic analysis.

As yet environmental justice has not crossed the Atlantic, but as generally occurs most American practice tends to permeate around the world in time. The issue is whether the principles behind environmental justice are the next fundamental steps to be taken in strategic integrated appraisal. The UK has already recognised that transport planning decisions should serve the needs of all and that transport measures need to better fit into communities, although outdated design standards still perpetuate the dominance of road traffic.

The task of enhancing public involvement and strengthening local communities has been started through the development of community strategies and Internet based discussion fora. Many of the attempts still portray the top down approach in which the technocrats believe that they know best and only token attempts are made to reach out to minorities.

In terms of improved data collection, monitoring and analysis tools, the methods of social impact assessment and health impact assessment remain relatively weak, particularly insofar as they may be applied to transport plans and projects. In contrast, the building of partnerships to lever increased resource for transport is well established as the private sector is increasingly relied upon to fund, promote and operate both transport infrastructure and services. However, increased private sector involvement may lead to increasing conflicts with appraisal practice as hitherto public information becomes viewed as being commercially sensitive and no longer available.

The task of assessing and avoiding disproportionate adverse impacts of minority and low income groups has not yet found its way into appraisal practice, since the utility of reporting winners and losers from transport plans and projects has only recently been acknowledged. Essentially, current practice has just about come to terms with the need for greater stakeholder involvement.

In order to evaluate the economic and social impacts of transport plans and projects requires a more comprehensive understanding of the issues with more effective tools than currently available. While transport planners have been concerned with access to the transport system, increasingly it is

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recognised that access to private and public services is important. This perspective then gives rise to questions such as:

1. Will the proposals make it more difficult for residents of predominately low-income or minority populations to access health care facilities?

2. Will the response time of the emergency services to low-income or minority neighbourhoods improve as a result of the proposals?

3. Will access from minority or low-income populations to community services be affected by the proposals?

Addressing social impacts is more problematic since the concern is about community cohesion. Community cohesion includes not just safety and barriers to mobility, but also issues such as the sense of place as views and lighting, as well as landmarks and useable open space all contribute to this perception. All these elements contributing to community cohesion are frequently directly affected by the provision of new transport infrastructure or services. As noted by Forkenbrock & Schweitzer (1997) there are few tools available to address these issues and they concluded that the following developments are needed:

1. Development of improved baseline assessments that estimated current levels of inaccessibility and adverse impacts.

2. Improved mobility assessment methods.

3. More effective methods for reaching affected populations and gauging neighbourhood level priorities.

4. Better predictive approaches for estimating trip generation and travel desires of low-income and minority population.

5. Locational analysis for public and private facilities taking into account the daily activities of low-income and minority populations.

6. Improved techniques for communicating probable impacts of changes to the transportation system.

As Litman (1999) puts it, transport gives people the opportunity to access goods, services and activities that provide benefits. It also helps determine where people can live, shop, work, go to school, and recreate. Transport is therefore fundamentally concerned with opportunity and equity. Litman describes three major types of equity:

1. **Horizontal Equity**: The fairness of cost and benefit allocation between individuals and groups who are considered comparable in wealth and ability.

2. **Vertical Equity with Respect to Income**: The allocation of costs between income and social classes.

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3. **Vertical Equity with Respect to Need and Ability**: A measure of how well an individual's transport needs are met compared with others in their community.

Litman observed that the manner in which transport is defined and measured often determines how equity is evaluated and his work raises new avenues that economic and social appraisal tools need to explore particularly as few appraisals have explicitly sought to redress disproportionate effects during the planning process. Within this domain however, are parallels with the recent SACTRA (2000) discussion on which economies actually benefit from transport investments.

2.20 A look into the future

In response to the view that the present planning system takes too long to process major infrastructure projects, such as new trunk roads, airports and runways through to a decision, the Government announced a package of measures to streamline the procedures and reduce unnecessary delays in July 2001 (DTLR, 2001). The package comprised:

1. Up-to-date statements of government policy before major infrastructure projects are considered in the planning system to help reduce inquiry time spent on debating the policy.

2. An improved regional framework to assist consideration of individual projects.

3. New procedures to give Parliament the opportunity to approve projects in principle, including the right for people to object before Parliament debates the issues, prior to consideration of detailed issues at inquiry.

4. Improved inquiry procedures for major infrastructure projects.

5. Improved arrangements for compulsory purchase and compensation.

Given the potentially contentious nature of some of the topics that could be covered by national policy and that it would set the framework for major infrastructure projects, CPRE have called for a period of public consultation on such policies (CPRE, 2001). This would overcome the suspicion that a particular policy had been prepared to restrict debate on a contentious issue, or the scope of evidence at a forthcoming inquiry.

The extent to which up-to-date statements of government policy set the framework for the major infrastructure projects raises some important issues for appraisal practice. For example, if the policy were regarded as a plan in that it sets the framework for projects for the purposes of the SEA Directive then a statutory assessment could well be required. Alternatively, in the context of current appraisal policy, the policy should be supported by a sustainability appraisal. This aspect will require further consideration by government during the process of implementing the SEA Directive.

Procedures currently exist for Parliament's involvement in the approval of major schemes under section 9 of the Transport and Works Act 1992 (TWA). The proposed new procedures apply to a broader range of developments, with the Secretary of State having a discretionary power to decide whether a major infrastructure project was one to which the new Parliamentary procedures apply. Designating such projects would be on a case-by-case basis, having regard to the specific nature and circumstances of the project concerned. Examples of major infrastructure projects to which the new

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procedures could apply include new airports and runways, ports, trunk roads, rail schemes, power stations, radioactive waste disposal, and other forms of infrastructure, such as new reservoirs. Hence the new procedures would apply to projects initiated under the Town and Country Planning Act 1990, the Transport and Works Act 1992 (TWA), the Highways Act 1980, the Harbours Act 1964 and the Electricity Act 1989.

Parliament would consider the principle of, the need for and location of a project with the environmental impact assessment, draft orders and copies of the planning application as sources of information. The precise terms on which Parliament's approval was sought would be determined by the Secretary of State case-by-case on the basis of the specific proposals concerned.

Parliament's approval in principle would not itself confer planning permission (or give any other consents needed) as this would remain with the Secretary of State following a public inquiry. At the public inquiry, the Inspector would then focus on detailed issues of project implementation including for example, the precise alignment and layout of the proposal, land take, mitigation measures, conditions and legal agreements.

After the inquiry, the Secretary of State would consider the Inspector's report and recommendations in reaching a decision on the project. Notwithstanding Parliament's approval in principle, the Secretary of State would have the flexibility to decide whether or not a project should proceed. It is envisaged that the Secretary of State would only reject a proposal approved by Parliament in exceptional circumstances.

The implications of these changes for project delivery and appraisal practice are likely to be subtle. For example in the last 15 years there have been less than 10 projects that were national in scale whose public inquiries have lasted for more than 3 months (Dark and Forster, 2001). Most of the time is taken in preparing for the consent process with over 10 years needed to deliver a road from the date it enters the roads programme. This has lead to a view that a reduced level of scheme design is needed before decisions in principle are taken.

While the EIA Directive would require that an appropriate level of design be undertaken to support a robust project environmental impact assessment, the SEA Directive and the assessment of transport plans may provide an opportunity to provide the certainty for projects at an earlier stage. It should be apparent from a strategic environmental assessment of a multi-modal study or transport plan whether individual measures raise important issues. The regional planning bodies or Parliament could then make decisions on the principle of proceeding using such plan level assessments thereby avoiding expenditure on projects that are fundamentally unacceptable. Project level design and assessment work could then proceed on the basis of determining the preferred scheme.

The Royal Commission on Environmental Pollution (RCEP, 2002) in its 23rd Report – Environmental Planning — devotes a chapter to environmental assessment. The RCEP is critical of the opportunities for public involvement in the informal scoping activities, the limited assessment of alternatives as well as the lack of impact monitoring and auditing. It also recommended that health issues be incorporated explicitly into the EIA process. In the Commission's brief comment upon SEA it called for SEA to be combined with strong and specific environmental objectives to adjust public decision-making towards an objectives-led, proactive process of strategic environmental management.

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As part of their review of the Government's proposals for handling major infrastructure projects, RCEP called for an open process in which the need for additional infrastructure is probed following a SEA of the policy options (paragraph 8.50). They highlighted the national aviation strategy and the surface transport multi-modal studies as welcome practices.

RCEP called for definitive statements of priority objectives that must include a quantified target or targets for the movement towards the objective by a specified date with a programme by which it is to be achieved. National objectives will need to be interpreted and applied within local situations reflecting local capacities and circumstances.

Linking national objectives to practical implementation, the concept of integrated spatial strategies is seen by RCEP as delivering the spatial distribution of activities to safeguard sustainability by protecting and enhancing the environment (paragraph 10.13). With a 25 year horizon, integrated spatial strategies would comprise a set of common indicators to deliver comparisons between areas, important in evaluating and reviewing policies and performance. Additional indicators may also be needed to reflect the particular circumstances of an area (paragraph 10.25).

Although not raised by RCEP, the issue of indicators is an aspect where further clarification may be beneficial. The recent use of 72 performance indicators within a Local Highway Authority's Local Transport Plan Annual Progress Report prompted the observation that such large number of indicators made it difficult to assimilate all the information (Mellor, 2002). Herein lies a tension between the need for effective communication, an administrative desire for a reduced set of indicators that are applied uniformly across the country, and the need for issue responsive indicators that are locally established.

The introduction of SEA could well increase this tension, as it becomes clear that "state" or "performance" indicators are not always useful in assessing the impact of different options. Equally, an extensive array of impact indicators will only add to the difficulties of distilling the information into a form that decision-makers can appreciate.

2.21 Some conclusions on evolving UK appraisal practice

To conclude this review of the evolution of UK appraisal practice to support decision-making, it is evident that drivers to improve practice have come from both within and beyond government.

As the Department of Transport acknowledged that it was responsible for public transport and not just roads, so more balanced appraisal frameworks have emerged with the more rigorous appraisals required for public transport resulting in the development of common appraisal frameworks. The constant threat to the delivery of the road programme by pressure groups also stimulated the Department to examine a wider variety of appraisal issues.

The Department of the Environment has also caused change to appraisal practice by promoting sustainable development supported by former environmental activists as official advisors. Documents such as Sustainable Distribution (DETR, 1999) contributed to the general transport policy debate and the need to manage the use of the transport network in a more efficient manner. In addition, through the report "Increasing Awareness of Sustainable Development Across Government" paper (DETR, 2000d), all departments were called to:

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1. Prepare targets for sustainable development.
2. Promulgate the Cabinet Office Policy Makers Checklist which provides guidance on an integrated system of impact assessment and appraisals in support of sustainable development.
3. Involve all staff in discussions and decisions about the effects on sustainable development of the work they do and how they do it.
4. Provide training on sustainable development to new entrants to the departments.
5. Monitor how far awareness has been achieved and feedback through Green Ministers.

How far elected decision-makers rather than technical decision-makers have stimulated change in appraisal practice is unclear. Ministers of Transport have had a pivotal role in changing the policy framework and inclusiveness of the planning and appraisal processes. While Department of Transport officials were aware of a need to respond to the changing context in which transport decisions were set, it needed the support of elected decision-makers to enable the paradigm shifts in appraisal practice to occur. The new labour government was just the impetus needed to drive the change towards integrated appraisal.

It is clear that elected decision-makers have been sensitive to public opinion and in particular the activities of environmental lobby groups. Even HM Treasury is not immune to the actions of pressure groups and thus present restricted spending in a manner that highlights the environmental benefits. Also in seeking to ensure that the best use is made of funds spent on transport the Treasury has often increased the robustness of appraisal tests especially in times of spending restraint.

While appraisal practice has evolved endogenously since the early 1970s to become more complex, it is questionable whether much change would have occurred without external drivers from the public. The role of the environmental lobby and researchers has been crucial in undermining former practice, highlighting inconsistencies and flawed assumptions. Would change have occurred without John Tyme and the protesters at Oxleas Wood, Twyford Down and Newbury or did they just hasten a process of slowly maturing decision-making machinery?

The Directive on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive) will cause sectors other than transport to develop a new set of appraisal tools. Those sectors that have been content with largely qualitative and ad hoc procedures will face the public challenge of systematic and highly quantitative integrated appraisal on which transport appraisal has already embarked. Some sectors, such as land use planning, must learn rapidly from transport experience if they are not to be so traumatised by the appraisal requirements of the SEA Directive that a degree of paralysis will set in.

The UK has a long tradition of strategic planning based around the skills of land use planners. While land use planners hold many of the skills needed to implement strategic appraisal, the demands of rigor, comprehensive review of alternatives, quantified forecasting as well as mitigation and enhancement of plans and programmes will require new skills. Much of the current approach to the environmental appraisal of development plans has been through the use of consultants to apply an appraisal checklist to the plan as an ex-post rationalisation with heavy reliance upon expert judgement rather than the scientific approach embodied in EIA and hopefully SEA practice. While transport planning is well positioned to respond to challenge, the same cannot always be said of land use planning or planning in other sectors which have yet to adopt the integrated appraisal philosophy.

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As appraisal practice becomes more integrated and encompassing so it is potentially planting the seeds of its own destruction, as the room for manoeuvre afforded to elected decision-makers becomes increasingly constrained by the procedures of systematic and integrated appraisal. This need to complete the appraisal procedures may well impact upon elected decision-makers wishing to announce vote winning transport investments.

Having embarked upon elaborate appraisal practices, failure to follow their procedures and report the findings in the required manner within an open and transparent process creates greater opportunities for stakeholders to challenge the legitimacy of the results and hence the decision. Should elected decision-makers receive a backlash from active stakeholders when not following the procedures, then such constraints on their flexibility may well result in a further change in appraisal practice.

To avoid a potential backlash, elected and senior technical decision-makers at all levels need to be actively engaged in the appraisal process. This may involve decision-makers in having a more informed understanding of the transport problem so they may take over the technocratic setting of objectives for the transport plan or project and also explicitly assign weights to reflect the relative importance of such objectives.

Involvement of elected and senior technical decision-makers in key stages of the appraisal process, rather than just at the end may also raise their appreciation of the complexity behind results on which they are expected to make decisions. Such involvement would also overcome a criticism of the Appraisal Summary Tables that they over simplify information in order that the results can be communicated to the decision-maker. Through earlier involvement, the role of the technical decision-maker as the gatekeeper of the information and the bias that can be imparted would be minimised.

While other papers have explored the methodological aspects associated with the application of SEA to transport planning (see ECMT, 2000), the following section of this paper explores the communication of the economic and environmental appraisal to decision-makers. As such, it explores the roles adopted by decision-makers and the use made of the economic and environmental information.

While the technical appraisal tools are important, there is a danger that too much attention is currently being placed upon the tools and not enough upon how they are used. Preparing the best tools and the best guidance does not guarantee that strategic integrated appraisal will be delivered or that the output will command respect.

The following section provides an insight into the interaction between the appraisal process and their associated decision-making processes using the Channel Tunnel Rail Link, the M4 South Wales Common Appraisal Framework and the 1998 English Roads Review. Building upon this review of appraisal practice, the case studies then help to establish the opportunities through the technical appraisal and decision-making processes that may be enhanced.

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3. CASE STUDIES

3.1 Channel Tunnel Rail Link

The story of the Channel Tunnel Rail Link, now called the Union Railway can be represented thus far as four phases:

1. First phase 1986-1990.
2. Second phase 1990-1993.
3. Third phase 1993-1998.
4. Fourth phase 1998-2001.

First Phase: 1986 - 1990

During preparations for the Channel Tunnel legislation during 1986-7, a new high-speed link was not contemplated. Further, it was not even accepted that new rail capacity through Kent was needed. British Railways (BR) maintained that the existing network was, in the main, adequate for the foreseeable future (Collis and Hill, 1993). The reason for this was partly historical, tactical and political.

The Channel Tunnel treaty, signed in 1973, but never ratified by the British Parliament, committed Britain to building a dedicated High Speed Rail Link to complement the Tunnel (Gibb, 1986). Then in 1975, increasing costs of the Rail Link enabled the government to abandon the whole project. Mindful of the 1970s' decision-making processes that led to abandonment, the government subsequently avoided any commitment to the link (Gibb and Knowles, 1994).

The tactical reason not to proceed was the desire to reduce the potential for organised resistance, by local authorities, interested bodies, communities, action groups and individuals by separating the decision on whether to build the Rail Link from the decision to build the Channel Tunnel.

The government's ambivalent and inconsistent attitude towards Channel Tunnel supporting infrastructure contrasts sharply with its enthusiastic backing for the Tunnel itself. Although inconsistent from an integrated transport policy perspective, the position stems from the private sector nature of the Tunnel and the essentially public sector funding need for supporting infrastructure. It was a manifestation of the political ideology of the time that advocated minimum state interference and market-led solutions (Gibb and Essex, 1994). The dominant role of the car in UK transport also helped place emphasis on the shuttle services to provide the 'missing link' between the British and Continental road systems.

The Channel Tunnel Rail Link was unable to show a sufficient rate of return on the capital to be invested. Financial support for the Channel Tunnel Rail Link remains an issue recently explored by the National Audit Office (NAO, 2001).

The Kent Joint Consultative Committee (KJCC), set up in March 1986, under the chairmanship of the Minister of State at the Department of Transport established the Kent Impact Study (KIS) in April 1986 as the only strategic planning initiative. This Study examined the economic and

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development implications of the Channel Tunnel and supporting infrastructure in Kent. Its brief was to evaluate the:

1. Adverse impacts to areas which could be disadvantaged, mainly on port activities (which had been a fast-growing sector in the Kent economy) and employment; and
2. Future positive impacts, both short-term direct employment (arising from the construction) and the longer-term indirect gains which could be expected given a favourable planning and infrastructure approach.

The study provided an insight into the location of the 14 000 new jobs forecast within 10 years and concluded that specific measures would be necessary to realise such growth particularly in east Kent, where an international station at Ashford was seen to be vital. Strategic planning policies were, therefore, proposed for planning, transport and labour markets, but only for Kent. As the Channel Tunnel Rail Link was not on the table at this time, only peripheral consideration was given to its impacts on commuter services and development.

At this time, the government was supportive of efforts in Kent to resist peripherality and take advantage of the Channel Tunnel. It was, however, not disposed to encourage BR or statutory bodies to plan strategically for the rest of the country, including south-east England outside Kent. Consequently strategic planning bodies such as the South East Regional Planning Conference (SERPLAN) and the London Planning Advisory Council (LPAC) advocated that the whole scheme should be associated with the objectives of a development strategy for the country and the London region in particular (Gibb and Knowles, 1994). Four main arguments were advanced:

1. Contrasts between the close relationship of strategic infrastructure and regional development in France with that of the UK.
2. Growing recognition that the UK could be left out of the European high-speed rail network increased pressure on the government on the way transport infrastructure could affect the location of development.
3. Submission of proposals for explicit regional planning guidance by SERPLAN to deliver continued growth while recognising environmental constraints and the need to integrate the planning of new transport infrastructure to such a development strategy if it was to succeed.
4. To foster London as a "world city" and a need to address the economic in-balance between east and west London.

In 1986, the government and BR concluded that the anticipated increase in domestic traffic and international passenger and freight traffic could be accommodated on existing lines until the year 2005 (Simmons, 1991). This conclusion was despite the south-east having amongst the worst journey times to Central London for equivalent distances. Even without the Channel Tunnel, a case could perhaps be made for a new high speed route in this radial sector from London to cut journey times by more than 40 minutes (Collis and Hill, 1993).

Once the 1987 Channel Tunnel Act was passed, it became apparent that the level of through train services envisaged by BR, SNCF and SNCB would result in serious capacity constraints on the main routes through Kent to London (Gibb and Knowles, 1994). The following arguments favoured a new high-speed rail link:

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1. Capacity constraints imposed by the existing lines would seriously erode the reliability of international passenger and freight services.
2. Accessibility to continental Europe for regions outside south-east England, would be restricted by the present network of links.
3. Operational constraints and competition for train paths between the dense pattern of commuter services and international services would lead to unacceptable speed restraints on international services.
4. The psychological impact of having a third-rate rail system linking into the European high speed network portraying a somewhat isolated and detached position from the European Community (Gibb and Knowles, 1994).

By 1988, BR considered a Channel Tunnel rail link to be indispensable to its international rail services due to a change in the pattern and growth of journey-to-work traffic using Kent lines which had previously been static or declining. During 1987, however, it became apparent that commuter traffic had started to increase as a result of a strong employment growth in central London.

Recognising these issues, the Department of Transport invited the BR to report on options for increasing rail capacity into London. This request arose, in part, from the results of the 1987 Department of Transport "Kent Impact Study" published after the Channel Tunnel Act which found that new rail capacity would be required if growth in rail traffic was not to be constrained. BR concluded that the timing at which additional capacity could be commercially justified depended on:

1. Traffic levels.
2. The route/terminal combination chosen and its costs.
3. The benefits of additional capacity and flexibility to Network South-East and freight services.
4. The effect on traffic levels of reducing journey time.

In 1988 BR published three possible routes through Kent, and two through South London forming four route combinations (Figure 1). In addition, two other route options were considered, RACHEL (Rainham to the Channel Tunnel) and TALIS (Thames Alternative Link International System). The uncertainty about the real impact of a new railway by the public caused widespread blight and uncertainty. Opposition was caused by the major noise, visual and land-take impacts on communities in both the countryside and in London arising from the routes and terminals (Simmons, 1991).

The criteria used for route selection included technical feasibility, transport operating requirements, costs and expected rates of return and environmental considerations. However, British Rail admitted that it was particularly difficult to meet the environmental standards expected.

> *Building a new railway through 68 miles of south-east England, means some people will be affected and their present environment disrupted. Moreover, Kent is particularly rich in historic buildings and the quality of its countryside, and this calls for sensitive treatment.* (British Railways Board, 1989, p4).

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While environmental issues were recognised, the whole exercise was conducted internally by BR, without involvement of the bodies charged with responsibility for planning and the environment Simmons (1991). By March 1989 a route was chosen that, in Ashford and South London, was different from any of the 1988 routes (Figure 2). A major feature of this route was tunnels that enabled BR to claim that it was the least environmentally damaging option available.

The total length of the proposed route between King's Cross and the Channel Tunnel was 109 km, of which 37 km were in-tunnel, 26 km ran alongside existing railway and 22 km followed the alignment of the motorway. The measures to avoid serious environmental impacts increased the estimated costs by £500 million, resulting in an estimated cost in 1989 of £1.7 billion. This figure was, however, regarded as being too conservative, with many commentators predicting the cost to be in the region of £3 billion (Gibb and Knowles, 1994).

Section 42 of the 1987 Channel Tunnel Act prevented either revenue subsidies or capital grants to international railway services and British Rail was required to make a 7-8% return on capital invested (Gibb et al, 1992). Given the need for a 'market' appreciation of the risks, benefits and revenues, the Department of Transport required BR to seek a private sector partner to undertake work on the Channel Tunnel Rail Link and hence in December 1988 BR invited six consortia to bid. The Eurorail group comprising Trafalgar House and BICC was selected.

Private sector involvement brought about a widespread review of the southerly BR route. The Joint Venture 1990 route featured less tunnelling than the 1989 route and increased use of existing rail corridors through South London.

By the summer of 1990, it had become apparent that the route proposed by BR was unattractive to the private sector and those interests (represented by the Eurorail consortium) subsequently withdrew. The Government then invited BR to formulate further proposals for an affordable route that also extended to other interests; the notable response came from Ove Arup & Partners.

Having seen the BR 1989 route that featured so much tunnel through South London, Arup chose to examine radical alternatives. Through extensive consultations Arup developed a route that sought at the outset to achieve benefits beyond those that were purely operational in nature. Key among the objectives was to establish a route that minimised environmental conflict and maximised development potential. It was also clear to government, BR and Arup that domestic as well as international services were going to be a vital component of a successful proposal (Ove Arup & Partners, 1990).

In March 1990 Arup published its proposals that followed existing transport corridors, passed through derelict and landfill sites, avoided urban areas and entered London on an easterly approach via Stratford (Figure 3). Following publication it was clear that the Arup proposal would gain widespread support.

Up to 1991, little account had been taken of the externalities arising from the Channel Tunnel Rail Link beyond those associated with the EIA Directive (Gibb and Smith, 1991). It was not part of BR's remit to consider wider implications, particularly those relating to industrial competitiveness, regional development, congestion and wider environmental issues. The strategic planning implications of the Channel Tunnel Rail Link for Kent, south-east England and the country as a whole were disregarded. This situation arose from a government policy that prioritised market-led solutions and

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rejected strategic planning (Gibb and Essex, 1994). Those institutions and bodies charged with the responsibility for planning and the environment were largely outside the decision-making process.

Second Phase: 1990 -1993

During 1990-1991 both technical evaluation and political lobbying was underway with BR performing a comparative study of the routes. To aid comparison, all the proposals were modified and assessed as two track passenger railways with a 1 in 90 gradient and similar service patterns. BR's comparison report to government concluded that its Southern Approach was superior in business, financial and economic terms whilst the Arup proposal was considered the best Eastern Approach. BR then lodged a scheme with the Department of the Environment in May 1991, for a new route across Kent via Ashford, the Medway Gap, Swanley and south-east London, with a final section in tunnel under the Thames at Blackfriars to King's Cross.

After gaining an understanding of the BR proposals, Arup concluded that in terms of construction costs there was no significant difference between the Eastern route and the Southern route. A similar conclusion was reached on revenues. Although the Eastern route incurred a time penalty in getting to Waterloo, this was offset by park and ride facilities for business travel at Stratford. Arup considered the choice of route had to be based on:

1. Opportunities for carrying freight to European standards.

2. Network advantages of avoiding central London in making links with the North.

3. Development impact on regenerating sites.

4. Relative ease of implementation including the involvement of the private sector.

5. Enhanced environmental performance.

In October 1991, the Secretary of State for Transport announced his preference for a *route "along the lines put forward by Ove Arup*" and rejected the BR route on which £40M had been spent. At this point wider objectives were recognised since, in addition to environmental reasons, economic regeneration in the East Thames Corridor was cited as a major factor in the decision that led to acceptance of the Arup route.

Selection of the Eastern route represented a political victory for residents' action groups affected by BR's Southern route having persuaded at least five local Conservative Members of Parliament and the government that their marginal seats were at risk unless the southern route was abandoned Gibb and Knowles, 1994). The decision also represented acceptance by government that the provision of transport infrastructure could influence the pattern of new land-use development that in turn could influence the demand for travel. This position was later formalised into general government policy through a revised draft Planning Policy Guidance on Transport (PPG13) by the Department of the Environment and the Welsh Office in May, 1993. This fundamental policy change in October 1991 was attributed to the influence of the new Secretary of State for the Environment, Michael Heseltine (Gibb and Knowles, 1994).

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Figure 1. **Channel Tunnel Rail Link - 1988 Routes**

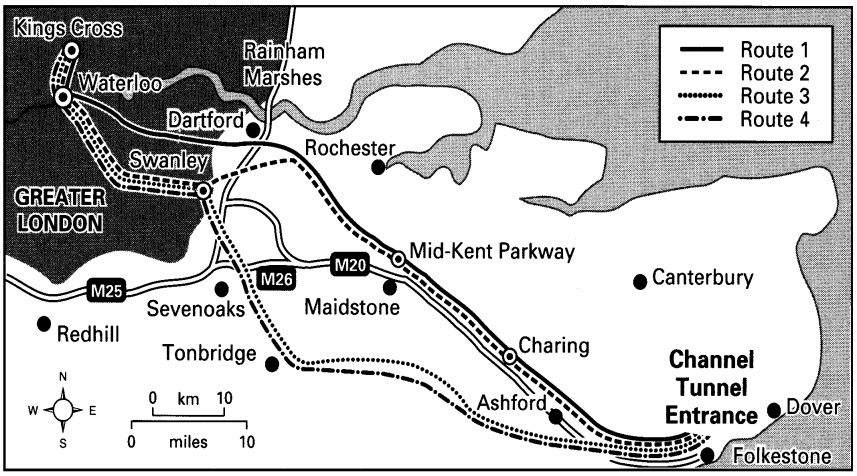


Figure 2. **Channel Tunnel Rail Link - 1989 Route**

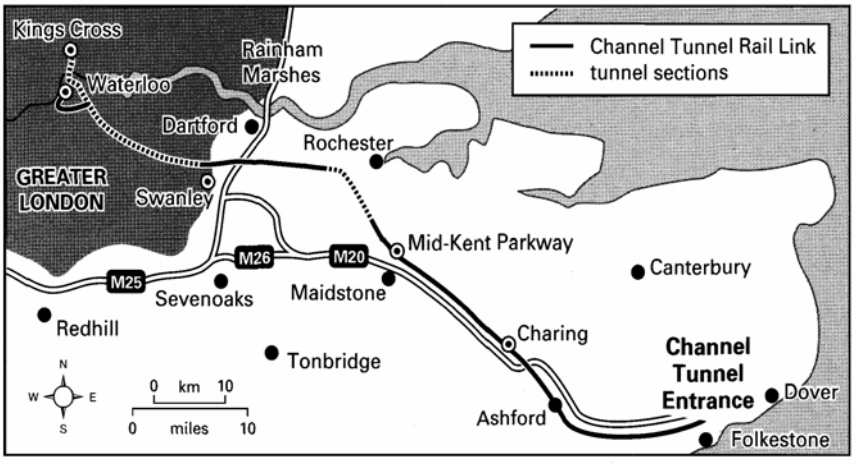
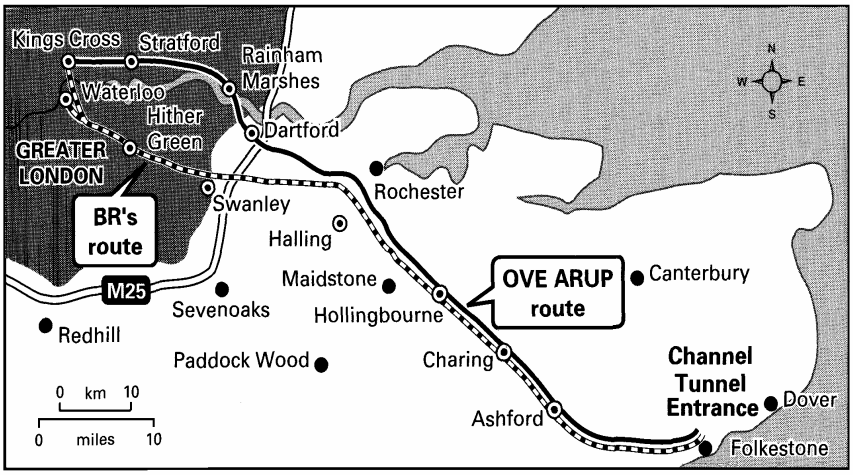


Figure 3. **Channel Tunnel Rail Link - Arup Route**



Source : Gibb, 1992.

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Investigations into the Eastern Approach Route led by BR through 1992 were supported by intensive discussions held on a confidential basis with local authorities. An explicit set of objectives were agreed with government and regular meetings at ministerial, local authority member and technical officer level were held to ensure that all were agreed as options were considered and decisions taken.

Government insisted on an alternative to Kings Cross with the second London terminal at St. Pancras and an access route from Stratford. The St Pancras design was submitted in February 1993 and BR submitted its report in March 1993 for a two-track passenger line with potential freight capability (Union Railways, 1993). The cost of the basic project had been reduced to about £2.4 billion (within a range £2 billion to £3 billion) while maintaining environmental standards.

The economic regeneration options outlined in the March 1993 Union Railways report identified a number of transport infrastructure projects capable of stimulating economic regeneration. It also outlined various means to reduce environmental impact albeit at a higher cost due to increased tunnelling.

The government's proposals for south-east regional planning guidance were published in March 1993, while the Department of the Environment issued a paper on the East Thames Corridor and set-up an East Thames Task Force to report by March 1994. The Task Force was to liaise with Union Railways and the Department of Transport on finalising the rail link and selecting the location of intermediate stations and related development opportunities. The integration of land-use and transport planning was now accepted both in theory and practice (Gibbs and Knowles, 1994).

Third Phase: 1993-1998

Delays to the £3 billion, 109 km long Channel Tunnel Rail Link (the Rail Link) were announced in November 1993 with the Hybrid Bill not being programmed for submission until November 1994 and two years being allocated for its passage through Parliament. With five years for construction, 2001 was set as the opening year.

The government then determined that the Rail Link would be delivered by the private sector through a “design build and operate” arrangement. Bidders had to state how much public funding they needed and how the risks were to be managed. The contract to build the Rail Link and run the UK Eurostar train service was awarded to London & Continental Railways Limited (LCR) in February 1996. The contract envisaged that LCR would finance, build and operate the Rail Link drawing revenue primarily from Eurostar UK and from its use of the track by domestic train services. The Department of the Environment, Transport and the Regions provided LCR with direct grants of some £1 730 million for the construction and use of the track by domestic train services. It was expected that construction would start in 1998 with opening in 2003 (National Audit Office, 2001).

At the end of 1997 it had become clear that overly optimistic forecasts for the operating performance of Eurostar UK meant that all the money from private investors could not be secured. Hence in January 1998, LCR sought an additional £1,200 million in direct grants. While in June 1998, a restructured deal split the construction of the route into two sections: Section 1, from the Channel Tunnel to near Ebbsfleet on the outskirts of London and Section 2, from near Ebbsfleet to St. Pancras. Railtrack was brought in both to manage construction and to purchase the completed Section 1. Railtrack also had an option to purchase Section 2 (recently withdrawn). Construction of Section 1

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began in October 1998 and is on target for completion by 30 September 2003. Completion of the entire Rail Link is now scheduled for late 2006 some 12 years after opening of the tunnel.

Fourth Phase: 1998-2000

Although the Channel Tunnel Usage Contract obliges the Government to provide sufficient infrastructure to meet forecast demand for use of the Tunnel, there is no obligation to build a high-speed link. The obligations require journey times between London and Paris to be between 2 hours 55 minutes and 3 hours 5 minutes. Track and signaling improvements since the opening of the Channel Tunnel have allowed direct services to be quicker than these obligations. Indeed, the existing network and the capacity of the Waterloo International terminal, with minor upgrades, should be sufficient to meet international demand until around 2025, although extra network capacity is needed if the expected increase in demand for domestic services is to be met (National Audit Office, 2001).

The economic justification for financing the Rail Link was based on the view that the estimated economic benefits outweighed the required subsidy. The main economic benefits being reduced journey times for passengers and increased rail capacity, along with expected regeneration benefits.

Until the Channel Tunnel Rail Link, DETR considered that regeneration benefits were too uncertain to be quantified in money terms; and the extent to which they could be quantified would represent double counting of passenger benefits already included in the assessment. The first value for money assessment of the restructured deal in March 1998 reflected closely the traditional approach of excluding regeneration benefits. The government's Standing Advisory Committee on Trunk Road Appraisal (SACTRA) provided evidence for this position. The SACTRA report stated that "*there are strong theoretical expectations that all or a part of a transport cost reduction will lead to economic impacts outside the transport sector, but the empirical evidence of the scale and significance of such impacts is weak and disputed*" (SACTRA, 1999).

In re-negotiating the original deal, the DETR made several changes in its methodology for estimating the benefits that would be generated. In the final assessment the DETR excluded benefits to non-UK resident passengers, but included an estimate of regeneration benefits amounting to £500 million giving a most likely outcome of around £3,000 million in total benefits for a total public sector contribution of some £2 000 million (National Audit Office, 2001).

DETR estimated that the government would be willing to pay £1,000 million through conventional regeneration funding to secure benefits equivalent to those likely to result. This figure was then halved to take account of the double counting. If regeneration and passenger benefits are not fully achieved, then the Rail Link is unlikely to be good value for the taxpayer on economic grounds. The National Audit Office, therefore, concluded that it was essential the DETR ensure that such benefits were achieved as far as it was able. This should include close monitoring and evaluation of the actual value of the regeneration benefits achieved against those anticipated (National Audit Office, 2001).

Other benefits were also estimated, such as environmental benefits arising from freight transfer from road to rail and road decongestion benefits as people opted to travel on Eurostar UK rather than flying or driving. The National Audit Office was however, unable to confirm the reasonableness of these estimates as the DETR was unable to locate detailed evidence. The National Audit Office also found that several aspects of the value for money assessment were questionable. These included:

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1. Use of out of date economic growth assumptions to estimate time savings benefits.
2. Incorrect assumptions on the time savings.
3. Incorrect removal of the costs of £130 million for works at Kings Cross.
4. Inconsistency in passenger forecasts and rolling stock availability.

Wider Lessons from CTRL

The Channel Tunnel Rail Link illustrates the difficulties of long-term strategic planning particularly within a market-led approach to transport investment. The delays were in the main due to:

1. The decision to separate the Rail Link from the Channel Tunnel processes.
2. Debate over rail capacity in Network South-East and the lack of strategic vision to separate high-speed international trains from freight and domestic commuter trains.
3. BR's pursuit of a long and costly evaluation of alternative routes and terminals leading to a southern route rejected for political reasons leaving the completed Waterloo Terminal on a spur from the Rail Link.
4. Lack of appreciation of the relationship of land-use and transport infrastructure.
5. Difficulties in financing the proposal.
6. Late insistence by government on an option of a cheaper terminal at St Pancras.

Although the Rail Link has a significant bearing on land use and transportation planning in the south-east, and potentially on the whole of Britain, planning has been project-led rather than set within a framework of strategic policies and land-use strategies. The absence of such a framework encouraged other parties, such as Arup, to put forward alternatives, most of which addressed wider issues outside the remit of the BR Rail Link Team.

What underlies the UK approach is the manner in which key national projects are delegated to organisations that do not have the remit to examine wider issues such as economic or environmental considerations. Once operating within its narrow remit, BR experienced frequently changing objectives set for the Rail Link as summarised in Table 5 that inevitably affected costs and delivery date. It is apparent that route selection proceeded in a fundamentally different manner to that adopted for the delivery of highways, the latter having a public review of alternative alignments. That said, highway proposals were also guilty of using a narrow set of objectives as witnessed by the lack of consideration of alternatives to road building as solutions to transport problems.

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Table 5. **Changing objectives for the Channel Tunnel Rail Link**

Date	Objective
1986	A new line was not required as all traffic could be accommodated on existing, upgraded, lines.
1987	The rail link was accepted as necessary for international passenger traffic and preparations commenced.
1988	Government required that the scheme be delivered through the private sector.
1990	Benefits for Network South-East domestic passengers as well as international traffic were to be provided.
1991	At the time that the Arup route was selected a further objective was added to support the regeneration of the East Thames Corridor.
1992	Government request to consider a cheaper St Pancras alternative to a terminal at Kings Cross.

Would Strategic Environmental Assessments (SEA) have improved the situation by providing a strategic framework for the assessment of the project? As SEA places a fundamental reliance upon the definition of a set of objectives against which the different options may be formulated and assessed, so it may at least have exposed some of the wider arguments relating to the Southern route versus the Eastern routes.

SEA also places an emphasis upon a consultation process that is thorough, genuine and responsive. Whether the narrow decision-making practices that typified the early stages of the Channel Tunnel Rail Link would have been modified is uncertain, although it could well have resulted in a more structured approach to transport and land-use planning for the south-east region.

In the delivery of transport infrastructure, the government frequently is both developer and decision-maker and is often perceived to prioritise cost saving in preference to the wider social and environmental goals. In the case of the Channel Tunnel Rail Link, the importance of political considerations have been fundamental to the delivery of a scheme intended to provide benefits against a wider or cross-cutting set of objectives than those of simply transport alone. The way in which the route was selected suggests that the weight given to environmental factors in government decision-making is dependent on whether political survival is threatened, as was the case in Kent and south-east London.

The role of environmental and economic appraisal has been one of supporting the political decision-making process, gradually causing a widening of objectives and ultimately a fundamental change in the scheme. The unique nature of the project and the absence of any legal requirements for Strategic Environmental Assessment, despite the words of wisdom in the 1991 Policy Appraisal and the Environment, (Department of the Environment, 1991) inevitably led to a project being propelled into an, at best, ill conceived planning framework.

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As the UK has embarked upon the integrated appraisal of transport plans and projects and as the SEA Directive forcefully sets the framework for projects with significant environmental effects, the Channel Tunnel Rail Link experience should not be repeated. However, as the M4 Common Appraisal Framework reveals, external events can often stimulate change to major projects given the long planning periods associated with transport schemes.

3.2 M4 common appraisal framework

Origins and objectives of the M4 common appraisal framework

In 1989/90, the Welsh Office commissioned the South Wales Area Traffic Study (SWATS) which examined the existing and future performance of the motorway and trunk road network in the area. The effect of traffic growth on the M4 around Newport was identified as a particular matter of concern, with increasing traffic congestion and delay expected over time. Subsequently in 1991 the Secretary of State announced a number of additions to the roads programme, including a relief road around Newport. A Stage 1 commission to examine options for such a road was then carried out by Ove Arup & Partners.

In July 1995, the Secretary of State announced the preferred route for the M4 Relief Road which runs between Magor and Castleton (Junction 23 to 29), passing to the south of Newport; a minor amendment to the route was announced in April 1997. Arup were subsequently appointed in March 1997 to a Stage 2 commission to develop the scheme with adequate detail in order to enable the Secretary of State to progress the Orders for its delivery.

As part of the activities to confirm the appropriateness of the proposed scheme, consultants were appointed to carry out a Common Appraisal Framework (CAF) study of alternative transport options which aimed to address the same objectives as the M4 Relief Road.

In July 1998, the Welsh Office produced "Driving Wales Forward - A Strategic Review of the Welsh Trunk Roads Programme" (following on from a consultation document in July 1997, produced by the Welsh Office). The Strategic Review makes the following statement about the M4 around Newport.

> *The consultation paper sought views on how the problems of congestion which already exist, and which are predicted to worsen steadily, on the M4 motorway in south-east Wales should be resolved. It noted that the Welsh Office had already engaged consultants to carry out a review, using a common appraisal framework, of the options for dealing with the problems around Newport through road and/or public transport enhancements, and emphasised that, especially in view of the environmental concerns which have been expressed, we would wish to study all the options closely before taking decisions on whether to proceed with the schemes for a relief motorway south of Newport, and for widening the existing M4 motorway north of Cardiff.*
>
> *Opinions were sharply divided. The construction of the M4 relief road around Newport was seen by some as incompatible with the aims of an integrated transport policy, and hence as an acid test of the movement away from 'predict and provide' to a more subtle and long-term approach to the relief of congestion. It was characterised as destructive, expensive, and ultimately futile. It was suggested that development of rail services in south-east Wales could be achieved for a fraction of the cost of the relief motorway, and since most journeys around Newport were short*

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(many for commuting purposes) the problem should be amenable to a public transport solution allied to traffic management measures aimed at restricting access to the motorway.

The effect of the M4 relief road on the Gwent Levels, and in particular the diverse habitats of the SSSIs in that area, attracted considerable comment. It was suggested that there would be an enormously damaging effect on an extremely fragile environment, not simply from the construction of the road itself but from the associated development which would inevitably follow. A parallel was drawn with the cancellation of the Salisbury bypass proposals.

Business and local authority interests recognised these issues, but considered that the economic effects of congestion in south-east Wales were potentially so serious that additional capacity had to be provided. There was a widespread view that, even after applying a common appraisal framework to the problem of the bottleneck at and around the Brynglas tunnels, there could be no credible alternative to the development of the M4 relief road; rail and other public transport options simply could not cater for the demand for travel in the South Wales corridor. An alternative of upgrading the proposed Newport Southern Distributor Road was suggested, but the relevant local authority had investigated this possibility and concluded that on cost and environmental grounds this could not provide an effective answer to the problem.

We recognise that the two proposed M4 schemes which we inherited raise extremely sensitive issues. There are strong arguments in favour of proceeding with them, not least because of the sheer volume of traffic using the motorway and the likelihood that even the most ambitious of public transport packages could not realistically expect, at least in the short term, to achieve sufficient success to make a significant difference to the levels of congestion and delay which are likely to arise. Equally, however, we recognise the force of the arguments put by those opposed to the schemes, particularly in respect of environmental impacts.

We believe that it would be entirely wrong to reach a decision on the M4 relief road or the closely related widening north of Cardiff until we have had the opportunity to take into account the conclusions of the common appraisal framework study which our predecessors commissioned (and which will produce results consistent with our new approach to appraisal). This study will also be able to take into account the effects on travel demand of our recent announcement of plans for the development of a European railfreight terminal at Wentloog near Cardiff. We will therefore make a separate announcement about our plans for the M4 corridor at a later date. In the meantime... we will investigate the potential for the introduction of intelligent Transport Systems to assist in the management of the existing motorway.

The purpose of the CAF study was to:

1. Undertake a "Common Appraisal" of options to provide relief from the anticipated effects of increasing traffic on the M4 around Newport between Magor and Castleton.

2. To appraise options on the basis of acceptable environmental, financial, economic and safety criteria.

3. To bring all the relevant issues together to advise the Secretary of State on whether he should proceed to seek the statutory powers to construct the M4 Relief Road.

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The M4 CAF was undertaken at a time of rapid change in transport policy, assessment and appraisal. Not only was there a change in government, but several changes in policy, most notably a commitment to an Integrated Transport Policy, and publication of the Transport White Paper and the Welsh Transport Policy Statement (July 1998).

Study boundaries

The M4 CAF was a multi-modal appraisal of different forms of transport, including cars, public transport, freight, cycling and walking developed in the absence of any technical appraisal guidance. The study was not restricted to consideration of options that fall within existing powers, nor by any possible difficulties in promoting potentially unpopular measures. Essentially, the study was a technical appraisal unconstrained by political considerations. Implementation issues were to be addressed once the study conclusions were known.

Defining and constraining the study area was a technical decision-making issue dictated in part by the potential for transportation measures to require actions or cause effects beyond the study area and also by the desire to limit the area over which the economic and environmental appraisal needed to be conducted. Had a decision been taken to consider electrification of the Great Western rail line from Swansea to London then the entire study area may have been extended beyond is original geographic focus. A related issue is the potential for political constraints to restrict the search for potential solutions to those within the administrative domain of the organisation investigating the transportation problem, ignoring those that are the responsibility of others. While the M4 CAF did not investigate measures to be taken for the M4 in England, the potential for cross-boundary issues to complicate appraisal practice was nevertheless evident.

The size of the study area also influenced the resources and manner in which the transport models were constructed and hence the level of appraisal that could reasonably be provided. As the M4 motorway also served local transport needs of Newport, so transport measures were directed at both an urban scale and also at the intra-regional scale. This situation highlighted the need for a flexible approach to appraisal in which the level of detail varied across the study area.

Transport measures

The M4 CAF examined a range of alternative transport measures that satisfied the study objectives and then formulated three basic strategies for assessment:

1. Road building strategy.

2. Enhanced public transport strategy.

3. Traffic/demand management strategy.

Within the enhanced public transport strategy both infrastructure and fiscal elements were included with a real term reduction in public transport fares being assumed. The traffic/demand management strategy also employed a mix of infrastructure and policy measures including land use measures, urban car parking charges, urban road pricing, infrastructure and telematic measures applied to the M4 and telecommunications.

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A hybrid strategy was also prepared drawing upon the elements of other strategies to produce a good combination of measures assuming the M4 Relief Road was not built. Motorway tolling was included in this strategy.

Assessing environmental performance

The methodology adopted for the M4 CAF was an objectives-led approach with the following key stages in the appraisal:

1. Define geographic and time boundaries for the study.
2. Integrated specification of transport scenarios.
3. Establish the objectives.
4. Identify potential effects of individual transport measures.
5. Identify appropriate indicators.
6. Define baseline conditions.
7. Forecast effects of transport strategies.
8. Appraise relative performance of each transport strategy.
9. Identify preferred strategy.

In seeking comparability of assessment between transport options and different modes, it was necessary to develop objectives and indicators that address the likely environmental impacts. This task was undertaken by technical decision-makers with other stakeholders having little involvement in the definition or validation of such objectives. Had the objectives been subject to review by elected decision-makers and other stakeholders then, they may well have been more focused and proved to be a better aid to the elected decision-makers.

Increasing the involvement of other stakeholders in the objectives setting task may risk some degree of double counting of transport, economic and environmental indicators. While it is good practice to avoid double counting in different parts of the evaluation process, a pragmatic approach is needed which allows appraisals to present effects in ways that are a meaningful exploration of the issues, even where this leads to some degree of double counting. However, it is essential that elected decision-makers clearly appreciate where this occurs. The environmental objectives and indicators adopted in the M4 study are presented in Table 6.

The various transport options under consideration were then evaluated against the objectives extending beyond the traditional economic and transport appraisal techniques that were formerly so dominant. The results were then reported in an Environmental Summary Table to enable those indicators that had no bearing on the option selection process to be removed from further consideration.

The appraisal of the scenarios was assisted by combining the performance of each transport measure as recorded by the various indicators into a Framework. However, it was important that such a Framework should not be too long and complex, as it would be difficult to appreciate the issues. Furthermore, the desire was to assemble a summary of this on a single page for ease of understanding.

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Table 6. **M4 CAF Objectives and Strategic Indicators**

Issue	Objective	Strategic Indicator
ENVIRONMENT		
Noise & Vibration	Traffic noise levels in the vicinity of transportation infrastructure are minimised (EO1)	Length of main transportation network with a change in noise levels
Air Quality	Total greenhouse gas emissions from transport are minimised (EO2)	Change in CO_2 emissions in the regional transportation model area
	Any increase in the acidification loading due to transport is minimised (EO3)	Change in NO_x emissions in the regional transportation model area
	Emissions from transport affecting local air quality are minimised (EO4)	Percentage change in total emissions of NO_x within Newport
Landscape/ Townscape	Minimise adverse change in designated or historic landscapes (EO5)	Area of transportation infrastructure affecting designated or historic landscapes
Biodiversity/ Nature Conservation	Minimise any adverse effects on the integrity of designated sites of national importance (EO6)	Area of transportation infrastructure affecting designated sites * Extent of direct or indirect risk to designated sites
	Minimise adverse effects upon locally designated sites of irreplaceable value (EO7)	Area of sites of local ecological value directly or indirectly affected
Cultural Heritage	Minimise adverse affects on the integrity of nationally designated sites of cultural heritage (EO8)	Number of Scheduled Ancient Monuments or Conservation Areas experiencing a change in their setting
Water Resources	Minimise any increase in the susceptibility of land use activities to flood risks (EO9)	Area of floodplain occupied by new transportation infrastructure
ACCESSIBILITY		
Community Severance	To reduce community severance or conflict between motorised and non-motorised travellers (EO11)	Length of transportation infrastructure with a change in severance

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Issue	Objective	Strategic Indicator
INTEGRATION		
Land Use, Plans and Policies	Minimise the need for property demolition or land take (EO12)	Potential for property to be demolished or relocated
	Maximise support to transportation, land use planning, environmental sustainability and health policies (EO13)	Extent to which plans and policies are assisted or hindered
Resource Use	Minimise the amount of energy consumed by the transportation network (EO14)	Change in the consumption of energy within the regional transportation network
Construction	To minimise risk of extensive construction disturbance to sensitive features (EO15)	Area of major construction works within 100m of properties or designated sites

Note: Transportation infrastructure includes all transport related works having a discernible physical presence and applies to cycle routes, bus routes, pedestrian facilities and traffic management measures as well as roads and railways.

The process of reducing the fourteen indicators to a core set to present in the summary report to elected decision-makers proved to be one of the challenging aspects of the study. Those indicators that failed to provide any basis for discriminating between the transportation options were easily eliminated, but others proved to be more problematic. While the noise indicator was considered worthy of reporting, in practice, the assumptions taken in its calculation meant that its use as a headline indicator could not be sustained. Also, as some indicators were essentially telling a similar story to decision-makers, surrogates were selected to summarise several indicators.

Transport Appraisal

The following two general groups of transport indicators were defined for the CAF:

1. Movement and accessibility indicators.

2. Other physical descriptors.

Use of EMME/2 transport model meant that it was not possible to estimate queues and delays at junctions and hence indicators such as person hours per year in queues could not be employed. Also, as the model represented travel demand on an average weekday in a neutral month, it was not possible to produce statistics relating to tourist traffic. The transport objectives and indicators used are set out in Table 7.

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The transport performance of the scenarios was assessed against eight objectives supported by16 indicators. However these were then reduced to a smaller more comprehensible set for communication to decision-makers. In order to achieve such simplification, the indicators were compared with each other to allow them to be grouped with a representative one for that group selected so that only the following four indicators were reported:

1. Traffic relief on the M4.
2. Reliance on car use.
3. Accessibility.
4. Freight.

The emphasis upon reduced reliance on the private car and to reduce the growth in the length of journeys was established in order to show the overall transport impact of each scenario with the indicators showing the changes in person trips by mode, person kilometres travelled and person hours.

Economic and Financial Appraisal

The financial appraisal employed the following three indicators:

1. Capital costs including construction.
2. Recurring costs including infrastructure maintenance, vehicle operating and maintenance costs.
3. Revenues.

The costs of the various scenarios often could not be divided, preventing comparable appraisal with competing local schemes as no suitable methodology for attributing costs was available, instead the cost attribution used the proportion of benefits which accrue to users who could reasonably have used the M4.

Economic indicators covered items appropriate to cost benefit analysis and extended beyond the financial indicators to assess broader resource issues. These comprised the following:

1. Accident cost savings;
2. Times savings; and
3. Operating cost savings, including operating cost changes for private vehicles.

The evaluation framework disaggregated the economic indicators into working and non-working time for highway and public transport users. In line with the other appraisal topics, the indicators were reduced to only one indicator - Economic Net Present Value. The enhanced public transport and road building scenarios produced the highest user benefits through reducing travel times without increasing users' money costs of travel. Both the hybrid and the traffic/demand management scenarios involved

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substantial increases in travel costs and revenue from tolls and fares that balance the overall user disbenefits. The hybrid scenario produced the highest overall economic NPV, although revenues had been excluded from this calculation.

Table 7. **Transport Objectives and Indicators**

Issue	Objective	Strategic Indicator
Motorway congestion	To provide relief from the anticipated effects of increasing traffic on the M4 motorway around Newport (T1)	M4 travel times between junction 23 and 29 Motorway flow/capacity ratios
Impact on Newport	To avoid any adverse traffic impact on the transport network of Newport (T2)	Person trips crossing Newport cordon by mode Person trips crossing River Usk by mode
Network impact	To reduce reliance on the private car (T3) *(NB. to achieve a modal shift towards public transport)*)	Person trips by mode Person km travelled by mode Person hours travelled by mode Trip by purpose and mode
Trip length	To reduce growth in the length of motorised journeys (T4) *(NB. related to the government's objective of reducing the need to travel)*	Average trip lengths by mode
Accidents	To improve safety for road users (T5)	Personal injury accidents Casualties from personal injury accidents
Accessibility and integration	To promote accessibility to every day facilities for all, especially those without a car (T6)	Journey times between centres of population by mode Impact on pedestrians and cyclists Integration of public transport and other modes
Freight	To promote efficient and reliable movement of freight (T7)	Goods vehicle hours
Reliability	To improve travellers' journey time reliability (T8)	Reliability of journey times

The Common Appraisal Framework Summary Table, presented in Table 8, suggested that the road building scenario would be effective in providing a balanced and largely congestion free motorway. Although performing well in economic terms, this scenario would have environmental impacts on sites of national importance as well as increase road traffic and hence be against government policy. The enhanced public transport scenario would cause a limited change from car to public transport will little impact on the M4 congestion. The pricing measures within the traffic/demand management scenario indicated that a package of restraint could be effecting in relieving the M4 of traffic, however it did generate large user disbenefits. Finally, the hybrid scenario reduced flows on the M4 and produced a mores substantial modal transfer to public transport.

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Wider Lessons from the M4 CAF

The M4 CAF in considering all technically feasible transport measures essentially delivered a hypothetical solution that was not founded in political reality, as elected decision-makers were external to the study process. As a result, the recommendations for demand management through tolling were regarded as being too radical. In part this situation arose from a complex local policy context in which elected decision-makers were unclear on how to intervene and interact with the complex issues.

The lack of involvement by elected decision-makers was mirrored in the narrow selection of stakeholders active as consultees during the process. The User Group Forum being set up to establish ownership of the transport measures, but no wider involvement to represent environmental or social interests. This situation led to the technical decision-makers setting the detailed objectives for the M4 CAF and hence they failed to address the tensions between sustainable development and transport faced by the National Assembly for Wales. The study objectives also, being narrowly defined, failed to address the tensions between local, regional and national objectives which were also in a period of change.

A lack of technical guidance available on the setting of objectives and indicators was a weakness in that it highlighted the lack of a high level policy structure for dealing with issues such as the appropriate level of service that the transport network should provide. This was a crucial aspect where a clear direction from elected decision-makers would have been desirable. Other aspects where difficulties were encountered in dealing with the results were the manner in which the do minimum or future baseline conditions were constructed and consideration of how to make best use of the existing M4 corridor.

In exposing the shortage of guidance, M4 CAF along with other studies such as the Trans-Pennine Corridor SEA Study, in addition to the decision to establish Multi-Modal Studies, stimulated a need for new strategic appraisal guidance. This resulted in the Guidance on the Methodology for Multi-Modal Studies (DETR, 2000a) and preparation of the Guidance on SEA for Multi-Modal Studies. It also highlighted the need for elected decision-makers to set clear performance based objectives for the transport network or to provide increased levels of involvement during such planning studies.

3.3 The Roads Review

As noted earlier, the new Labour government inherited the results of the previous government's Roads for Prosperity White Paper and were faced with many difficult decisions concerning whether to progress an unpopular roads building programme. By mid-1998, the government had undertaken a review of the trunk road programme in England (the Roads Review), while seeking to develop a more integrated transport policy. Of the approximately 150 schemes at various stages of development, about half were capable of being started within seven years. The remaining 68 were potential candidates for the Targeted Programme of Improvements.

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Table 8. **M4 South Wales Common Appraisal Framework Summary Table**

Indicator	Objective	Road building scenario	Enhanced Public Transport Scenario	Traffic/Demand Management Scenario	Hybrid Scenario
Transport: Local issues	Optimise local impact	43% reduction in M4 traffic. Minimal impact on Newport	6% reduction in M4 traffic. Small beneficial impact on Newport	77% reduction in M4 traffic 11% increase in traffic in Newport	58% reduction in M4 traffic 24% increase in traffic in Newport
Transport: Strategic issues	Assist National Transport Objectives	Objectives not assisted	Assist these objectives	Neutral to objectives	Assists these objectives
Environment: Local issues	Minimise adverse local impact	Local benefits to existing M4 corridor. Local adverse effects on the Gwent Levels	Improvement in local condition, but some areas deteriorate	Complex effects on local conditions, some improvement but adverse effects from traffic diversion	Complex effects on local conditions, some improvement but adverse effects from traffic diversion but less than T/DM
Environment: Strategic issues	Minimise adverse strategic impact	Increase in CO_2 emissions. Loss of 83 ha from SSSI	Reduced CO_2 emission 22 ha from SSSI	Large reduction in CO_2 emissions. No land take from SSSI	Reduced CO_2 emissions. Loss of 1.2 ha from SSSI
Economic: Local issues	Maximise traveller benefits	£440m	£1 038m	-£3 556m	-£464m
	Maximise accident savings	£56m	£83m	£241m	£74m
Economic: Strategic issues	Maximise economic value (NPV)	£273	£1 103	£549m	£1 332m
Capital Cost of Scenarios * (undiscounted)					
Total **		£340m	£930m	£176m	£653m
attributed		£430m	£255m	£176m	£1 129m

* The capital costs would be met from a variety of sources, and would, in some cases be off-set by revenue.
** These costs are non-attributed and are likely to generate benefits elsewhere.

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Each of the potential candidate schemes were appraised using the New Approach to Appraisal (DETR, 1998c) using information gathered from the previous economic, environmental and scheme assessment reporting exercises. An AST was produced for each of the 68 schemes forming a key input to the decisions announced in the Roads Review (DETR, 1998b). The single page AST represented the first occasion that environmental, economic and social information has been brought together in a concise and consistent manner. To meet a more open and transparent process of decision-making the ASTs were also published (DETR, 1998c).

Publication of the ASTs allowed researchers to explore how decisions in the Roads Review related to the measured performance of each scheme against the five stated objectives in the government's white paper *"A New Deal for Trunk Roads in England"* (see page 11) and also whether other factors were being used. Nellthorpe and Mackie (2000) developed a model to reproduce the pattern of decision making. This model then allowed the researchers to derive the implicit weights applied to the 15 objectives presented in the ASTs.

While the process adopted in the Roads Review provided a framework within which consistency could be achieved, decision-makers could either incorporate other factors not presented in the AST, or disregard some of the factors if they were considered to be unreliable or unimportant. The Roads Review process was able to arrive at one of the following four outcomes:

1. A scheme was placed on the Targeted Programme of Improvements (TPI).

2. The decision was deferred and the scheme was passed to the Regional Planning Conference (a new body) to be the subject of a multi-modal study.

3. The route on which the scheme lay was to become a local highway authority responsibility.

4. The scheme was withdrawn.

The key decision was whether a scheme was to enter the TPI and 37 of the 68 schemes were included in the TPI, with only 9 schemes withdrawn. In constructing a model of the decision-making outcomes of the Roads Review, Nellthorpe and Mackie (2000) concluded that only 8 of the 15 Roads Review objectives (see Table 2) played a key role in the decisions. Biodiversity, water impacts, local air quality, as well as the high level objectives of "accessibility" and "integration" were found not to have played a role in the decision-making process. Consequently the high level objectives of environment, safety and economy with noise, landscape, heritage, safety, journey times and vehicle operation costs, journey time reliability and regeneration being the key determinants of the Roads Review outcome.

It was inferred that "integration" could double count other criteria as it plays a role in determining the outcome of other factors. For example, a project that is well integrated with planning policies is also likely to perform well on "regeneration", while one that contributes to modal integration is likely to yield environmental benefits.

As the processes for estimating "accessibility" and "integration" are fairly crude compared with the COBA analysis or the air quality assessment, so Nellthorpe and Mackie (2000) considered that this might be translated into a lack of robustness (or perceived lack of robustness). In such a situation the decision-maker might take relatively little account of these sub-criteria. The limited statistical role

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attached to "accessibility" and "integration" in the decisions was also seen to be potentially associated with decision-maker fatigue as these criteria appear towards the bottom of the AST.

In examining the implied trade-offs between the AST sub-criteria, Nellthorpe and Mackie (2000) found improving landscape impact from Moderate Negative to Slight Negative was worth approximately the same as a £20m reduction in scheme cost, although this assumed a linear cardinal scale on which to map the scores. Nellthorpe and Mackie (2000) defined a series of implicit values relative to cost (PVC) with central estimates of:

1. Noise: £3 000 per dB(A) per property over 30 years.
2. Landscape: £20m.
3. Heritage: £10m.
4. Reliability: £20m.
5. Regeneration: £50m.
6. Safety: £1m of benefits were valued at £1.28m.
7. Time Savings: 1 peak minute over a scheme's life was valued at £3.2m.

Nellthorpe and Mackie (2000) concluded that the time-savings benefits were probably down rated by a factor of two or three relative to the conventional COBA values.

A traditional criticism of road appraisal and decision-making in the UK has been its perceived bias towards monetised values of time, safety and cost. The AST was considered by Nellthorpe and Mackie (2000) to have addressed this situation, as the scores for noise, landscape, heritage, reliability and regeneration were significant in explaining the pattern of decisions in the Roads Review, with the potential of too little weight being placed on travel-time benefits.

There were merits in having a single team to review the road proposals in single action as this provided opportunities for greater consistency. However, this was probably a unique situation for the UK as transport planning is being devolved to the Government Offices in the Regions and the Regional Planning Assemblies.

4. ENHANCING TECHNICAL AND POLITICAL DECISION-MAKING

This final part of the paper explores the different types of decision-maker and their evolving roles in strategic integrated appraisal. Crucial to the analysis of the next steps in appraisal practice is the contention that a change in appraisal culture will take time to permeate into everyday transport planning practice. This transition phase will also mark a difficult period in which any failure to deliver

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the 10 Year Transport Plan and the potential loss of flexibility that integrated appraisal may cause elected decision-makers could result in some aspects of strategic integrated appraisal being rolled back.

The following paragraphs explore some of the implications of the changing domain for technical and elected decision-makers and the increasing involvement of stakeholders in the decision-making process. These aspects provide the rationale for needing to change the perceptions of decision-makers towards the appraisal process. This then leads to consideration of the enhanced role for decision-makers, particularly elected decision-makers.

The final part of this paper provides a series of conclusions on strategic integrated appraisal and the implications for decision-makers.

4.1 Types of Decision-Maker

To commence an exploration of the role of decision-makers and transport planning, it is helpful to distinguish between two classes of decision-maker. First are the non-elected technical decision-makers that act as gatekeepers to both resources and the flow of information. The second group comprises the elected decision-makers where political accountability for making the decision rests.

Technical decision-makers include both the public servants in central and local government and the professionals that undertake the various appraisal activities. The public servants have a dual role, in that they both advise elected decision-makers and direct the work of the professionals. Consequently the orientation of public servants as the "client" has a fundamental bearing upon not just the direction of the appraisal, but more fundamentally on the quality of the appraisal undertaken and the information that is then communicated to the elected decision-makers.

The professional decision-makers essentially comprise the study manager who serves as the link to the client. The study manager is also a gatekeeper since there is a filtering of the two-way flow of technical information between the client and the study team. The study manager also has control of study finances and hence the scope of the appraisal activities.

4.2 Changing Domain for Technical and Elected Decision-Makers

As the role of transport is recognised to affect all aspects of life, so transport policy appraisal has sought to encompass a widening array of technical issues such as health and more explicit consideration of different social groups. Other forces are also increasing the technical complexity of transport planning and decision-making:

1. Technological developments.
2. Scarcity of resources.
3. Increased recognition of environmental effects.
4. Increasing cost of labour and capital.
5. Scale of new infrastructure (Hieronymi, 1993).

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An important characteristic of major transport infrastructure projects is that they generate economic, financial, transport and environmental impacts at local, regional or national scales. Environmental effects arise generally at the local or regional level, while financial burdens are spread throughout the nation or region and the positive economic impact may be experienced at the national as well as regional scale. In responding to this phenomenon with new appraisal processes, political decision-making and accounting structures have consequently become more complicated.

Overtime the legal complexity of transport planning has increased with additional assessment procedures to be satisfied and more extensive means of recourse to law where interests are affected. The advent of the UNECE Arhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (UNECE, 1998), as well as the SEA Directive will no doubt provide further opportunities to challenge failures to follow best appraisal practice.

As an increasingly diverse array of technical issues are examined, so this expansion brings with it an increasing array of stakeholders and coalitions of interests that interact to help shape policy. In addition, there is the hidden impact of assumptions, customary procedures, and/or prior knowledge and theory (Richardson and Hayward, 1996).

As a result of these forces, the number of decision-makers that participate in all stages of the planning process increase as the decision-making process becomes more complex reflecting the different preferences of various interacting interests. Yet the very increased technical and financial complexity of major projects makes an ever-wider political consensus a prerequisite for successful project planning and implementation.

From the previous sections it is evident that the nature of appraisal has changed such that technical and political decision-makers need to accommodate the following:

1. **Expanded Coverage of Topics:** Appraisal based upon time, cost and safety impacts are seen to be too narrow. Expansion into environmental and social aspects poses formidable problems in terms of measurement and valuation.

2. **Plan-led Focus:** Appraisal is now focused upon the area or corridor level, on the interaction between and integration of modes and on the variety of funding mechanisms rather than project appraisal.

3. **Changing Balance of Power:** The balance of power between the public and government has changed with governments now needing to demonstrate their case to an often sceptical public supported by professional expertise.

Essentially these changes are requiring the establishment of a transparent, robust, multi-modal and multi-agency response to transport planning that both technical and political decision-makers need to appreciate.

While transport planning has a long history of appraisal, such appraisals have been fairly narrow in recognition of the previous view of transport in society. This view held that transport is a public good with appraisal based upon objectives set only in terms of economic efficiency and/or growth that were assumed to produce benefits for the community in general. Whereas other sectors such as health

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and education have objectives focused upon the welfare of the population or specific social needs. This had compounded the view that congestion is the problem rather than a symptom of dislocations that can be addressed by non-transport measures.

It is argued by Giorgi and Tandon (2000) that the focus of transportation planning upon efficiency and growth rather than direct social objectives has resulted in a view of evaluation that is focused upon estimating times savings and the derived economic benefits. The externalities of social and environmental impacts are grudgingly assessed as externalities not neatly fitting into their view of the world.

4.3 Widening Stakeholder Involvement in Decision-Making

While technical decision-makers are faced with the task of assimilating the new appraisal culture, they also have to accommodate the widening of stakeholder involvement in the appraisal process. Recently, with the advent of Multi-Modal Studies it has become common practice to establish a client Steering Group that comprises a diverse range of interests. Their purpose is generally to agree the study brief, confirm the approach, ensure appropriate options are assessed, monitor the results and provide advice. The multi-modal study Steering Groups typically comprise the following organisations, although there is wide variability across the studies:

1. Government Office for the region;
2. the regional planning organisation;
3. Department of the Environment, Transport and the Regions;
4. Highways Agency;
5. Strategic Rail Authority;
6. Regional Development Agency;
7. Confederation of British Industry.

To support these groups is a Wider Reference Group in which a variety of other stakeholders are represented, including those concerned with environmental and community issues. The Wider Reference Group typically has the following functions:

1. Where requested, provide inputs to:
   - Identifying current and future problems;
   - Setting objectives for the study;
   - Developing solutions;
   - Indicating levels of support for different policy options;

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- Deciding a recommended strategy or plan.

2. Assist in the development of recommendations capable of securing the ownership of members of the Steering Group and Wider Reference Group.

With a participatory approach to decision-making involving a wider group of stakeholders, the following benefits accrue:

1. Reduced the risk that insufficient support would cause unexpected problems;

2. Gathering information that otherwise would be hidden;

3. Revealing stakeholders' interests and values;

4. Improving plans by a better match with the perceived problems of stakeholders;

5. Establishing better links and confidence amongst the parties.

As with the Steering Groups, there is variability in the membership of the Wider Reference Groups, but typically local authorities, the police, the statutory environmental agencies, transport user groups, transport service and infrastructure providers, environmental, economic, health and other groups would be represented. It is interesting to note the position of the statutory environmental agencies has, on occasion been subservient to the interest groups represented on the Steering Group.

Setting aside the flaws in the current arrangements, they do represent a significant change in approach from the single organisational view of the problem as represented by the Highways Agency, Railtrack plc or government. Whether such a wider perspective on objectives actually assists the process of systematic integrated appraisal has yet to be examined, but is a step in the right direction towards sustainable development.

Despite such enhanced stakeholder involvement with the technical decision-makers, elected decision-makers are not engaged in key stages of the process such as agreeing the study objectives. This lack of involvement of elected decision-makers places increased responsibility upon technical decision-makers.

4.4 Changing Decision-Makers Perceptions of the Appraisal Process

Crucial to the success of both gatekeepers (the public servant and the study manager) is their view of the appraisal process. As noted in the 1994 Department of the Environment report "Environmental Appraisal in Government Departments", systematic analytical frameworks were little used and there is a need for more guidance on valuation techniques and improved dissemination of best practice and sharing experience. While there has been an increase in the availability of technical guidance, it must be questioned whether sufficient effort is being expended on improving practice. Essentially, production of guidance is only part of the exercise and effective training must also follow.

Training is seen by the author to be central to the delivery of integrated appraisal as the very concept of integrated appraisal challenges the lack of multi-disciplinary training that the current cadre of gatekeepers have generally received. The practice of integrating environmental impact assessment

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within project level transport schemes, although aided by technical guidance such as the Design Manual for Roads and Bridges Volume 11 (Department of the Environment, et al, 1993) can still fail to deliver integrated solutions.

Too often schemes are designed first and assessed after. Budgets are allocated to engineering issues while those for environmental and stakeholder involvement are treated with suspicion and are heavily circumscribed. Even where environmental and social factors dominate in the decision associated with a scheme, it has been found necessary to stay within the "safe ground" that engineering provides as dealing with the public is akin to opening Pandora's box.

These failures are not only to be laid at the study manager's door, but also at the public servant client group. At the heart of the problem are the terms of reference for commissions to adequately reflect the need for integrated appraisal. If the terms of reference do not provide an appropriate emphasis upon environmental, social and economic appraisal alongside the transport planning and engineering dimensions then the tender submissions will also reflect a similar orientation.

Where the study sponsor does not appreciate the changing nature of the decision-making arena, then their planning studies and projects increasingly risk being the subject of criticism. Such criticism comes from an ever more sophisticated public quick to challenge when technical guidance does not appear to have been followed or where such guidance is found to be deficient.

A recent example is the Access to Hastings Multi-Modal Study where the technical appraisal has been found wanting and environmental groups have highlighted apparent contradictions between the planned schemes and the government's Ten Year Plan for transport. Decision-makers have been criticised for failing to consider the bigger regional picture in terms of balanced policies to cut congestion and pollution. Instead, they have been regarded as operating on a local agenda with a focus on making decisions on specific schemes as a collection of individuals (Anon, 2001 and Baker, 2001).

These issues are not new. In the early 1990s, decision-makers involved in the Trans-Pennine Road Study failed to address the bigger picture, as the study did not consider rail. The central premise for the Road Study was that increased road capacity was the only solution and that the task was to identify the most efficient investment package. This lead to a consortium of four passenger executives, county councils and the Peak District National Park to commission an alternative rail study (Richardson and Haywood, 1996).

Being essentially a transport study, the Road Study took no account of environmental or social impacts. The Rail Study also lacked a holistic viewpoint, only considering the reduction in congestion and accidents as a result of traffic diversion from road onto rail. There was no explanation of the environmental context of each route or the wider road versus rail debate (Richardson and Haywood, 1996). The consultation processes revealed a tension between the Department of Transport's intention to arrive at a decision following consultation with "elites" and attempts to open-up the decision making process through debate. Here the institutional process sought to protect the narrowness of its policy thinking by avoiding public scrutiny. This closed mindset worked against one of the goals of sustainable development, namely to change values and attitudes by encouraging an increase in participation in political decision-making at all levels.

In the end, the Road Study recommended a series of proposals to improve the Trans-Pennine Routes. Instead, the decision was to concentrate flows on the M62 and relieve pressure on other

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routes, an option not identified in the Road Study (Richardson and Haywood, 1996). Other stakeholders were also disappointed with a process that paid little regard to those outside the institutional framework, that constrained the alternatives examined and which failed to integrate new and difficult environmental arguments. In a rapidly changing policy agenda, the studies were left marooned with conclusions incompatible with the emerging new realism in transport planning.

It has yet to be seen whether the technical decision-makers leading the current series of Multi-Modal Studies are able to dispassionately review the transport problems they are to address. In particular, given the historical investment that has been made in many of the "difficult" schemes assigned to the Multi-Modal Studies, environmental pressure groups are likely to be examining the robustness and objectivity of the outcomes. There is a perception that the philosophical change in appraisal practice is only a veneer and the apparent certainties that road building is believed to deliver will dominate the unproven measures to modify travel behaviour. Add to this difficulties in rejecting road schemes with a long development history then Multi-Modal Studies may be regarded as merely a rubber-stamping exercise.

To deliver integrated appraisal necessitates a change in the culture of the gatekeepers. Fundamentally it involves a recognition that transport must seek to deliver against an ever more complex array of objectives, many of which may be in conflict with each other. Hence the process of objective setting must carry greater clarity and sharper definition in order to aid the process of allocating effort during the technical appraisal processes. To do this inevitably involves technical decision-makers taking risks in opening the process to a wider and more diverse array of stakeholders.

Given that the change in appraisal practice is very recent and many technical decision-makers responsible for transport planning are struggling with the realities of this new approach, it is unrealistic to expect that the actual delivery of transport planning would exhibit a smooth transition. It is inevitable that some technical decision-makers will be able to more readily incorporate the new appraisal practice, while others will still seek to follow the former narrowly defined and opaque appraisal practice.

Fundamentally, it will take time for the new strategic integrated appraisal culture to become accepted and in the intervening period different interpretations of the guidance may well lead to a lack of consistency across the studies. Indeed many parallels can be drawn with the slow improvement in EIA practice from its early days in the 1970's, as even today examples of poor appraisal practice are readily available.

The environmental lobby, in stimulating the change in appraisal practice, must be cautious that it constructively engages with the technical decision-makers in the pursuit of improved delivery of integrated appraisal. The danger is that a dismissive approach to Multi-Modal Studies may combine with a lack of funding, particularly for the rail projects, to view the studies as being unable to unlock multi-modal transport solutions and therefore be essentially irrelevant to long term transport planning.

4.5 Enhanced Role for Decision-Makers

As the Multi-Modal Studies are complex integrated appraisals extending over periods of up to two years, it is inevitable that decisions need to be made by the technical decision-makers that have a bearing upon the information ultimately delivered to the elected decision-makers. Such key decisions commence with the task of defining the problem and agreeing the objectives for the studies.

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Subsequent paragraphs explore the following aspects in which there is an enhanced role for decision-makers:

1. Providing clarity in problem definition.

2. Articulating community objectives and confirming the appraisal objectives.

3. Critically reviewing key assumptions on which the robustness of appraisal output is founded.

4. Ensuring that the appraisal is undertaken on an even-handed basis.

5. Facilitating and engaging with stakeholders to appreciate the key issues.

6. Enhancing communication of the appraisal outputs.

The perception of problems by the public and elected officials must be captured to support the technical/ analytical assessment. Even such concerns are more of a symptom than the cause, the fact that it is perceived as a problem means that the study needs to take it seriously. Likewise, if a problem is understood or projected by the study but is not yet perceived by the public and/or elected officials, attention will need to be given to discussing, resolving, and articulating a set of problems that can be supported from all perspectives. Hence the task of defining the problem now requires a more robust and inclusive approach, since unless the problem is appropriately framed the outcome is unlikely to meet the objectives of sustainable development or be acceptable to all stakeholders.

Closely linked with an understanding of the problem is the need for clarity in what are the specific objectives against which the alternatives transport strategies and measures are to be judged. While the government has set national objectives, the important task of defining problem and local orientated objectives remain to be defined within the studies. Regional and local goals, objectives and policies define what is important to the community and an agreed set is needed to determine the extent to which they are achieved by the alternatives.

As illustrated by the Channel Tunnel Rail Link and the M4 Relief Road, objectives need to be clearly defined, ideally achieving wide community support. Having wide agreement upon the objectives that form the basis of a strategic study with participation of elected and technical decision-makers is important if the transport studies are not later to be devalued.

As transport planning now deals with a wider range of issues and the technical decision-maker strives for a systematic approach, the following factors make prediction more problematic:

1. Complexity in the system between the transport system and its environmental, community and political context.

2. Limited knowledge of the complexity of the system.

3. Lack of knowledge of the behaviour of actors, decision-makers and informal networks.

4. Competing policy aims and the emergence of new aims and measures over time.

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5. Limited amount of rational and neutral behaviour in decision-making.

6. Limited knowledge about the effectiveness of particular measures (Zuylen et al, 1999).

Given such complexity and uncertainty, making assumptions is an inescapable function of transport planning and strategic integrated appraisal. This inevitably means that both technical and political decisions are made throughout the appraisal process. Within a context of robust analysis, such assumptions must be transparent and open to challenge. Technical decision-makers need to appreciate that their technical competence is not being challenged by such transparency and where key assumptions affect the robustness of the decision, then elected decision-makers should be advised of such situations.

The task of defining transport measures that may address the transport problem and perform well against the study objectives is a technical activity in which opportunities to induce bias to the appraisal exists. For example, the packaging of measures into strategies can be undertaken in a manner that would tend to devalue particular measures simply by grouping them with others that were fundamentally flawed. In this way an entire strategy may be weakened.

Currently there is no UK guidance on the manner in which strategies are to be formulated. Since the Multi-Modal Studies were a product of the difficult decisions on particularly controversial highway schemes there is an implicit focus on determining whether such measures should proceed. Also, such measures are more clearly defined within the strategies than more speculative measures that are potentially easier to dismiss by technical decision-makers without review by elected decision-makers. This may suggest a need for a more inquisitorial role by elected decision-makers in which they confirm the acceptability of such technical decisions.

The role of the Study Steering Group and Wider Reference Group in ensuring an even-handed appraisal is a key task in assisting technical and elected decision-makers. This task requires the various stakeholders to adopt an impartial stance rather than one of representing their particular interests. Where these groups are dominated by the traditional transport appraisal culture and the pre-eminence of road building in addressing community needs, then the level of critical review may not be as great as situations where independent reviewers are part of the process.

One approach to the search for potential transport measures to provide solutions is through the development of future scenarios. At least one study, the London Orbital Multi-Modal Study, has included a strategy based upon a vision of the future rather than the packaging of measures according to modal type. In this approach a desired future state is defined and the measures are identified to deliver such a vision.

The OECD have been promoting this approach, which they term “backcasting”, within their Environmental Sustainable Transport (EST) initiative (OECD, 2001). EST is characterised by starting from the broad definition of sustainable development and constructing a qualitative definition for environmentally sustainable transport based upon climate protection, regional and local air quality, noise and land use. Thresholds established for the six criteria based upon international guidelines, standards and goals are used as the means of assessing performance. OECD recommend that EST should draw upon a variety of parties from transport, environment, health and other sectors, government, industry, academia, NGOs and the general public to ensure widespread awareness, understanding, commitment and acceptance.

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As strategic transport planning studies rely upon increasingly sophisticated predictive models, the use of the forecasts can be impaired by the lack of technical ability amongst decision-makers to appreciate the complexity of the modelling process and more fundamentally the assumptions on which they are constructed. A quantified output from a model is less often challenged than an output based upon qualitative judgment as a number is conceived to be more accurate. The task for technical and to some extent elected decision-makers is to appreciate the key strengths and weaknesses of the new array of predictive models. This is particularly important in terms of the land use/transport interactive models that seek to explore the relationship between land use and transport for time horizons that extend beyond the politically validated land use plans.

The final area in which an enhanced role is emerging for technical and elected decision-makers is in the arena of communicating the results of the appraisal. In this new appraisal culture the technocratic decision-making processes of the 20th Century must give way to an approach that embodies community involvement. Due regard must also be given to the four distinct groups that are critical to the success of transport planning, namely:

1. The public.
2. Elected decision-makers.
3. Media.
4. Funding agencies.

Such an open process may make technical decision-makers fear a loss of control of the process. However, their task is to assemble the best technical information together with a structured appreciation of the community values in order that elected decision-makers can make a decision in the best interest of the community.

In dealing with the public, technical decision-makers face challenges of using new techniques for community engagement. These techniques seek involvement beyond that of pressure groups and instead aim to reach those members of society who are under-represented by traditional techniques but for whom the transport planning decisions directly affect their opportunities for work, leisure and education and other community services. This Pandora's box may cause technical decision-makers numerous difficulties in terms of programming and resourcing but such challenges need to be addressed rather than avoided.

As noted earlier the technical decision-makers act as gatekeepers determining the information that is provided to the elected decision-makers. While the Appraisal Summary Table (AST) is only one of the reporting strands, it has taken on an elevated status as the principal communication medium. Given the limited space it is inevitable that complex issues are compressed into relatively superficial statements. This process has a risk of a loss of key information if undertaken in a manner to ensure that the "correct" balance of findings is reported to elected decision-makers. The obsession with brevity risks a failure to communicate an understanding of the issues. Where senior technical and elected decision-makers have been involved in key stages of the appraisal, rather than just at the end, then they are more likely to appreciate the issues and be able to look beneath the headlines presented on the AST.

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Technical decision-makers must learn to appreciate the role of the media. Often viewed as foes, they can be a significant resource in promoting the transport study. Technical decision-makers should adopt the following strategies towards the media:

1. **Help the media understand the process:** Media articles will be more helpful to the public if they understand the overall picture.

2. **Be as open and honest with the media:** Hiding information or the appearance of hiding information usually leads to trouble.

3. **Be proactive in providing information to shape their story:** A media extracted story is more likely to be shaped according to their preconceived notions.

4. **Be constructive by correcting incorrect information:** Helping reporters to do their job is more to create allies as they too are being evaluated on how well they do their jobs.

5. **Convey technical issues in a simple language:** Reporters need to convey ideas to the public. If you do not simplify it for them, they will do it themselves, and their interpretation may not be correct.

6. **Consistent contact arrangements:** Provide one point of contact or spokesperson on the study team to interface with the media, and make sure that person is consistently available (Smith, 1999).

5. CONCLUSIONS ON STRATEGIC INTEGRATED APPRAISAL

Using the criteria proposed by Hieronymi (1993) for responding to the new context for transport planning, it is possible to reach a conclusion as to where the UK currently stands on the path towards strategic integrated appraisal. Using a four-point scale in which four represents substantial progress Table 9 provides a perspective on the current UK performance against these criteria.

On the basis of this paper, it is suggested that the UK has undertaken several major steps towards strategic integrated appraisal at least in terms of government policy. It will take a longer period however, for this change in appraisal culture to become embodied in day to day practice of those involved in transport planning. There are also many risks that an increasingly elaborate appraisal system will be exploited by pressure groups to challenge outcomes and that the flexibility enjoyed by elected decision-makers to promote programmes; plans and projects may be curtailed.

A fundamental challenge for those responsible for appraisal is to ensure that the benefits of undertaking strategic integrated appraisal are not over-shadowed by the potential for delay and unnecessary additional costs to the delivery of a sustainable transport system. Hence the in-principle political decision on a proposed project could be taken at the plan rather than at the project level

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potentially saving abortive project design expense. In addition, some degree of streamlining with project environmental impact assessment is required in order to ensure than only an appropriate level of assessment is undertaken.

The following other new challenges also exist for both the technical and elected decision-makers:

1. Establishing clear community objectives that the transport network is intended serve.

2. Facilitating and engaging in stakeholder involvement processes.

3. Critically examining assumptions to ensure that the study recommendations are robust.

4. Improving the communication of complex information in a manner that all stakeholders can gain a better understanding of the problem.

5. Help to deliver more cost-effective investments that will achieve the government's objectives for a sustainable transport system.

It is concluded that the UK has yet to deliver long term integrated visions for transport, but that progress is being made at least in terms of technical appraisal. Efforts to ensure that transport users bear the real cost of their actions, however, have a long way to progress from the perspective of political acceptability. The predict and provide philosophy is resurfacing as the difficulties in delivering improvements to public transport increase due to organisational and funding difficulties. Consequently, improvements to the highway network are frequently the only viable option.

Gradually, the UK is moving towards recognising the role of transport in all sectors but further efforts are needed within the related sectors in order that the implications of their action upon transport are considered such as the health sector, land use and education sectors.

Fundamentally, the infrastructure for sustainable transport is being assembled, but it will take time for the new concepts to permeate across the transport planning profession, for the resources to be provided to overcome historic under investment in public transport and for the results to become apparent. A key action that would hasten delivery of strategic integrated appraisal is an effective training and awareness programme to help change the existing appraisal culture. This should then be supported by effective ex-post evaluation of the early Multi-Modal and Road-Based Studies in order that lessons are learnt that would smooth delivery of the changes required to meet the Strategic Environmental Assessment Directive.

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Table 9. **Performance of the UK in the New Transport Planning Environment**

Criteria	Performance	Commentary
Vision and implementation with a long term perspective, covering both maintenance and new infrastructure.	**	Long term and integrated visions are not yet common.
A balanced approach between opposite interests and considerations.	****	NATA and GOMMMS mark milestones of achievement and further enhancements envisaged.
An overall inter-modal or system-wide view of the infrastructure.	***	Improving with advent of Multi-Modal Studies, Route Management Strategies and rail network planning.
The correct pricing structure for use of infrastructure services.	*	Extreme sensitivity to the use of fiscal instruments.
Increased policy focus.	****	Transport is now higher on the political agenda.
Explicit consideration of societal goals.	*	Recognition of the importance of this subject but shortage of techniques and resources.
Improved linkage of transport planning to other planning processes.	**	Land use and transport planning linkages are being established but slow progress with other sectors using transport services.
Improved multi-organisation co-ordination.	**	Increasing role being played by transport providers, but other groups still on the sidelines.
Not neglecting the importance of infrastructure.	****	The payback for years of under investment in transport infrastructure is now evident.
Engage and give careful consideration to all stakeholders.	**	Utility of stakeholders participation slowly being recognised. Multi-Modal Study use of wider reference groups established.

6. LESSONS FOR OTHER COUNTRIES

On the basis of the review presented above, it is concluded that there are many lessons that can be learnt from the UK as it seeks to develop approaches towards integrated appraisal for transport plans and projects. These are summarised below.

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6.1 Economic Appraisal

A central thread of appraisal practice should be the desire for efficient decision-making of which the effective assessment of alternatives is an essential component of ensuring the robustness of the policy or project. As a result scarce financial resources should be less likely to be wasted. As seen from the UK transport projects considerable sums of money have been wasted because of flawed appraisal processes in past decades.

An appraisal focus upon economic efficiency can struggle to provide a single measure of the net benefit of a project, as the valuation of some benefits and costs, particularly those of an environmental character is difficult. Also as social equity issues gain increased attention so it become clear that economic efficiency does not assist in an appreciation of the distribution of costs and benefits. Situations may arise where alternatives that are equally economically efficient perform differently in terms of the distribution of costs and benefits. Economic appraisals should be supported by a wider analysis that provides and understanding of the distribution of the costs and benefits in terms of location and the different communities that are affected.

6.2 Integrated Appraisal

The separate appraisal strands have increasingly become more closely integrated as new issues have become part of the appraisal process. This has raised concerns over double counting particularly between the economic appraisals and the statutory requirements to report individual significant environmental impacts. Integrated appraisal means not simply that the separate appraisal techniques are mutually supportive, but that the process of appraisal is integrated with multi-disciplinary teams and that the communication of information to decision-makers is also integrated without placing undue emphasis upon one particular element.

6.3 Communicating Results and dealing with Complexity

As the coverage of appraisal topics is expanding to encompass health impact assessment and social impact assessment, so there is a danger that the process becomes and end in itself and essentially becomes too burdensome as more stakeholders participate. The appraisal must carry the support of both the public and decision-makers if it is to survive, the current danger is that appraisal may be seen to delay decision-making processes rather than help inform such decisions. It is therefore beholden upon those responsible for appraisal practices to ensure that they are as efficient and effective in communicating complex issues.

The Appraisal Summary Table provides a useful mechanism for communicating the complex results from appraisal in a simplified form to decision-makers. However, the process of distilling the appraisal information into a rigid format inevitably leads to the loss of information and introduces the potential for some distortion of the results particularly in the process of aggregating individual impacts.

6.4 Traceability

The loss of information in the appraisal summary table is addressed through references that ensure a paper trail linking each indicator to increasingly detailed layers of supporting analysis. Providing traceability in this way is essential to ensuring confidence and lending credibility to the

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results of assessments in the form they are presented to decision makers. It also greatly facilitates updating and review of assessments when delays or new information or new policy imperatives make this necessary.

6.5 Establishing Objectives and Performance Based Planning

Establishing a national set of integrated objectives for transport can help the progress of sustainable development and integrated transport. Such frameworks then provide the context within which individual transport plans and projects should be evaluated. With wider stakeholder involvement in transport appraisal, so additional potentially conflicting objectives need to be considered in a transparent manner during plan and project appraisal activities

Apart from establishing objectives there is a need to focus upon outcomes rather than outputs, to measure the performance of the transport system rather than the length of new road that is provided. To achieve this needs a robust and holistic approach to problem definition, in which the problem is seen not only in terms of transport measures, but also in social, economic and environmental terms.

6.6 Public Involvement

While the SEA Directive and the Arhus Convention enshrine the provision of opportunities for public involvement in planning and appraisal processes, there are practical issues associated with how to engage the public in long term transport plans that affect large geographic areas. At the project level, there is also a tension between the need to deliver projects perceived to be in the national interest with the views of local opinion when few benefits and considerable dis-benefits may occur.

6.7 Long Term Plans

Strategic Environmental Assessment is being increasingly applied to transport plans that have a 20-30 year horizon. Such long-term plans create new challenges for appraisal in that they need to be sufficiently robust to accommodate external events, in particular they need to be fundamentally linked to long term spatial strategies. Equally, given the long-term planning horizons, mechanisms are needed to ensure that individual projects not only contribute towards the strategy, but also at the same time reflect the decision-making context current at the time of their appraisal. Institutional mechanisms are also likely to be necessary to ensure that transport providers remain focused on delivery of the transport strategy.

6.8 Vertical and Horizontal Integration

Opportunities should be taken with the application of SEA to transport plans to streamline the project EIA process. SEA and EIA should be seen as one linked assessment process. In this way efficiency gains can be made and repetitious assessments avoided.

Horizontal integration is required not only between the assessment topics to improve efficiency but also across sectors such that health plans, school plans and land use plans are all served by the transport plan in a consistent and coherent manner. Better integrated plans and projects will inevitably need more permeable organisations that are less concerned with preserving their domain and recognise the greater community benefit that results from working in partnership. This may also lead to

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situations where mitigation measures can be delivered for adjacent projects in a combined manner delivering improved environmental performance and financial savings.

6.9 Assessment Tools

While the development of assessment tools (methods, guidance etc) are a vital component of delivering integrated appraisal and integrated transport, in practice that is the easy activity. There is a danger that too much attention may be given to the assessment tools and not enough to how they are being used and the training needs of the users.

In calling for integrated transport and integrated appraisal, much more effort is needed to change the institutionalised attitudes towards transport planning. The dominance of transport planners and highway engineers' needs to evolve towards a truly integrated assessment team with the value of each component is recognised. This also means that the terms of reference for transport plans and projects need also to stress what might be called the 3Is: integrated appraisal, integrated transport and integrated appraisal teams.

6.10 Earlier Engagement with Decision-Makers

As exemplified by the Channel Tunnel Rail Link and to a lesser extent the M4 study, agreement on the wider objectives that the transport project is intended to deliver is a key stage. However, unless there is a consensus the plan or project objectives may be challenged and different or additional objectives applied potentially aborting previous work at great cost. While the Channel Tunnel Rail Link was an extreme example, decision-makers should play an integral part of the process of defining the problems and objectives that the transport plan or project at the outset rather than at the end of the exercise when other wider issues appear.

The problems of funding the rail projects identified in the Multi-Modal Studies illustrate some of the difficulties when governmental institutions have conflicting objectives. For example, the regional focus of the Multi-Modal Studies is in sharp contrast to the national or South East focus of the Strategic Rail Authority with the result that the SRA investment priorities are claimed to be at variance to the objectives of delivering integrated transport solutions in the regions. This has then led to the argument for a regional structure to the Strategic Rail Authority. As transport plans and projects increasingly seek to address community needs beyond those of transport, decision-makers need to ensure that the organisations and institutions charged with delivering the plan or project can operate within this wider template. Decision-makers should therefore, ensure that the institutional machinery to deliver integrated transport solutions is in place if the appraisal process is not to be devalued.

As the appraisals become more embracing so the challenge for technical decision-makers is to embrace the complexity and uncertainties inherent in the appraisals and to ensure that assumptions are transparent and that the individual decisions made during the appraisal process are robust. A related issue concerns the increasing technical nature of predictive models that mask from decision-makers the assumptions yet at the same time provide a false confidence based upon the delivery of a quantified output. Consequently a task for technical decision-makers is to appreciate the key strengths and weaknesses of the new array of predictive models, particularly the land use/transport models.

The final challenge for decision-makers is to embrace the implications of wider public engagement in transport planning such that a robust analysis of community reactions is taken

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alongside the technical appraisal. Essentially, decision-makers need to drive the change in transport appraisal culture if integrated and sustainable transport is to be effectively delivered. Table 10 concludes this paper with a summary of the change that is required.

Table 10. **Changes in the Culture of Strategic Integrated Appraisal**

Aspect for Change	Commentary
Problem definition	
Problems should not be framed in terms of a solution.	There is often a temptation to jump to possible solutions before the problems are defined or to assume that there could be only one solution to a problem.
Problems should be defined in terms of existing and the anticipated future situation.	Recognising that future problems can have a bearing upon the resolution of existing problems can lead to more efficient decisions, but the long timescale of transport planning mean that fundamental assumptions can become invalid.
Problems should be stated as specifically as possible.	Problem definition should be in terms of times, days, and locations of occurrence as this will help in the identification of causes and of possible solutions.
Problems should be stated in a way that is understandable to the public and elected officials.	Much of the decision-making will hinge on the extent to which elected officials and the public understand how alternatives address the identified problems. If they do not understand the problems, they will have difficulty evaluating the alternatives.
Agencies should seek to obtain as much agreement on the problems as possible, early in the study.	For controversial studies, approval of the problem statement by the elected decision-makers may be advisable.
Objectives	
Transport plans and projects must address society's objectives.	Transport must not operate to its own narrow set of objectives but must serve the wider economic, environmental and social needs of the community.
Objectives setting needs to consider all stakeholders.	The objectives of those stakeholders that are likely to be affected by the plan or project should be explicitly used to inform the appraisal process.
Objectives need to be organised into a logical structure.	Objectives should be set within a clear hierarchy from the national, regional and local scales. International objectives may also be relevant in some contexts.
The extent to which objectives are achieved should be at the heart of the appraisal exercise.	Objectives should be translated into agreed indicators that measure the extent to which transport plans or projects achieve the set objectives. There should be no bias in the indicators or their units of measurement.

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Alternatives	
Appraisal needs to examine a wide range of alternatives.	The alternatives should not simply be between modes, but also between infrastructure and non-infrastructure measures, as well as between a series of small interventions versus a large solution.
Critically examine older existing scheme proposals.	There should be willingness to critically review long standing schemes that may no longer perform well in the current sustainable transport agenda. Be prepared to jettison earlier schemes.
Wide involvement in generation of alternatives.	To establish the validity of the appraisal outcome there should be an inclusive approach to consideration of alternative solutions.
Mitigation	
Early consideration of mitigation and enhancement.	While the need for mitigation is an admission of poor design, opportunities for mitigation and enhancement should be explored to maximise the return on the transport investment against wider community objectives.
Stakeholders	
Involvement of stakeholders during the appraisal process rather than at the end.	Stakeholders have a valuable role to play in problem definition, defining objectives, identifying alternative solutions, evaluating outcomes and validating the appraisal process.
Robustness	
The appraisal outcome should be robust.	The appraisal should not simply confirm the solution preconceived by the client but should be defensible in public review fora.
New information or changed assumptions should not fundamentally change the outcome.	The appraisal outcome should not be sensitive to disputes over assumptions or the significance assigned to individual impacts. There should be some resilience in the ability of the decision to withstand the changing circumstances associated with the long planning timescales of transport measures.
Transparency	
Assumptions and uncertainties should be documented.	Key assumptions should be provided to allow interested parties to appreciate their logic and appropriateness to the study.
Clear audit trails should be provided.	It should be possible to track how information has been used in the appraisal.
The process of comparing and selecting preferred alternative transport strategies and measures should not mask trade-offs.	The trade-offs between the performance of the competing transport strategies and measures should be clear and presented in an impartial manner that does not risk claims of bias.

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IMPROVING ECONOMIC AND ENVIRONMENTAL ASSESSMENT TO SUPPORT DECISION MAKING IN FINLAND, GERMANY AND SPAIN

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FINLAND

STRATEGIC ENVIRONMENTAL IMPACT ASSESSMENTS AND LINKS TO TRANSPORT PLANNING[1]

1. INTRODUCTION

Finland introduced a general requirement to assess the environmental effects of policies, plans and programmes in the EIA Act of 1994. The requirement to carry out strategic assessments is limited to one Section in the Act (Section 24). The Act does not specify how they are to be carried out, but the Ministry of the Environment and the Council of State have subsequently issued guidelines on the assessment of policies plans and programmes and bills respectively (Ministry of the Environment 1998, Council of State 1998). In addition, the Ministry of the Environment has funded a development project aimed at supporting authorities in carrying out environmental assessments. The Land Use and Building Act of 1999 also emphasised the requirement to carry out environmental assessments of land use plans. Brief statements on the need to assess environmental effects can also be found in other Acts, e.g. the Act on Regional Development (1135/1993).

Within certain branches of the administration, notably the transport sector, environmental impact assessment has received considerable attention and the transport sector has explored and developed environmental assessments as an element in planning. Initially the focus was on project level assessment, but the environmental assessments of policies, plans and programmes have become increasingly important.

A number of environmental assessments have been undertaken also in other branches of administration. These experiences have resulted in a material that can be used to explore questions and issues that have implications for the future development of assessment practices. Such questions are the following:

- What similarities and differences do we find in the assessments and why do these occur?
- What do these assessments tell about the challenges of implementing the recent "SEA" Directive (2001/42/EC) on the assessment of the effects of certain plans and programmes on the environment?
- What implication do the experiences of the assessments have for transport planning?

1. Prepared by Mikael Hildén, Finnish Environment Institute, and reviewed by the Ministry of Transport and Communications.

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2. BACKGROUND

2.1 Transport planning policy in Finland

The Ministry of Transport and Communications supervises transport planning in Finland. In 2000 the Ministry presented guidelines for the long term planning of the whole transport sector, targeting at the year 2025. These guidelines include a general vision of the transport system, taking into account transport related policies and plans that the Government has adopted in recent years.

The general policy documents of the Ministry serve as guidance for the road, rail and maritime administrations, which develop their own more specific plans and programmes. The most detailed planning system is that of the road administration: it covers the whole country and has different levels of plans and programmes. The national road administration has developed general guidelines, i.e. a broad strategy for road the administration to 2015 together with subject specific strategies, for example for urban highways, trunk roads and low volume roads. The regional road districts also have their own strategic plans. These strategic plans are then reflected in the five-year programme of the national road administration and in the programmes of the road districts and eventually also in the action plans that specify actual expenditures.

The regional road districts further participate in multi-modal transport planning at regional and municipal levels. With the exception of the Helsinki Metropolitan Area transport plan, these multi-modal plans have no formal legal background, but they can nevertheless be reflected in land use plans at the regional or municipal level and in the programmes and action plans of the road districts.

A particular feature of the Finnish transport planning is that very little has been defined by law. The Road Act (243/1954) has been modified to include certain procedural elements for road planning, but these specifications cover mainly the project level, not the policies, plans or programmes. Thus the planning system for levels above projects has largely developed as administrative practice, not as a legally specified procedure. In this, strategic transport planning resembles that of many other sectors, with the exception of land use planning, which has a long tradition of specified procedures for strategic planning. In recent years certain procedural elements for strategic planning have been introduced in legislation for other sectors, e.g. in regard to nature protection and waste management.

In 1999 the Road Act was revised by strengthening the link between road planning and land use planning. The Act now includes an explicit demand that road planning must be harmonised with land use planning and also with the national land use objectives (Road Act, Section 10; 133/1999). The revision to the Act thus puts new demands on strategic transport planning, although it did not introduce new statutory procedural requirements.

2.2 Environmental assessments

The material that will be used to illustrate Finnish practice in the environmental assessment of policies, plans and programmes (Strategic Environmental Assessment - SEA) has been collected from more than 15 assessments (see Table 1), which vary in scale and expenditure of resources and come from different branches and levels. The examples discussed here illustrate the assessment of policies, plans and programmes as it has developed without procedural requirements. Except for SEA of the

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national land use policy objectives, assessments related to land use plans have been excluded because land use planning is regulated in detail by the Land Use and Building Act (132/1999). The assessment of parliamentary bills has also been excluded, as their assessment is provided for in the procedural requirements for the preparation of Government Bills.

Although the sample is not statistically representative of Finnish SEA experience, it does include a number of important case examples. It is also based on a systematic reading of the assessment documents, on interviews with persons involved and in some cases external reviews of the assessments and their use. It aims to illustrate the diversity of issues and to identify some frequently occurring issues and problems. The author has been has been personally involved in some of the assessments (see Table 1). For these assessments, the analysis is also based on notes made during the SEA process and access to draft assessment reports.

Table 1. **Assessments reviewed for this study**

Transport
Nordic triangle (transport infrastructure along Finland's southern coast)
Helsinki Metropolitan Area Transport Plan 1998
Guidelines for Road Management and Development 2015
Intermediate Term Road Management Plan for Savo-Karjala district 2000-2010
Railnetwork 2020 Programme
Resource management
National forestry programme*
Programme for renewable energy
Resource management and area ecology plans of the National Forest and Park Service
Regional development
Structural Funds Programmes for western Finland 2000-2006,
southern Finland 2000 2006 and central Finland 2000-2006
National objectives for land use
Environment and nature protection
Energy conservation programme
National Climate Strategy*
Finnish Natura 2000 programme*

Note: Asterisks denote assessments in which the author has been personally involved.

2.3 Observations on features of SEA practice

The following discussion of Finnish experience focuses on nine key features of SEA practice, which also roughly accord with the headings of the Articles in EU Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive). The findings are organised in order to facilitate comparison with the changes that are likely to occur as result of the implementation of the SEA Directive.

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The applicability of the assessment

The Finnish EIA Act (Section 24) requires that all policies, plans and programmes that may have significant effects on the environment require an environmental assessment. The authority responsible for drafting the policy, plan or program is responsible for determining the need for an assessment. In retrospect, it is evident that all of the policies, plans and programmes examined here meet the criterion of "possible significant environmental effects". An important question is whether they would also have been subject to assessment under the requirements of the SEA Directive.

The SEA Directive introduces the additional conditions that a plan or program should "set the framework for the consent of projects" and that the plan or program is "required by legislative, regulatory or administrative provisions." These conditions are crucial and their interpretation is likely to vary somewhat among Member States.

A strict interpretation of the concept of "setting framework for development consents" would exclude several assessments reviewed here, including the guidelines for road management and development 2015, which outlines the long term policy of the Finnish road administration. Other policies, plans and programmes that are outside the scope of the SEA directive are the national forestry programme, which represents a policy paper aimed at guiding general policies and the energy saving programme, which provides some funds for development work, but which does not deal with consent procedures.

Interestingly, the national climate strategy and the national land use objectives, which are primarily policy papers, could qualify for assessments in accordance with the Directive, since they contain certain explicit statements that can be interpreted as setting the framework for specific projects. Strategic policy documents can thus qualify for assessment according to the Directive although they may initially have been intended to be policies that lie outside the scope of the Directive. A further expansion of the applicability of the directive could also occur, if the European Court of Justice eventually gives the concept "setting the framework" a broader interpretation than that envisaged in the negotiation process leading to conclusion of the Directive.

The requirement that plans and programs should be based on legislative, regulatory or administrative provisions is also critical. In Finland strategic transport plans and programs largely lack a formal legal background and one could argue that they are therefore not plans or programmes in the sense of the directive. Thus although, for example, the guidelines for road management and development 2015 outline what kind of projects will be prepared in the future the document itself is based on an agreement within the administration and not on an "administrative provision" or any stronger legal document. The Finnish EIA Act's requirements to assess policies, plans and programmes do not depend on the legal background of the planning activity, but the applicability of the SEA Directive may clearly be restricted by this criterion.

2.4 Timing

Arguments about the need to carry out an assessment delayed the initiation of the process in several cases. Other delays in this regard were caused by arguments over whether or not an assessment can be made before a policy, plan or programme is available, at least in draft form. In the examples listed, this line of argument was presented in the national forestry programme. In this case, the programme progressed all the way to decision-making at the Council of State level, when the

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Chancellor of Justice ordered an assessment to be completed before the programme was finally approved.

Various problems were encountered in the cases in which the start of the assessment was severely delayed relative to the other preparatory work. In some cases, the credibility of the planners was severely questioned and this became channelled into strong opposition to the whole plan. The Natura 2000 programme is an example. In other cases, the assessment results were used only to a limited extent, because too much prestige had already been built into the programme as drafted before the assessment. The National forestry programme is an example.

There are also examples of policies, plans and programmes where the assessment work started simultaneously with the other preparatory work. The energy saving and energy efficiency programmes included assessments that were part of the preparatory process. The Finnish Forest and Park Service have also included assessments as an integral part of resource planning. Also, the Ministry of Transport and Communication, the Finnish Road Administration and the Finnish Rail Administration, have moved toward, and recognised the usefulness of, initiating assessments simultaneously with the other preparatory work in transport planning.

The early initiation of assessment, simultaneously with other processes, does not mean that all problems will be avoided. Other issues remain from an assessment point of view. Notably the question of integration between environmental assessment and other preparatory work still needs to be addressed (see below).

2.5 Tiering

According to the text book, policies, plans and programmes can be seen to form a clear hierarchical structure in which higher tiers direct the lower ones. In reality the picture is blurred. First, there are policies, plans and programmes at several hierarchical levels, from the supranational (European Union) to the local (municipal) level. Second, the top down direction may be reversed and programmes, or even certain large-scale projects, such as those for harbours or nuclear installations may begin to drive the plans and policies. The picture is further complicated by the fact that local policy may have starting points that differ from those of national policies. Moreover, local implementation of a national policy clearly is a political activity that affects the interpretation of the policy.

Thus the tiering of assessments is not a simple technical exercise. In this regard, the requirement of Article 4(3) of the EU Directive, namely that "Member States shall, with a view to avoiding duplication of the assessment, take into account the fact that the assessment will be carried out ..... at different levels of the hierarchy" is open to interpretation. For example, regional development programmes should reflect policies agreed upon at a supranational level. Yet, assessments of supranational and national regional policies related to the use of structural funds have been virtually non-existent. Instead, there has been tiering within the region and links to other plans and programmes that have direct implications for an assessment. Agenda 21 programmes have, for example, become a reference for municipal policies.

The driving force in the development of regional programmes is the Regional Council, which in Finland is formed by municipalities and is thus a bottom-up structure (Ministry of the Interior/Ministry of the Environment 1999). Funding, however, is channelled through regional government authorities,

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which represent a top-down structure. These conflicting pressures have to be taken into account, although they do not represent an orthodox view of what tiering is about.

Avoiding duplication in data collection is relatively easy, but the main issue and the time consuming phase of assessments relate to the discussions that take place in the preparation of the policy, plan or programme when several discussions will be "duplicated". This appears to be unavoidable, given the nature of the planning task.

In transport planning, the administrative flow chart looks like a text-book case of tiering. The Ministry of Transport and Communication has a key role at the policy level and these policy lines are transmitted to the administrations for the different transport sectors. A very clear break occurs, however, when one reaches the municipal level, and, in particular, larger urban areas as shown by the transport plan for the Helsinki metropolitan area. Here local and national policies meet, not as well structured tiers but rather as partly competing views that struggle to influence development (Kaljonen 2000). The revision of the Road Act in 1999 with demands for explicit links to land use planning also complicates the picture: in addition to the top-down tiering there are now strong horizontal links between two or more sectors.

2.6 Consideration of Alternatives

In some respects, the scope of alternatives in the preparation of policies, plans and programmes increases when moving to more general planning levels. Thus it is conceivable that the alternatives related to policies cover the broadest range, whereas alternatives related to programmes are more restricted. In practice, this general view of alternatives is not very helpful. Despite the consideration of alternatives, it has proven difficult to formulate them as part of assessments and policy related alternatives have not necessarily been broader than the programme alternatives.

Although all the examined assessments dealt with alternatives, there was considerable variation in the role of the alternatives and the constraints placed on them. Finnish experience shows that alternatives can play very different roles: exploratory and visionary alternatives map possible worlds; variations on a single theme prepare the ground for a compromise; and demonstrative alternatives serve to prove that the chosen solution is the only possible or clearly best alternative. In several assessments, two of these functions were combined. For example, in the programme for enhancing the use of renewable energy resources, one alternative considered the exclusion all subsidies, whereas the other alternatives maintained or increased modestly the subsidies. The starting point for the whole program was clearly a modest increase in the subsidies.

In most of the transport plans and programmes, the consideration of alternatives has been fairly exploratory and not overly restricted by what is possible or realistic. In the assessment phase, the aim has been to examine what constraints and conditions would arise under different scenarios. A key task has been to identify and co-ordinate means for achieving various objectives. The road maintenance policy was developed using such an objectives approach.

In this context, alternatives have tended to focus on the needs of different user groups and labelled accordingly. For example, in the Helsinki Metropolitan transport plan, they were termed "the reference alternative", the "public transport alternative" and the "car alternative". A contrasting approach was used in the natural resources programme for Western Finland, with a conservation oriented and exploitation oriented alternatives presented for the region's forests. In certain assessments

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of regional development programmes, alternative visions were developed using SWOT (Strengths, Weaknesses, Opportunities and Threats) techniques but these were not carried into full-blown alternatives at the level of measures.

2.7 Assessment methods and approaches

The SEA Directive does not specify the type of methods or approaches that should be used in an assessment of the issues listed in appendix I of the Directive. The assessments examined here have used a wide range of methods, from quantitative modelling to collection of qualitative information and expert opinions. In fact, common to all is a combination of methods and approaches. Also, the assessments indicate that it is not possible to undertake detailed quantitative analyses of all relevant aspects. Several assessments, e.g. the assessment of the programme for renewable energy resources, have hinted at the need to carry out a life cycle analysis (LCA) of some aspects of the policy, plan or programme, but none of the cases examined here applied this approach. Given the available resources, it is unlikely that LCA could be done as part of the assessments. The demand for LCA perhaps should be seen as a reflection of the fundamental uncertainty that pervades all assessments of strategic decisions.

Another key methodological issue concerns the scope of assessment, in particular the combination of economic analyses with the environmental assessment. All examined assessments had clear links to economic activities, and for some there are established procedures for carrying out the economic appraisals. In the assessments of the Natura 2000 programme and the national forest programme, economic calculations were part of the assessment. In these cases, the combined assessment clearly increased the interest in and weight of the whole assessment. In the assessment of the national climate strategy, the environmental assessment was carried out separately but co-ordinated with the economic analysis. This arrangement caused some confusion. The main interest was clearly in the economic assessment, but some issues, such as the views of different interest groups, could probably have been handled better in a truly combined assessment.

Co-ordination problems were generally encountered in policies, plans and programmes for which separate and loosely combined assessments were made of various types of effects. With separate assessments, more effort has to be spent to achieve a final aggregation and synthesis of the different effects. These experiences appear to strongly support the idea of integrated assessments that have been developed within transport planning. It is, however, also evident that good, balanced, integrated assessments cannot be achieved by simply stapling together different assessments.

All the assessments encountered uncertainties and data deficiencies. These were noted and in some of the assessments systematised. The uncertainties were exploited by various groups, causing important conflicts related to the validity of various pieces of information in relation to who can say what and on what grounds, whose information is accepted and who will have to produce extraordinary evidence in order to convince others? Assessments are closely related to questions of power and authority, but they may help to increase transparency somewhat.

In order to achieve a systematic treatment of some uncertainties, the Nordic Triangle transport assessment separated the issues influencing the development into background variables and decision variables, thus highlighting more clearly what the assessment was about (Valve 1999). In the assessments of the national forestry programme, the regional development programme and the national climate strategy, SWOT type analyses were made and synthesised into best and worst case

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scenarios. These have been used in the subsequent public discussions on effects and have diversified views of what the programmes are actually about.

2.8 Reporting

All the assessments were publicly reported. In all cases, assessment findings have been reported in the actual documents for the policy, plans or programmes. In some cases, the assessments were also published as separate reports. The National Climate Strategy is an example of a case with several types of reporting: the strategy itself includes a brief mention of the environmental effects; the background document of the strategy devotes a chapter to the various assessments that were made; and, finally, the detailed assessments were published separately, as well as the sector specific material that was used in the preparation of the strategy.

The most common form of publication has been printed reports. The more recent assessments have used the Internet as one important channel for the distribution of information, including progress with implementation. A further advantage of the Internet relates to its cost effectiveness as a way of presenting and distributing drafts of the policy, plan or programme and the assessment of the proposal. For example, the National Climate Strategy and its assessment were posted in draft form on the Internet. The Internet was also used to disseminate information on the national land use objectives.

The contents of assessment reports have varied from brief descriptions of likely effects that have been identified to more extensive analyses of consequences and alternatives. The original National Forestry Programme contained a one page expert opinion based overview of environmental effects, but the Chancellor of Justice did not consider this to be a sufficient assessment of the likely effects, which led to a detailed assessment that dealt with environmental, economic and social effects.

2.9 Public participation

According to the Finnish constitution, everyone has the right to documents and recordings produced by or in the possession of authorities. The Act on Public Access to Information (621/1999) makes it clear that authorities should inform citizens not only of their decisions but also of the preparatory work leading to decisions. This applies also to policies, plans and programmes and thus gives a strong backing for public participation in the environmental assessments.

In the structural funds programmes, the participation is based on the concept of partnership. In practice, this meant assembling a broad group of stakeholders, but not providing direct access for individual citizens. Similar broad groups with members representing various interests have been used in other assessments as well, but many have also provided broader access for the public. In the resource plan for Ostrobothnia, more than 1000 groups were contacted in order to assemble local working groups. In the regional intermediate term road plan of Savo-Karjala, several consecutive hearings were organised to deal with specific issues. The organised group discussions have contributed by highlighting the views of different interests, and by giving interest groups the opportunity to interact with and to understand each other's arguments.

In a few assessments, attempts were made to reach the broad public by newspaper advertisements. These attempts, for example in the programme for renewable energy resources, have not been particularly successful. The response was limited and the general interest in the programme was low.

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2.10 Use in decision-making

On paper, all the assessments were used in the decision-making process, in the sense that assessment results were referred to in the final documentation and decision-making. It is more difficult to verify the actual influence on the choices made. Due to the nature of the decision-making process, individual findings seldom have a clear-cut effect on the outcome but instead may exert a gradual influence. In order to detect this influence, a separate evaluation that can clarify both direct and indirect effects of the assessment would be necessary.

An evaluation of the assessment of the Helsinki Metropolitan Area Transport System Plan 1998 indicates a lack of strong immediate influence on decision-making, primarily because the basic agenda was set using criteria other than those dealt with in the assessment. This does not, however, mean that the assessment will not influence planning, only that the influence is slower and more indirect than a rationalistic view of assessments would indicate. (Kaljonen 2000).

The general emphasis has shifted from viewing assessments as a way of producing specific information to a more integrated view that makes the assessment a part of the preparatory process (Jansson 2000). The assessments examined here contain mixtures of these views. In the road maintenance policy, the assessment contributed to the discussions of objectives and highlighted various aspects of the planned measures.

2.11 Monitoring

All the examined assessments include some reference to monitoring. In the simplest form, the reference is a list of matters to be examined further (e.g. Pirkanmaa waste management). In most assessments, there are also more detailed considerations related to monitoring. Some assessments include a proposal to set up a specific monitoring group that would deal with implementation and effects monitoring (e.g. the renewable energy resources programme, the Pirkanmaa waste management project). In some cases, the monitoring plan included indicators and monitoring variables for which data collection is taking place already or is reasonably easy to organise (e.g. the natural resource plan for western Finland). The references to monitoring understandably become more vague the closer one gets to policies. For policy, monitoring largely concentrates on the achievement of objectives, which represent the intended effects (e.g. the national land use objectives).

3. DISCUSSION

3.1 Similarities and differences in the assessments

Fisher (2000) argues that it is possible to distinguish between “policy SEA”, “plan SEA” and “programme SEA” and that assessments within each group are similar. In this classification, policy assessments are broad, scenario-driven and examine broadly different types of effects, which are fully integrated into the formulation of the policy itself. The National Forest Programme, the National

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Climate Strategy, the national objectives for land use and the road maintenance policy 2015 are typical policy documents that aim to influence plans, programmes and to some extent even projects at lower tiers. In all these cases, the assessment could have played the role envisioned by Fischer (2001). In practice, the assessments of the road maintenance policy and the national objectives of land use came closest in establishing a policy dialogue. The assessment of the National Climate Strategy established a dialogue, but it was partly set aside from the core discussions, which dealt with the economic effects. Finally, the assessment of the National Forest Programme contributed only to the discussion on implementation.

These differences can be attributed partly to the novelty of the assessment culture. The Minister in charge of the National Forestry Programme put it explicitly "when we started I thought that you can't assess anything before its ready, in retrospect this was a too simplistic view". One can, however, also argue that the various degrees of difficulties in achieving integration also reflect power relationships within the field or sector that the assessment takes place. The degree of integration will depend on whether the assessment experts are considered to be within or outside the group that has the power to formulate the policy.

The Road Administration has developed a culture that includes environmental assessments and those responsible are experts within the system. The National Climate Strategy was developed under the leadership of the Ministry of Trade and Industry, which traditionally has had a very strong role in policy formulation although external experts are used. The Ministry, however, is not particularly interested in having results that could question its competence and this was felt in the environmental assessment and the economic assessment alike. Willingness to actually use assessments in decision-making is an important determinant of what the assessment will look in practice. When the willingness is lacking, the assessment will not be able to influence the policy, even though it aims to assess options. The willingness to use assessments is also linked to the results: an assessment that supports the main policy line will be extensively used, seemingly strongly influencing the policy, plan or programme.

Similar explanations for differences in the way assessments have been carried out and, in particular, influence decision-making can be found in other types of assessment. Differences can be observed even within similar assessment task. Thus the different structural funds programmes differed widely in their environmental approach. In one of the programmes, the influence of assessment is easy to trace: the different measures reflect the environmental discussions, e.g. in the justifications and in the funding criteria. Whereas in the other two programmes, the environmental aspects are reduced to one particular set of measures and a brief description that meets the letter if not the spirit of environmental assessment.

One important reason for the similarity or difference between assessments appears to be the planning context. If the object to be assessed is clearly defined, in the sense that all important stakeholders agree on what the policy, plan or programme is about, the assessment is relatively easy to plan and conduct. If there is disagreement on the nature of the policy, plan or programme, the assessment will face difficulties. In practice, it means, for example, that some stakeholders attempt to raise broad strategic issues while others wish to make the whole exercise a technical listing of observations that can be used to justify specific (predetermined) choices. Under such circumstances, the assessment is demanding, because it will somehow have to deal with both aspects, thus leading to a mixed rather than a clearly tiered assessment.

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Several of the assessments examined here display these features. The Natura 2000 assessment simultaneously had to deal with the selection of specific sites and a broad discussion on the need for nature conservation. The National Forestry Programme outlines general forest policies, but also specifies sums to be used for particular activities, such as improving forest roads. The National Climate Strategy outlines a path of development towards greater energy efficiency, but also focuses on a single project — the question of a fifth nuclear reactor in Finland.

3.2 The scope for standardisation

Finnish SEA experience indicates a limited scope for the standardisation of procedures. Probably the most promising opening for some standardisation is at the level of public participation. Standardisation could simplify procedures by setting out clear obligations on how to inform the public and the opportunities for interested parties to provide input to the process. It would help those responsible for the assessment to plan the process and could lead to the specification of certain quality criteria for the assessment process.

This is particularly important for policies, plans and programmes that are controversial in some respects. Without legal backing, participation may end up being restricted to a negotiation among a few strong interest groups. Standardised procedures can also be envisioned for some negotiations between authorities, and would be particularly useful for the process of transboundary assessments. Here experience with project level assessments has shown that a common cause of difficulties is the lack of structured processes that can be clearly described to the authorities and public in the neighbouring country (Hildén and Furman 2001). The contents of the environmental report can be standardised at a general level, i.e. the type of effects that are examined.

One key issue will be the relationship between environmental, economic and social information. A requirement to include all these aspects provides an incentive to form multidisciplinary teams for assessments. If the assessment is limited strictly to environmental issues, highly specialised but narrow teams can handle the assessment tasks. In this case, the synthesis will have to be made by those drafting the policy, plan or program, who can use a "divide and rule" approach to the different assessments. Restricting the environmental assessment to a narrow environmental concept will increase the number of specialised assessments: economic assessments, social assessments, cultural assessments and so on. It is obvious that the demands to carry out various ex-ante assessments will increase, just as the demands for ex-post evaluation have increased. It is useful to try to combine the different ex-ante assessments into a single comprehensive assessment. Such assessments are challenging and require methodological development for multidisciplinary studies. The possibilities to standardise these assessments are, however, limited.

Certain basic tools, e.g. economic models and qualitative strategic tools such as the SWOT analysis, have been found useful repeatedly in the assessments of policies, plans and programmes. These can be methodologically standardised to a certain degree, but they will obviously have to be adapted to the specific context. Requirements concerning the transparency of the description of methods can also be "standardised" to some degree, but a significant proportion of the data presented in assessments of policies, plans and programmes will represent syntheses of available information and possible new combinations of older data, rather than new primary data. Therefore, it is equally important that original sources are quoted and critically reviewed.

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3.3 Challenges in implementing the SEA Directive within the transport sector

One of the main challenges in implementing the SEA Directive lies in determining its scope at the Member State level. The issue is not so much about the necessity to carry out an assessment *per se* but about when it is justifiable to follow the procedural and content requirements that are included in the directive.

This raises the question how rigid must the assessment procedure be in order to meet the requirements of the SEA directive? Any assessment worth the name will cover the basic contents of the articles in the SEA directive, perhaps with the exception of extensive public consultations. The crucial issue is thus to what extent the contents have to be translated into rigid procedural steps in the national legislation, for example by specifying the type and duration of negotiations between authorities. Should this be the case there is clearly an interest in keeping the scope of the directive narrow, for example by making sure that all transport policy documents are excluded from assessments according to the SEA directive. One way of doing this is to focus all formal assessment procedures on land use planning by viewing all transport planning only as preparatory work for land use planning. This strategy could, however, have some radical implications for transport planning and it is far from clear that it would be beneficial overall.

The requirement to organise public participation has been seen as one of the bureaucratic elements of the SEA -directive. In part there are practical problems to be solved, for example how to reach potentially interested stakeholders and organise their input in such a way that it can be used in the assessment. More fundamental issues are related to the concept of representative democracy, for example which groups can act as spokespersons for the public. Transport planning is a case in point because it relates to an important part of social infrastructure and should thus serve the interests of the whole society. Both theory and practice have shown that it is impossible to identify the interests of society unambiguously. The role of assessments will therefore be to structure and support the political discussions on the alternative solutions, not to declare *the* optimal solution.

In the end it seems that the real challenge in applying the directive within the transport sector is in finding ways of integrating the assessments with the preparation of plans or programs in such a way that the preparatory work is improved from a technical information standpoint while simultaneously offering possibilities for democratic input into the processes. This will require the will to initiate and use assessments. Within the transport sector this work is ongoing, but the difficulties should not be underestimated. Rigorous assessments may challenge existing structures and practices and will therefore encounter opposition.

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GERMANY

REFORM OF THE ECONOMIC EVALUATION PROCEDURE IN RESPECT OF TRANSPORT INFRASTRUCTURE INVESTMENT

1. General remarks

On the basis of fresh knowledge and against the background of the greater demands made of transport infrastructure, the German Federal Ministry of Transport, Building and Housing is reforming its economic evaluation procedure in respect of transport infrastructure investment.

Under the reform, the main features of the evaluation method under the 1992 Federal Transport Infrastructure Plan will be preserved but brought up to date with fresh knowledge. This is particularly the case with respect to the following components:

- The environment.
- Spatial planning.
- Urban development.

One of the principal new features is that in addition to the individual project evaluation several measures taken by one or more transport modes are systematically grouped together and subjected to a further evaluation insofar as they interact with each other. Similarly, account will be taken in future of the structural effects of better connections between sea- and airports.

2. The Standardised Evaluation System[1]

A general assessment procedure for transport investments was introduced in Germany in the 1970s, first as *Guidelines for Road Planning and Construction — Economics*. This was used as the basis for assessing the 1985 and 1992 Transport Master Plans through procedures to quantify changes in user costs (operation and time costs), infrastructure costs and some external costs. The 2001 Master plan was drawn up by the integrated Ministry of Transport, Building, Housing and Spatial Planning and assessed following the same approach with the improvements and extensions described below.

The division of responsibilities for government between state and federal levels has an important bearing as the 16 Lander are generally charged with taking action on the basis of federal law. The federal government is responsible for motorways, trunk roads, railways and inland waterways, but the Lander have the entire responsibility for ports and airports. The transport master plans are drawn up by

1. See Werner Rothengather in *Evaluation of Infrastructure Investments in Germany,* Transport Policy 7 (2000), Elsevier Science Ltd., 2000.

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the Ministry for the areas of federal responsibility and approved by the federal parliament. The Lander, however, have a powerful role as they are required to issue confirmation that the master plan can be integrated into their spatial planning without significant problem and they are the source of much of the data used to assess projects encompassed by the master plans. Finally community government is responsible for determining the detailed alignments of transport projects in the master plans.

3. Development of cost-benefit analysis

Cost-benefit analysis is at the heart of the economic evaluation procedure in respect of transport infrastructure investment. The aim is to facilitate comparative assessment of projects on a monetised basis. The future structure of the evaluation components and criteria used for the cost-benefit analysis is basically the same as before. All costs and values are based on 1998 prices. The most important changes are set out below:

4. Accident costs

New, more extensive accident cost statistics supplied by the Federal Highway Research Institute are included in the evaluation in connection with the impact infrastructure investment has on safety. For example, accident-related costs to the overall economy are taken into account.

5. Impact on employment

The evaluation of the effect of new transport infrastructure on employment has been improved insofar as the new procedure is able to distinguish between regional labour markets. For the first time, this evaluation component also takes into account the employment impact of maintenance and repairs work carried out on transport infrastructure.

A new approach has been developed for identifying employment effects once transport infrastructure becomes operational. It has distinct advantages over the procedure used until now. One of the criteria for determining the positive employment impact of the use of transport infrastructure – such as, for example, the establishment of new firms in the area – is the resulting improvement in the quality of regional transport connections, which is more closely linked to the impact on employment than the criteria used until now, namely the regional supply of transport infrastructure and the length of the infrastructure in question. Evaluation of the benefit for employment is therefore no longer limited to the region where the infrastructure is to be built. All regions where connections improve as a result of the project can now be included in the evaluation.

6. Non-urban noise

For the first time, the procedure includes a simplified method for taking account of noise pollution suffered by people who retreat to rural areas in search of peace and quiet. It is based on the principle that even in rural areas there are maximum noise pollution levels that should not be exceeded. It is assumed that appropriate technical measures could be used to prevent noise levels from exceeding specified target levels. The cost of these potential noise protection measures is taken into account in the evaluation procedure.

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7. Emissions

Emissions are evaluated in accordance with a new two-part evaluation method. A distinction is made between global emissions (principally atmospheric emissions) and urban emissions. Unlike the old procedure, the new procedure deals separately with health impairments caused by carcinogenic air pollutants. For the first time, the new evaluation method is concerned with not only emissions but also emissions of harmful substances that undermine any benefits. This innovation meets an important requirement of Regulation n° 23 on implementation of the Federal Emissions Protection Act (regulation about the setting of concentration values).

For the necessary reproduction of urban structures in this context, city models based on the existing planning regulations were used to estimate the number of inhabitants affected. They can also be used to establish noise pollution and separator effects.

8. Climate change

For the first time, the monetary impact of climate change is taken into account, on the basis of CO_2 emissions as a key variable expressed in terms of an avoidance cost per tonne of CO_2 emitted.

9. Compensation costs

With the old procedure, the cost of compensating for incursions into nature and the countryside as a result of the infrastructure project was included in the investment costs as an approximate lump-sum share of the building costs. The new procedure introduces a new method for evaluating the compensation costs more accurately by taking more account of the particular circumstances of each individual case. It is based on a preliminary estimate of the cost of compensation measures that takes account of the local spatial characteristics of each case. Included in the calculation are the cost of purchasing the land, initial work carried out on the land, maintenance work, as well as any functional losses during the regeneration period expressed in monetary terms.

10. Effects of seaport and airport connections

Changes in the transport connections between seaports and airports as a result of infrastructure investment can affect the routes chosen by hauliers. This can have consequences that until now were not taken into account in the standard procedure under the federal transport infrastructure plan or were only partially taken into account. For example, more intensive use of German sea- and airports by hauliers generates a higher turnover of goods and a higher volume of passenger traffic. This in turn creates higher value added which means more jobs are created in the relevant locations. In the context of the reform of the federal transport infrastructure plan these positive effects of building a new transport connection or upgrading an existing one will be explicitly taken into account in the new evaluation procedure, notably with respect to the ability of German sea- and airports to compete better internationally.

11. Modernisation and extension of the non-monetary evaluation procedure

Expressing a project's impact in monetary terms is not always possible or appropriate for all areas affected by transport infrastructure investment, and not all the effects of a project can be expressed in monetary terms and compared with the investment costs. This is the case not only with

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the environmental risks inherent in a given project but also with distribution and development concerns in relation to spatial planning objectives. They cannot be subjected to the evaluation criteria of cost-benefit analyses which are based exclusively on overall cost-effectiveness.

A non-monetary evaluation is therefore necessary in respect of the aforementioned areas. The procedure for evaluating transport infrastructure investment under the federal transport infrastructure plan combines non-monetary evaluations and cost-benefit analyses.

12. Environmental risk assessment (ERA)

Environmental risk assessments assess the qualitative effects of the construction of transport infrastructure on nature and the countryside according to the grid devised in the context of the federal transport infrastructure plan. An estimate of the cost of compensation and replacement measures is not possible with an environmental risk assessment.

The ERA system in the federal transport infrastructure plan has been developed further. The most important new features are:

- Use of a similar method for all transport modes.
- Better account taken of cultural landscapes, areas with low traffic density not carved up by transport infrastructure, and highly sensitive regions.
- Appropriate account taken at an early stage of potential clashes with European nature conservation concerns (special protection areas and special areas of conservation).
- Inclusion of extension projects.
- Account taken of the cumulative effects of neighbouring projects.

An ERA is carried out in respect of all road building projects, irrespective of their size, whenever the results of a preliminary study suggest a likelihood of significant clashes with nature conservation. These projects are identified by the federal conservation agency. In principle, the same procedure also applies in the rail sector, where because of the sheer size of projects it can generally be assumed that they will clash with nature conservation concerns. Because of their particular sensitivity with regard to conservation, all projects involving the waterways are subjected to an individual study.

13. Land-use efficiency analysis (LEA)

Insofar as more account is to be taken of spatial planning concerns in the context of the reform of the federal transport infrastructure plan, the spatial planning component has to be taken out of the cost-benefit analysis system so that it can be developed further as a separate evaluation component based on realistic objectives and criteria. The new objective-based system can be divided into two parts:

1. Distribution and development objectives:
   High degree of mobility among members of the population; nationwide development (evenness of distribution); development boosts for disadvantaged or backward regions.

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2. Decongestion and transfer objectives:
   Decongestion of congested areas and corridors; better conditions for transferring traffic onto more environmentally-friendly transport modes such as the railway or waterways.

Distribution and development objectives

The system of urban centres is used to identify the spatial planning contribution of measures included under the federal transport infrastructure plan with respect to distribution and development objectives. The centres have feeder functions for their respective traffic networks and – in rural areas in particular – also serve as development centres for whole regions. In performing both of these roles they are backed up by a qualitatively high level of development with respect to transport. Spatial planning criteria used to evaluate projects under the federal transport infrastructure plan therefore have to show to what extent the project contributes towards development in the transport sphere and improves connections between individual urban centres. In this context, international connections with centres in neighbouring countries and European metropolis regions must also be taken into account.

The importance of locations of airports, seaports and freight hubs is similar to that of traffic centres. Their connections with each other and with the centres they serve are important for determining their ability to compete and therefore have a significant economic impact. Another important factor that has to be taken into account in relation to the development objective is the structural strength or weakness of the areas connected with each other.

Decongestion and transfer objectives

To ascertain to what extent projects included in the federal transport infrastructure plan contribute towards regional development in terms of decongestion and transfer objectives, it is important in each case to establish which construction and upgrading projects in the rail and waterways sectors may be particularly effective at regional level in relieving congestion on high-density corridors and in conurbations, sometimes as alternatives to road building projects. Such projects are prioritised in spatial planning terms because of their predicted capacity to relieve congestion as well contribute towards connecting and developing urban centres.

14. Evaluation of town planning effects (decongestion at local level)

As early as 1986 the federal parliament ordered that a study carried out to measure the demand for trunk roads in Germany should also look at the impact of such roads on built-up areas and the populations concerned.

Inclusion of the impact of federal infrastructure projects on town planning ensures that the function of such projects is not only to promote development and improve transport connections but also – in accordance with an urban-friendly trunk road policy – to relieve congestion in built-up areas locally and bring benefits for the people living there. Unacceptable new nuisances in sensitive areas are to be avoided whenever possible.

Under the present federal transport infrastructure plan, infrastructure projects are first subjected to a qualitative on-the-spot assessment in accordance with town planning criteria. The quality and sensitivity of the urban area is then assessed and set against the impact of the infrastructure in terms of building work and traffic.

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The result of the "before" and "after" comparison is a benefit or risk potential. The difference, expressed in points, reflects the imbalance between the sensitivity of the urban area and the infrastructure project's contribution to town planning. A high benefit potential signifies that the urban area's quality features are not fully exploited, perhaps because there is no local bypass. The benefit potential reacts sensitively to any shifts in the structure of traffic volume linked to new building projects (such as a local bypass) which offer scope for transforming or abandoning unacceptable town planning situations at the level of local through traffic. Decongestion measures yield benefit potential activated by transforming or abandoning existing busy roads. Similarly, negative benefit potential, otherwise known as "risk potential", can also arise.

One of the aims of the reform of the federal transport infrastructure plan is to develop the procedure for assessing town planning effects so that for the first time it can be applied nationally to small road projects. The "soft" indicators that have to be taken into account in this context are:

- The quality of the urban area.
- The quality of local conditions for the population and user demand.
- Barrier effects.
- The urban climate/urban environment.

15. Other significant changes to the procedure

Assessment of interdependent sets of measures

The federal transport infrastructure plan launched in 1992 was used only to assess individual projects. The only difference between the case covered by the plan and any other case was the particular measure that had to be assessed. The possibility that measures taken by different transport modes, with their overlapping operating spheres, might have an influence on each other was not taken into account. However, if the effects of different transport measures are dependent on each other to a significant degree, and such interdependencies are overlooked, as happens with individual project assessments, the results of the assessment will be distorted and the priorities set on the basis of the assessment will be wrong.

Under the new federal transport infrastructure plan, the idea is that measures that present significant interdependencies should be subjected to an additional assessment. Examples in this context include series of investment measures, such as series of local bypasses, as well as measures carried out by the same transport mode or different transport modes in parallel situations.

As yet, there are no precise rules for grouping together measures that present interdependencies. More research is needed in this field. However, test questions are being developed which will be used in future to examine individual measures for any significant interdependencies.

Like the assessment of individual projects, the assessment of interdependent transport effects basically includes all the benefit-related components of the federal transport infrastructure plan. For the purposes of the economic evaluation procedure, the decisive value where groups of interdependent measures are concerned is the difference between the cost-benefit ratio. The individual measure with

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the best cost-benefit ratio is taken as the starting point for studying the additional benefits that would arise as a result of another project's inclusion in the network together with the additional costs. On the basis of these results it is also possible at the same time to establish whether there is a need for only individual measures or the whole group of measures.

Induced traffic

In the old evaluation procedure under the federal transport infrastructure plan, traffic generated as a result of an infrastructure measure was not explicitly taken into account, and a rough assessment of the impact of extending infrastructure was only carried out in the context of long-distance passenger forecasts. "Induced traffic" is new traffic generated exclusively as a result of infrastructure measures in the transport network and which would not exist without such measures.

With the reform of the federal transport infrastructure plan the impact of induced passenger traffic on road transport has been explicitly included in the economic evaluation procedure for the first time by means of factors that tend to reduce the benefits of such traffic. By applying the factors in respect of the different benefit components of the cost-benefit analysis, it is possible to quantify and evaluate not only the costs of induced traffic but also the benefits. The benefits of induced traffic are assessed using the consumer surplus concept. In the case of other transport modes induced traffic is not taken into account.

Integration of forecasts and evaluation

In future, project evaluations will comprise an additional integration phase. After an initial evaluation based on the volume of available investment, the resulting transport offer (i.e. series of key infrastructure measures) will be compared with traffic forecasts. In this way it should be possible, *inter alia*, to judge the contribution of key rail projects towards full utilisation of the market potential for rail traffic.

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SPAIN

INTEGRATION OF ENVIRONMENTAL CRITERIA IN THE PLANNING AND DECISION MAKING PROCESS ON TRANSPORT INFRASTRUCTURE

Decisions about linear transport infrastructures (roads and railways) are made step by step, along a complex process of planning and design. This process integrates economic and environmental appraisals, procedures of consultation and public participation, and technical analysis.

Until now, this process did not usually include a Strategic Environmental Assessment (SEA) of plans and programmes (in the narrow sense of the term). However, the integration of environmental variables and criteria begins at a relatively early stage of the decision making process, long before the development of the infrastructures at the project (design) level. For this reason the environmental assessment of this kind of infrastructure in Spain has some of the characteristics of a SEA. Briefly, the environmental assessment of linear transport infrastructures in Spain could be described as a combination of a SEA at corridor level and an environmental impact assessment (EIA) at project level.

In fact, the integration of the environmental criteria is made in the course of the elaboration, administrative procedure and approval of the called "Estudios Informativos". In these studies, different alternatives are assessed, normally on a scale of 1:5 000, considering sections up to 100 km. In urban areas, the studies are sometimes developed at a larger scale (i.e. 1:2 000), due to the greater complexity of these territories, and the subsequent need for a more precise definition of the technical solutions.

The "Estudios Informativos" are carried out by the developer of the project. In the case of infrastructures of national interest the developer is the "Ministerio de Fomento" (Ministry of Public Works and Transport).

The studies are usually developed in three phases. In the first one (Phase A) the study area is characterized, according to physical, environmental, territorial and cultural criteria. This activity allows identifying a number of broad-brush routes (corridors) that are potentially compatible with this set of criteria. For instance, all the protected areas, as well as the most valuable or vulnerable zones from the environmental point of view, are identified, in order to avoid them. In this phase, a consultation procedure is also launched. The key results of the analyses, especially the selection of the broad-brush routes are presented to different institutions and ecologists groups.

In the second stage (Phase B), more detailed routes and designs (at a 1:5 000 scale) are introduced in each of the broad-brush routes selected in the previous phase. A quantitative characterisation of all these alternatives is made, considering the following points of view:

- Economic (capital costs, cost-benefit analysis, etc.).

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- Functional (traffic forecasts, safety, parameters of design, etc.).
- Environmental (expected residual impacts after mitigation measures).
- Spatial (relationships with urban and land use planning, effects on other infrastructures, etc.).

A multi-criteria analysis is carried out using these four groups of criteria. It includes tests of sensibility and robustness, varying the weights given to different indicators. The final result of the analysis is a recommended alternative.

The study, including the recommended and the others alternatives, is then submitted to the procedure of public participation. In this procedure, the public and the administrations are invited to present their comments or suggestions. The comments can be about the general characteristics of the project or specifically related to environmental questions. All the comments received are analysed, and the Director of the study has to make a report for each of them. The comments and the reports are included in a dossier that is sent to the Environmental Authority, which is responsible for making the "Declaración de Impacto Ambiental" (Declaration of Environmental Impact), normally called DIA. The DIA assesses the environmental feasibility of the project, on the basis of the alternative recommended by the developer or on the basis of any other of the alternatives drawn up. The DIA also defines the requirements and conditions to be met in the design and building processes.

The Ministry of Public Works and Transport can accept the DIA issued by the Environmental Authority or express its disagreement, if it thinks that the alternative selected by the Environmental Authority leads to an excessive increase of costs, or causes functional or spatial problems not justified enough by environmental criteria. In that case, the final decision is taken by the Council of Ministers.

Once the DIA has been published, the route for the project is definitively approved, and will be the basis for the technical development at project level (a common scale for project level is 1:1 000). However, before that development, there is one last stage (Phase C) of the "Estudio Informativo". In this last Phase, the requirements stated by the DIA are defined and evaluated in detail.

The integration of environmental criteria results in higher costs for the development of the infrastructures. These higher costs are the logical price that must be paid for the better environmental quality of the infrastructures and the preservation of the environment, for which there is a growing public awareness.

Just as an example, in the studies carried out for road projects in 2001, the environmental costs were estimated to reach 10 per cent of the construction costs. This figure includes the costs of assessment studies themselves, and, mainly, the higher costs associated with the selection of more environment friendly alternatives, the costs of preventive, corrective and compensatory measures included in the study, and, the costs of the environmental requirements stated by the DIA

Obviously, the technical project (design) for the construction of the infrastructure has to fulfil all the DIA requirements. It has to include an Annex of Environment Analysis, which develops and budgets all the mitigation measures, and also a Plan of Environmental Monitoring to be applied during the construction period.

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In Spain, the regions (Comunidades Autónomas) have very important competences in the transport sector. In general terms, the procedures followed for the environmental assessments of infrastructures of local or regional interest are quite similar to the above-mentioned. Some regions are introducing in their environmental legislation the strategic environmental assessments of several types of plans.

In the case of nodal infrastructures, such as ports and airports, there is also a growing trend to make the environmental assessments at the earliest stages of the planning process.

A good example of this trend is the extension of the Port of Barcelona, now under construction. The extension will be built in different phases, and comprises a large number of individual projects of quite different nature. The legal obligations as regards environmental impact assessment also vary among the projects. All this phased development and the detailed identification of the projects are included in a long term planning document called "Plan Director del Puerto" (Master Plan).

The Port Authority of Barcelona decided three years ago, with the agreement of the Ministry of the Environment, that it was more convenient to make an environmental impact assessment of the whole Master Plan, instead of waiting for the development of each of the individual projects, and then make the environmental impact assessment in the cases that it was legally obligatory. This innovative approach was successfully finished in July 2000, with the publication of the DIA of the "Plan Director". Since then, this same approach has been applied to other ports, such as, Las Palmas, Huelva, Gijón, etc.

Finally, concerning the SEA of plans and programmes, in the narrowest sense of the term, it can be said that the main efforts until now have been focused in the development and testing of assessment methodologies, as well as in making some pilot studies. The procedure of transposition of the Directive 2001/42 to the Spanish Legislation is still at its earliest stages.

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RESOLUTION 2003/1 ON ASSESSMENT AND DECISION MAKING FOR INTEGRTATED TRANSPORT AND ENVRIONMENT POLICY

COVER NOTE

At the Prague Council in 2000, Transport Ministers agreed to a common approach to developing sustainable transport policies[1] that highlighted the need for improved support for decision making on transport projects and policies. The importance of good systematic evaluations of costs and benefits and effective strategic environmental assessment was stressed and guidance sought on developing better procedures and tools for presenting the results of appraisals to decision makers. Improved decision making was viewed as the key to integrating transport and environment policies. This resolution takes up these issues.

The accompanying report presents the results of work on improving tools to support decision making undertaken since the Prague Council, based on a review of experience the United Kingdom, France, Italy and the Netherlands with additional short summaries provided by Germany, Spain and Finland. The paper draws the following main conclusions.

The purpose of economic and environmental appraisals is not to attempt to take the decision in place of technical or political decision makers but to present them with the information they need to make an adequately well informed decision. Assessments therefore need to be are presented in a way that directs decision makers to the key factors to weigh in their decision, highlighting trade-offs, risks and uncertainties, rather than making judgments in place of the decision maker. The limits to appraisal techniques also need to be acknowledged.

The key to making appraisals useful and indeed useable for decision makers is **effective presentation and communication of results**. The main results and issues have to be presented succinctly, in just a few pages, but in a way that makes the analysis behind each issue readily accessible.

Appraisals are usually more effective when the **financial responsibility** for projects matches their spatial dimension (e.g. for local projects local governments have discretionary powers over the use of resources). Where this is not the case it may be more efficient to reorganise government responsibilities than develop elaborate assessment and consultation procedures.

1. Sustainable Transport Policies, ECMT 2000.

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Establishing the regional economic development and other objectives that transport projects are intended to deliver at the early stages of planning is critical, as unless there is a consensus the plan or project objectives may be challenged later on and different or additional objectives applied, potentially aborting previous work at great cost. **Early stakeholder involvement** is crucial together with wider public consultation.

Difficulties are apparent in most countries in reaching individuals and the public in general as opposed to organised groups. Consultation must go wider than institutional stakeholders and just creating the opportunities is not sufficient. It requires **formal strategies for public involvement**. Partners for achieving political acceptance have to be identified and all representative groups solicited, especially weak groups and particularly potential losers.

Assessments should be linked directly to the decision making procedures of elected and technical decision makers for full effect. **Integrated assessments as part of the planning process** are therefore likely to be more effective than separate economic, environmental, health and other impact assessments undertaken in isolation.

An appraisal focus upon economic efficiency can struggle to provide a single measure of the net benefit of a project as the valuation of some benefits and costs, particularly those of an environmental character is difficult. In all the countries examined multi-criteria analysis is becoming a central part of project assessment, complementing traditional cost benefit analysis an lending more credibility to economic assessment procedures. Notwithstanding the limitations of economic appraisal in isolation, good **quality economic appraisals are an essential part of effective decision making**. Quality here requires that all important economic effects are addressed.

Opportunities should be taken to streamline assessment procedures in a linked process down to the project environmental impact assessment level. In this way efficiency gains can be made and repetitious assessments avoided.

The quality of assessments and the value in practice of the procedures discussed here depend on the availability of **staff with the skills needed**. Adequate resources have to be allocated to managing consultation and contracting expert assistance. More fundamentally for transport Ministries, staff have to be recruited or trained with the skills to manage assessment procedures, interpret results and liaise with other stakeholders.

The accompanying draft Resolution was drawn up in co-operation with the OECD Environment Policy Committee's Transport Working Group. It is to be submitted through the committee to the OECD Council for agreement in due course.

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RESOLUTION 2003/1 ON ASSESSMENT AND DECISION MAKING FOR INTEGRATED TRANSPORT AND ENVIRONMENT POLICY

The Council of Ministers of Transport, meeting in Brussels on 23 and 24 April 2003,

CONSIDERING:

- That integration of transport and environmental policies is fundamental to sustainable development.

- That improved decision making procedures are the key to more integrated policies.

- That tools to support better decision making developed by ECMT Member Governments should be more widely deployed.

RECALLING the joint statement of Ministers on Sustainable Transport Policies agreed at the Council of Prague in 2000 and in particular the stress it puts on the importance of integrated decision making.

RECALLING ALSO Resolution 2002/1 on the Development of European Railways and especially its recommendation that good multicriteria and cost benefit analyses must be used as the basis for making decisions on infrastructure investment.

Having regard to:

- The conclusions and recommendations of report [CEMT/CM(2003)9] Assessment and Decision Making for Integrated Transport and Environment Policy.

- The Key Messages for Government from reports [CEMT/CM(2001)12 and 13] on Implementing Sustainable Urban Travel Policies.

- The conclusions of report [CEMT/CM(2000)7/FINAL] Assessing the Benefits of Transport.

- The conclusions and recommendations of report [CEMT/CM(2000)8/FINAL] Strategic Environmental Assessment for Transport.

- The results of the OECD report [DSTI/DOT/RTR/IM2(2001)1] on the impact of Transport Infrastructure on Regional Development.

NOTING:

- Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.

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- The Report to the European Council on integrating environmental concerns and sustainable development into Community policies, SEC (99)1941.

- The Protocol on Strategic Environmental Assessment to the UN/ECE Espoo Convention in the process of negotiation.

- The UN/ECE Convention on access to information, public participation and access to justice in environmental matters (Aarhus Convention).

- The OECD Environment Strategy and Environmentally Sustainable Transport Guidelines adopted by Environment Ministers on 16 May 2001.

- The 1997 UN/ECE Vienna Declaration on Transport and the Environment, the 1999 UN/WHO London Charter on Transport, Environment and Health and the subsequent WHO and ECE Transport, Health and Environment Pan-European Programme.

CONFIRMS the importance Ministers attach to integrated transport and environment policy and decision making.

AGREES:

- That good economic assessments of transport policy and project proposals are essential to ensuring efficient and robust decision making and cost effective use of resources.

- That appraisals of economic efficiency need to be supported with wider analysis that values — qualitatively and/or quantitatively — environmental, health and safety effects and reveals the distribution of costs geographically and in terms of the different communities affected.

- That integrated assessments are likely to be more effective than isolated economic, environmental, social and health appraisals.

- That integrated transport and environmental policy requires transparent decision making procedures that relate clearly to the results of economic and environmental assessments.

- That assessment and decision making procedures should be designed to facilitate rather than delay decisions[1].

- That co-operation between the Ministries responsible for transport, planning, the environment, infrastructure, regional development and health will be required to develop effective integrated appraisal procedures.

1. Whilst ensuring transparency and adequate assessment of social, environmental and health impacts, procedures must be designed both to safeguard objectivity and guard against potential abuse to obstruct the programs of elected decision makers or unnecessarily hinder flexibility in implementing their policies.

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RECOMMENDS that systematic evaluation of economic, social and environmental effects should underpin all transport plans and programs and all major transport sector investments, and to this end the guidelines annexed below should be followed.

INSTRUCTS the Committee of Deputies to monitor best practice in the development of evaluation procedures and tools to support decision making.

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ANNEX

GUIDELINES FOR GOOD ASSESSMENT AND DECISION MAKING SUPPORT

Overall

Systematic evaluation of economic, social and environmental effects should underpin all transport plans, programs and all major transport sector investments, as part of integrated assessment procedures developed in place of isolated economic, environmental, health and social evaluations.

As far as possible, similarly integrated evaluation should be incorporated into transport policy making.

Decision makers should be engaged in establishing the wider objectives that transport projects are intended to deliver for the economy and the community, through consultation with transport experts, planners, stakeholders and the public, early in the planning process in order to establish consensus and avoid challenges to project objectives at later stages with potentially high costs.

In relation to decision making support

Assessments should be presented in a way that directs decision makers to the key factors to weigh in their decision, highlighting trade-offs, risks and uncertainties, rather than making judgements in place of the decision maker.

The results of project, plan and program assessments should be presented to decision makers in a form that is simple, concise and clearly communicates the key issues.

Traceability must be assured and this can be done by referencing summary results to supporting analysis in successive layers of detail.

In relation to institutional arrangements and procedures

Assessments should be linked directly to the decision making procedures of elected and technical decision makers for full effect — integrated assessments as part of planning processes are therefore likely to be more effective than separate assessments undertaken in isolation.

Consultation with stakeholders and the general public is critical to the legitimacy of assessments and the durability of their results, it should begin early and be professionally conducted in order successfully to engage participation, and elicit and address the true concerns of the public.

Evaluations of infrastructure investments should be undertaken with equal rigor whatever the mode of transport concerned.

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Cross-border consultations should be undertaken where necessary.

Ex post evaluations[1] are important for verifying the results of assessments and for improving future project assessments.

Transport and land-use planning agencies may need training, support and additional expertise in the newer disciplines of environmental and health impact assessment; institutional capacity building is desirable even in respect of existing procedures.

In relation to the contents of assessments

Integrated assessments should aim at a systematic presentation of all relevant welfare effects (economic, health, environment, safety), where possible these should be quantified, otherwise they should be qualitatively described in a transparent way.

Assessments should contain explicit consideration of alternatives including the "non-implementation" option.

The uncertainties and limits of assessments should be made clear.

Assessments should explicitly account for significant distortions[2] in the pricing of transport services and in the markets they serve as such distortions result in wider economic effects, both positive and negative, than captured in conventional cost benefit analysis.

Where additional positive effects, for example in terms of regional development, are important to the overall benefits of a project, the specific mechanisms by which they are delivered must be identified in order to be sure that the intended results are likely to be achieved.

Distributional impacts should be reported in sufficient detail, as the indirect benefits of regional development accrue to different people and places than initial transport benefits and their incidence is likely to change over time.

1. Evaluations to analyse the effectiveness of policies and projects after their implementation.

2. In relation to marginal social costs.

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