European Commission DG TREN
Fifth Framework Programme
Competitive and Sustainable Growth

Key Action 2
Sustainable Mobility and Intermodality

Task 2.1.1/8

Thematic Network on Trans-Alpine Crossing

Contract Number: GTC1/2000/28057-SI2.315865

Work Package 1 **Trans-Alpine Crossing – An Overview**

Deliverable 1 **Inception Report**

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16 November 2001

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Overview

Executive Summary

Introduction

ALP-NET is a thematic network launched under the Key Action 'Sustainable Mobility and Intermodality' of the GROWTH programme of the 5th Framework Programme for Research and Development of the European Commission.

The subject matter of ALP-NET is transport in the Alpine regions. The latter faces specific problems due to the capacity limits of existing infrastructure and the sensitive ecological landscape.

As a thematic network ALP-NET will not carry out new research but instead bring together teams from ongoing research projects and policy makers and stakeholders in order to synthesise, concert and co-ordinate ongoing-work and for discussing open questions.

This inception report comprises an annotated bibliography on relevant themes and as such represents a starting point for discussions on specific issues. It provides a very broad overview on recent and current policy and research developments. It served as a 'general compendium' for the discussions at the first project workshop in October 2001. As such, it will allow specifying the agendas for the forthcoming workshops within the ALP-NET project.

Furthermore, it includes a summary of the contributions and the conclusions of the first workshop held in Brussels in October 2001.

All information on studies, projects, publications and key actors is also available on our project homepage at **www.alp-net.org**.

Policy Context

In the main part of the inception report, the international and national policy background is briefly presented and key actors are identified. In this executive summary, we briefly outline the key issues.

The centrally located Alps have always been an important feature of European transport. Since Europe has consolidated as a single economic area, the transit route through the Alps has gained in importance.

Over the years, the continued growth of trans-Alpine transport has led to a significant increase of transport-related problems, such as ecological damage, safety risks and noise. Congestion is a recurrent problem that can be explained by the fact that transport demand exceeds the capacity of the existing infrastructure. Reducing bottlenecks by merely building new (road) infrastructure is not considered a sustainable solution. This would reinforce the ecological problems and the resistance of the population in the affected regions. Furthermore, there are problems to finance new infrastructure projects.

Instruments that try to curb the demand or to shift it to environmentally friendly modes of transport have had a limited success so far. Apart from the conflicting interests of shippers, there are also conflicts among the Alpine countries since every national measure has repercussions for the neighbours.

New strategies are called for and this at different levels of government. The trans-national nature of transport makes clear that only co-ordinated transport policies can lead to successful results. The bilateral agreement with Switzerland as well as the Transport Protocol of the Alpine Convention are attempts to integrate non-EU countries in this process.

The analysis of EU policy documents shows that there is no explicit European Alpine transport policy. Instead, there are elements affecting trans-Alpine traffic such as the promotion of Combined Transport, the TEN (some of them across the Alps), and the attempts to harmonize weight limits, working hours and pricing/financing, where the new White Paper on the Common Transport Policy contains some specific provisions for sensitive areas like the Alps.

In order to analyse the EU policy context it is necessary to draw attention to politics within the European Union. It was mostly the Commission that took the initiative to present economically and environmentally innovative transport policy strategies in its White and Green Papers. The limited progress can in part be explained by the fact that implementation is for several transport issues subject to majority decision in the Council of Ministers (where Member States are represented). Problematic also remains the implementation deficit of directives agreed upon.

Austria and Switzerland, the two countries situated at the heart of the Alps, have the most active transport policy regarding trans-Alpine transport. As a member of the European Union, Austria will have to give up its Ecopoint system by 2003. The latter helped contain growing transport and pollution to a certain degree. Although the accession agreement between the EU and Austria clearly states that after 2003 the Austrian road network will be subject to the same rules as any other road within the EU, it remains unclear whether Austria will be able to defend some special regulations in order to protect its Alpine space from road traffic. In any case, Austria plans to introduce road pricing for HGV as of 2003.

Switzerland's transport policy is characterized by its role as a non-Member State of the EU. Transport agreements with the surrounding countries and later the EU have always had a major impact on the national policy. With the soon-to-be-implemented bilateral agreement on land transport (BALT), two main pillars of Swiss transport policy were co-ordinated and agreed upon with the EU. These pillars are the construction of a new Alpine rail link (NARL) until 2007/2013 and the recent introduction of a mileage-related heavy vehicle tax (MRHVT), a première in Europe. At the end of a transitional period, both measures together should lead to a significant shift of freight transit traffic from road to rail.

In Germany, Italy and – to a lesser degree - France, the Alps cover a smaller share of the national territory than in Austria and Switzerland. Their transport policy is subsequently less focused on Alpine-specific solutions. These countries rely on expanding infrastructure in order to reduce bottlenecks. France and Italy have recently decided to build a new rail link between Lyon and Turin. Germany plans to introduce a distance-related road-charge on motorways for HGVs from the year 2003 onwards. Besides the financing of new road infrastructure, the charge aims at making rail freight transport more attractive.

Slovenia does not have an officially formulated transport policy. A White Paper on transport policy, which was initiated in 1996, has never been finished and will be rewritten soon. The national motorway construction programme has priority to other measures.

The analysis of the policy context shows that the Alpine countries have different approaches to trans-Alpine transport. Due to institutional reasons, the EU is not acting as effectively as desired by the Commission. Some countries have come up with innovative policy measures in order to tackle the problems evoked by the ever-growing trans-Alpine transport. A joint effort is needed however to bring trans-Alpine transport back to a sustainable path.

The review carried out for the inception report has confirmed that an improved co-operation between policy makers and with the research community is needed on a number of issues. More specifically, we need:

- a harmonised base for analysis and forecast (evaluation models for projects, data collection, transport modelling and tools such as GIS)
- a co-ordination in pricing and financing measures and the research related to this issue
- a co-ordination of measures to promote Combined transport and related research
- a better understanding of the peculiarities of the political process in the case of the Alps

Horizontal themes

Methods

This section is about methods for assessing the functioning and efficiency of various transport modes in relation to the bottlenecks and other constraints in the Alpine area.

There exist several evaluation methods rooted in different theoretical and analytical frameworks. In transport, and particularly with regard to the appraisal of infrastructure, the standard methods in use are cost-benefit analysis and multi-criteria analysis. Environmental assessment (and as of recently strategic environmental assessment) are supplementary methods. The Thematic Network on Policy and Project Evaluation Methodologies (TRANS-TALK) provides a platform for the exchange of methods and evaluation concepts.

Despite the fact that most countries use the same or similar appraisal methods, there are as of yet no commonly accepted standards or conventions with regard to the types of impacts to include in the analysis and/or their valuation. For Alpine corridors, there is a need for co-ordination between the various plans to improve the existing infrastructure in order to avoid under- or over-capacity. This co-ordination requires a minimal common denominator that should allow a comparison of the evaluation at project level. Such a common denominator would for instance be necessary for projects like the Brenner or the Mont Cenis rail base tunnels.

Models

In this context, we use the term ‘models’ to refer to quantitative transport models that are able to analyse route and mode choice and the impact on traffic flows of scenarios with different growth rates, network characteristics and policy constraints. Models are frequently also used to complete missing information, e.g. to estimate origin-destination-matrices when only traffic flows on certain axes are known.

Various models have been developed on a European or regional scale. Furthermore, some of these models have been applied in case studies for the Alpine area (or part of the Alps), e.g. the STEMM and the PETS models and the scenarios from SCENES. Models that cover well the Alpine routes are INTRAPLAN, MATISSE and EUFRANET. The thematic network THINK UP tries to bring together the “architects” and the users of these models.

However, despite various efforts there is no model that covers all the Alpine crossings *and* which is up-to-date, detailed enough and taking into account the modal and route choice and the capacity constraints on all the crossings. Such a model should also be able to show the effects of various policy measures (prices, permits, weight limits etc.). Furthermore, there is no clear picture about the possibilities and limits, strengths and weaknesses of the existing models. A particular problem of such a model is that it has to take into account the long distance transit traffic and at the same time short distance traffic in order to assess the capacity bottlenecks at the Alpine crossings.

We therefore conclude that there is a need for a better exchange of information on existing models and ongoing developments. Furthermore, an attempt should be made to develop one or several models in a co-ordinated way and to assure an independent quality review of these models. These aspects should also be at the centre of interest of the work to follow in ALP-NET

Data and Statistics

The gap between ambitious data requirements for policy decision-making and the availability of data is widening. It is obvious that a better statistical tool needs to be developed at the European level. A Euro-

pean Transport policy Information System (ETIS) is long outstanding. A lot of research has been carried out to determine what exactly should be included in such an ETIS system. One conclusion was to use the Alpine area as a pilot region and to build up an Alpine transport information system ATIS as a part of the MESUDEMO project. Many different data sources were compared, harmonised and combined for this purpose. The ATIS freight database contains freight flows at the regional level disaggregated per origin, destination, transport mode, transhipment location, commodity group and Alpine Crossing.

Furthermore, there is a co-operation between France, Switzerland and Austria to regularly provide data on trans-Alpine freight transport.

As recently confirmed by an ECMT report, there is still a long way to go until data collection and data-bases on trans-Alpine traffic are reasonably harmonised. Despite very advanced existing co-operation, an additional effort to co-ordinate especially the data bases from European projects and the data collected by France, Switzerland and Austria should be made. However, the ongoing activities should not be duplicated, rather the existing gaps in the exchange of information should be filled. This intensified co-operation should be connected to the modelling issue.

GIS

A geographic information system (GIS) is necessary to analyse and visualise the relations between transport infrastructure networks, socio-economic and demographic information and transport flows.

Our literature review reveals that currently several systems and software tools are in use. In most national administrations the process of standardisation and implementation of GIS has just started. At the European level, several systems and networks were analysed and compared by the MESUDEMO project, amongst them the APUR-GISCO and GEOSYSTRANS systems. Well-known software used to visualise relations between transport infrastructure networks and transport flows are for example MapInfo and ArcInfo.

It is not yet clear in which fields and to what degree a harmonisation of GIS as a tool should take place. With regard to the Alpine region, it would be helpful if the GIS tools used at national levels and within projects commissioned by the European Commission were compatible.

In the future work of ALP-NET, the needs for harmonisation and possible action with respect to this should be discussed in more detail.

Vertical Themes

Decision Making Process

The decision-making context is of particular interest for the Alpine case because

- non-EU-countries (Switzerland, Liechtenstein, Slovenia) are involved
- special agreements on trans-Alpine transport have been concluded (Alpine Convention with its Transport protocol, bilateral transport agreements with Switzerland and Austria)
- several conflicting interests are at stake (shippers, operators, affected population, a sensitive environment etc.).

Trans-Alpine transport was not a focal point of the Common Transport Policy of the period 1995-2000 but is likely to be one in the forthcoming years, not least because of the expiry of the transit agreement between Austria and the EU, and specifically of the Ecopoint system, in 2003. We can therefore expect an intensification of bilateral and multi-lateral activities in the next couple of years.

Finding appropriate regulatory and/or economic measures that deal with the problems faced in the trans-Alpine crossing and which are accepted by all relevant parties to the agreements will not be easy. Solutions must be elaborated by the Commission in consultation with Member countries and other stakeholders, but have then to be approved by the Council of Ministers. With few exceptions, the European Parliament has (until now) no major co-decision power in transport, yet it has to be consulted. The same applies to the Council of Regions and the Economic and Social Committee. There are, in other words, several points at which pressure from various groups, regional governments or Member States can be exerted.

Mention must also be made of the European Court of Justice and of intra-institutional interaction, especially within the Commission. The ECJ already once played a major role in pushing through a common transport policy agenda following the intervention of the European Parliament. Recently it was called to decide on the dispute between Austria and the European Commission on the implementation of the Eco-point system. Otherwise, the failure of the Commission to come up with a new White Paper on the Common Transport Policy in early 2001 as originally planned is related, amongst others, to disagreement within the Commission about the contents of this paper – in particular from within the general directorates of budget and environment.

Another important player is the European Conference of Ministers of Transport (ECMT), where the non-EU-countries are fully integrated. ECMT has been active in Alpine policy as well.

The ALP-NET literature review produced a good number of studies dealing with decision-making processes in the countries involved, but little specific information for the trans-Alpine crossing. Several of the studies dealing with the policy contents of transport policy at European and national level (in comparative perspective and/or for the purpose of elaborating future scenarios) have produced as a by-product an insightful analysis of the special nature of policy-making in the European Union and the role and positioning of various actors representing different interests. This analysis is interesting for ALP-NET in that it largely explains the difficulties the EU is facing in the field of trans-Alpine transport. Nevertheless, there would appear to be a need for a more systematic and tailored analysis of the decision-making context surrounding the trans-Alpine crossing.

In Austria there are some interesting studies describing the decision-making process from the perspective of representatives of the citizens' initiatives that are fighting against the official transport policy of their country.

For Switzerland, studies show the influence of federalism and direct democracy on the country's transport policy. Political scientists claim that Swiss transport policy is increasingly determined by the European level and that fully autonomous Swiss solutions are no longer tenable.

To sum up, there are a limited number of studies that have dealt with the specific trans-Alpine transport issue from a political science point of view. It would certainly be interesting to draw conclusions from the political process and to improve future co-operation in this field. For all actors involved, it would be interesting to learn how to deal successfully with complex situations There is often a significant gap between collaboration for the purpose of exchange of information and active co-operation and co-ordination For the EU it is not easy to deal with "special cases" like the Alps and non-member states. Therefore, as a first attempt, the planned ALP-NET workshop on policies and decision-making should be used as a platform to analyse the peculiarities of the political process surrounding the Alpine transport issue and to discuss innovative approaches to tackle the existing problems in co-ordination and co-operation.

Combined Transport

Combined Transport (CT) is usually seen as one possible solution for the trans-Alpine transport problem. There are several important issues in this field:

- technical problems (loading systems at terminals, infrastructure)
- capacity optimisation and the modelling of capacities
- modelling combined transport in transportation models
- current operational and organisational problems (lack of co-operation between railways, administrative problems with track access and track fees)
- design and evaluation of political programmes for the promotion of CT

Many reports have been written about the current problems and the potential of CT; so the need for further research may be limited to some specific aspects such as: terminal location and network operation, competition between techniques; importance of rolling motorways, and priorities for slots allocation.

As for the international co-operation of operators, working groups of the railway companies have been put in place already. There is no need for further co-ordination.

However, better co-operation among the policy makers in order to harmonise their programmes for the promotion of CT would probably be helpful. Therefore, we recommend putting the stress on this issue for the workshop planned within ALP-NET.

Pricing and Financing

Pricing is a key issue of the Common Transport Policy as well as of research Currently the various research activities are co-ordinated through the IMPRINT-EUROPE thematic network. The focus of the ongoing projects is the establishment of harmonised national transport accounts, the real-world implementation of pricing schemes and the use of revenues (e.g. about cross-financing other modes).

At the political level, the introduction of heavy vehicle charges that are related to mileage and emissions characteristics is at the centre of the debate, especially after the successful introduction of the electronic Mileage-related Heavy Vehicle Tax (MRHVT) in Switzerland.

Several studies have dealt with the trans-Alpine transport prices. They generally found large deviations from optimal pricing and distortions between modes and routes. Several impact studies show that marginal cost pricing will not benefit the environmentally friendlier mode in any case. Furthermore, pricing can have a large impact on traffic, particularly if the pricing scheme is applied in an internationally harmonised way and for the whole distance and not only on a small stretch like a tunnel.

The financing issue has gained importance in the last months. This is related to the fact that new infrastructure, like the Mont Cenis or the Brenner base tunnel, requires heavy investments.

It is recommended to relate more closely the research and the policy makers concerned with the freight taxes and financing of infrastructure in the Alpine area. Information on recent and ongoing case studies as well as on political plans needs to be more actively exchanged.

Further issues

There are several issues in the field of Alpine transport that are beyond the direct scope of the terms of reference of ALP-NET. However, it was agreed to list such issues and to discuss whether they should be treated within ALP-NET or in another way.

Co-ordination of infrastructure planning

The international co-ordination in the planning of new infrastructure (like Brenner, Mont Cenis etc.) was addressed in part in the chapter on methods. As there are heavy investments and financial risks involved and the European Commission (TEN-T) as well as all the Alpine countries have an interest in co-ordinating these plans, there could be room for improved co-ordination and for a better exchange of information between researchers and other actors. This issue should be included in the method workshop, but furthermore, a co-ordination on specific projects could be necessary.

Environmental monitoring

Usually transport experts mainly think about transport data and less about the environmental impacts of transport. In most countries, a monitoring of key environmental data is in place. These data are not always linked to transport databases. Furthermore, the data are not always harmonised at an international level. Since the environmental problems are (together with infrastructure and financial constraints) among the main underlying problems in Alpine transport, it should be explored whether and how a better co-ordination of environmental monitoring could be achieved.

Safety in tunnels

After several heavy vehicle accidents in Alpine tunnels (Mont-Blanc, Tauern, Gotthard), the safety precautions have been reviewed by most countries. Improvements in the tunnels are planned. The rules for the equipment, the load of dangerous goods and the training of the actors involved have also been discussed. There might be a need for further co-operation in this field.

Conclusions drawn from the first ALP-NET workshop

Policy Developments in Alpine Transport and the Decision Making Context

1. No single policy instrument is sufficient on its own to overcome the problems faced by trans-Alpine transport. Thus whilst both combined transport and pricing promise to ameliorate the situation with regard to modal split, congestion and environmental externalities, their application needs to be combined and possibly also co-ordinated, spatially as well as temporally. The same is true for each policy instrument separately.
2. Temporal co-ordination involves considering the phasing of policies in such a way so as to deal with immediate and short-term problems to the maximum extent possible (besides resolving problems in the longer-term). This also applies to the political decisions that are or should be upcoming in the near future regarding how to deal with the higher charges being proposed by the French government on the Italian-French crossing and the possible extension of the Austrian Ecopoint system until that time that a European charging system is realised.
3. Spatial co-ordination involves a higher degree of collaboration among Alpine countries and regions so as to avoid the ”Not in my Back Yard (NIMBY)” syndrome whereby unilateral or bilateral decisions lead to an amelioration of the situation in a specific country or over one particular crossing but to no positive results, or indeed a worsening of the situation in another country or at another crossing. Such co-ordination should also consider the transport situation of specific countries – for instance, the higher current ‘dependency’ of Italy on the Alpine crossings for the transfer of goods.

4. It is also important to consider the limits of the current policy proposals with regard to coping with the problems of Alpine transport. Combined transport and pricing promise to ameliorate the situation, yet they might not suffice even when combined and implemented in a comprehensive way. Both Switzerland and France have defined targets about the desired amount of traffic through their crossings and hope to achieve these through a set of measures, with pricing, rail development and combined transport at the core. Yet the question must be raised as to what happens if these targets cannot be met with the available policy options. What additional measures will (then) be necessary? The discussion suggested that additional measures could include
   - the imposition of absolute limits (on the total amount of the transport volume across the Alps, or with regard to night and weekend bans);
   - the extension of pricing measures for heavy vehicles to cover the full European road network (rather than just the motorway network) and the increase of road pricing charges;
   - the extension of pricing measures to apply also to passenger cars;
   - the consideration of alternative routes either with regard to both road and rail across other countries (for instance through Austria or Slovenia/Hungary) or with regard to maritime transport. The latter would need to consider the role of the ports, in particular the Italian and Dutch ports.
5. According to the new White Paper on European Transport Policy, environmentally sensitive areas, like the Alps, might require the implementation of policy measures that go over and beyond those that apply to other regions. In order to justify such additional actions, it will be important to move towards a better definition of what comprises an environmentally sensitive area. This is in part a scientific exercise, but it is also a political one, as the definition of an environmentally sensitive area might involve the setting of standards and thresholds as well as decisions as to the monetary values of environmental effects, which will have to be agreed by all Alpine countries and regions and still be negotiated with other important stakeholders. Subsequently monitoring will be necessary to follow up on the success (or failure) of policies.
6. The question of public acceptability remains a difficult one for European and national policy-makers, especially in the Alpine regions. On the one hand, it is argued that the introduction of, say, pricing is more likely to be met with acceptance if environmental effects are accounted for sufficiently and revenues can be used to invest in environmentally friendly modes of transport. On the other hand, such proposals are often not enough to conciliate local populations facing serious problems in terms of health or quality of life at present. Such would seem to be the situation currently faced with regard the re-opening of the Mt. Blanc road tunnel. Better information policies and wider consultation practices are clearly procedures that need to be given greater attention in this respect in the future.
7. Policies are more likely to be successful in terms of implementation if they are accepted by the public but also by stakeholders – in this case road operators, railways and ports. This is no easy task as stakeholders will seek to defend their interests and in that might not be open to new or innovative solutions that could include sacrifices or losses on their part, at least in the short-term, or alternatively gains for those they consider their competitors. This would still appear to be the case of road operators on the one hand and railway companies on the other. There is a need for the better involvement of stakeholders in the policy process – including a better understanding of their needs – yet if the policy outcomes are to yield wins for all involved or at least minimise the risks and losses for some, then stakeholders will have to accept rules of participation in policy discussions which move beyond confrontation towards consensus and compromise.

Influencing the Modal Split: The Potential of Intermodal and Combined Transport

1. The main problems of intermodal and combined transport are technical and organisational problems including
   - The interoperability of rail services;
   - The capacity optimisation of the existing systems;
   - The lack of reliability which concerns primarily the railways;
   - The insufficient construction of new terminals;
   - Problems in efficiency of border crossing operations;
   - The organisation of the rolling road and in this connection the role of base tunnels.
   - The instalment of a supportive regulatory framework for the development of combined and intermodal transport, which also allows for the financing of relevant infrastructure projects (railway, terminals, etc.)

     The discussion of the potential of development of combined transport should technically distinguish between accompanied and unaccompanied transport.
2. Another major problem with regard the development of combined and intermodal transport concerns the notorious confrontational type of relation between rail and road.
3. Improving the quality and flexibility of the intermodal chain will be the only way to convince users and, in particular, shippers and road operators that combined transport is an alternative to road transport.

Pricing and Financing of Transport Infrastructure

1. Whether at the theoretical or more pragmatic and political level, there still exists no consensus on the method and the database to be used for defining the level and the structure of taxes and prices. This applies especially to
   - the valuation of environmental externalities – in general but in particular in environmentally sensitive areas where additional effects might have to be taken into account

   but also concerns
   - the degree of harmonisation of pricing structures and levels as well as charging technologies among the Alpine regions, but also between Alpine and non-Alpine regions
   - the incorporation of financing needs (for fixed costs of the infrastructure, but also for a possible cross-financing for other modes) into the pricing scheme.
   - the modelling of the impacts of pricing on route and mode choice

     A new framework directive is expected to clarify matters. This is an opportunity for Alpine countries to explore their room for manoeuvre during the preparatory stage of this directive as well as during the implementation period. It is also an opportunity to strengthen the co-operation among policy-makers of the Alpine area and to get closer to a common pricing and financing strategy.
2. How the revenues of pricing are to be used; whether these will be channelled to general revenues or not, and the possibility of cross-subsidising across modes, remain likewise open questions.
3. As a basis for these important tasks of co-operation and decision-making, the scientific community should improve the estimation models for the impact of various pricing and financing schemes and hereby improve the knowledge on pros and cons of various schemes, including step-by-step imple-

mentation scenarios. A monitoring of the effects of recent events (closing of Mont-Blanc and Gotthard, introduction of the new regime in Switzerland) should be used to calibrate and improve existing models.

Data, Methods, Modelling and Geographic Information Systems (GIS)

1. The more pressing problems regarding Alpine transport concern data, less so methods, modelling and GIS. This does not mean, however, that issues relating to methods, modelling and GIS are not specific to Alpine transport.
2. In connection with the existing surveys (especially CAFT and EUROSTAT), there are two main problems. The first concerns the lack of harmonisation in data collection and reporting – this concerns especially the EUROSTAT surveys. The second problem concerns data availability within Alpine countries and to independent researchers – insofar as CAFT is concerned, a serious problem is the failure to integrate Italy into the survey.
3. More generally, what needs to be explored is the scope of the data – thus it is important to inquire not only into what is covered by existing datasets but also what is not covered now, but should be in the future. Two issues arose as relevant in this respect: environmental data / monitoring and information on passenger transport. The former concerns also methods and modelling as much as data.
4. The country coverage in Alpine-specific data surveys might no longer be adequate in view of enlargement. Thus, it is important to consider including not only the North-South traffic but also the East-West transport as it affects the Alpine crossings. In this connection, Slovenia and possibly Hungary would have to be covered by the datasets.
5. Origin-destination matrixes (thus also integrating ports) and considering the Alpine transport area as a part of a wider transport system rather than a set of crossings or regions in terms of data coverage and collection procedures would be important for identifying policy measures for the future.

Contents

1. Introduction

Transport in the Alpine regions of Central and Western Europe is politically a most sensitive subject. It has been a source of debates and uneasiness in bilateral and multilateral relations among countries and has led to widespread resistance against EU transport policy amongst the population in the affected regions. Not surprisingly, trans-Alpine transport is a focal point for research both at the European and national levels. In view of important upcoming policy decisions, it is necessary to synthesise, concert and co-ordinate ongoing-work and to discuss open questions. This is the role of ALP-NET.

Before addressing specific problems related to trans Alpine crossing, it is necessary to provide an overview of the relevant literature on research at national and European level as well as of policy initiatives taken in the last years and planned in the near future. Taking the results of this overview as a starting point, the first of a series of seven workshops has already brought together experts, decision makers and stakeholders to discuss the state-of-the-art in policy and research and, accordingly, to specify the agendas for the forthcoming work within the ALP-NET project. The Inception Report in hand comprises the results of the literature review as well as the conclusions from the first workshop.

This report is structured according to the work within the ALP-NET project. **Chapter 2** provides an overview of substantial policy initiatives in the field of Alpine transport taken in the past decade and planned in the near future. The most important governmental and non-governmental actors on a European and national level are identified. **Chapter 3** is related to the second work package dealing with horizontal themes of trans Alpine crossing, such as methods and models, data and GIS. **Chapter 4** gives an overview of literature on the vertical themes of work package 3, such as decision-making processes, combined transport as well as pricing and financing. **Chapter 5** mentions in a very brief way three possible extensions of the thematic scope of the project, which could be treated in future workshops as well. Finally, **Chapter 6** includes summaries of the roundtable discussions as well as results and findings of the first workshop held in Brussels in October 2001.

Project Homepage: www.alp-net.org

On our Web Site, you can access the information provided in this report (key actors and research on trans-Alpine transport) by help of an online database.

Updated information on ALP-NET activities and publications can be obtained from our Web Site as well.

2. Policy context

2.1 Policy: developments and outlook

The objective of this chapter is to provide an overview of substantial policy initiatives in the field of Alpine transport taken in the past decade and planned in the near future. A distinction between the EU policies on the one hand and different Alpine countries on the other hand will be drawn.

2.1.1 European Union

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A historical perspective on European transport policies

Even though already the Treaty establishing the European Economic Community, signed in March 1957, provides a legal basis for the creation of a common transport policy (CTP), for many years transport policy has almost exclusively remained an issue under the control of national governments. However, due to the unfavourable reactions of the Member States, the Commission's initiatives to develop a common transport policy during the 1970s and early 1980s showed little effect.[1]

In 1983, the European Parliament, which had generally supported the Commission's efforts, took the council of Ministers to the European Court of Justice for "failing to introduce a common policy for transport and in particular to lay down the framework of such a policy in a binding manner", as required by the Treaty of Rome. In his 1985 ruling, the Court of Justice supported the Parliament and declared European inland freight and passenger transport open to all companies within the Community without any discrimination of place of establishment. In the same year, the European Community published the *White Paper on the Completion of the Internal Market*.[2] In this paper, restrictions on the provision of transport services were recognized to be one of the major barriers to free trade and the Internal Market. Thereby these restrictions impede economic growth as well.

These developments, taken together, led to a transfer of transport policy powers from the national capitals to Brussels.

The "Old" White Paper on the Common Transport Policy (1992)

Until 1992, the Community's transport policies were largely market driven. They almost exclusively aimed at the harmonization and liberalization of the transport sector. In terms of stimulating the Internal Market, the EC policies were a success: The intensification of the division of labour within Europe led to a sharp increase of transport service demand. However, this development had its negative impacts as well: air pollution, bottlenecks, etc.

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1 Wicki (1999), Nachhaltige Alpenverkehrspolitik, p. 28f.

2 COM(85) 310 final.

The European authorities were forced to react. With the publication of the *White Paper on the Future Development of the Common Transport Policy*[3], seven pillars were identified for a sustainable European transport policy.

Although the Commission does not deal with the Alps in a special way, three of the above mentioned pillars seem to be of some significance for trans-Alpine crossing.

First, the stronger accent on environmental protection in the Maastricht Treaty of the European Union has been incorporated in this White Paper. The Commission states clearly that too low prices for road use (not covering all internal and external costs) are a main reason for environmental problems. This could imply a special treatment of the Alpine region if it is defined as an environmentally particularly sensitive area.

Second, the Commission's intention to develop the EC transport policy in relation with third countries is relevant for trans-Alpine crossing since two important countries involved were non-members of the European Community at that time: Austria and Switzerland.

Third, the Alpine region is affected by the planned trans-European transport network. This so-called TEN-T is treated in more detail below.

The strategy laid down in the 1992 White Paper was refined in 1995 when the Commission published its follow-up paper for a *Common Transport Policy action programme*.[4] The issue of trans-Alpine crossing was raised in this document implicitly by mentioning bottlenecks, TEN and the need for co-operation with non EU-countries.

The "New" White Paper on the Common Transport Policy (2001)

In September 2001, the European Commission adopted its long awaited White Paper entitled *European transport policy for 2010: time to decide*.[5] With this new Transport Policy White Paper, the Commission is proposing an Action Plan aimed at bringing about substantial improvements in the quality and efficiency of transport in Europe. It is also proposing a strategy designed to gradually break the link between constant transport growth and economic growth in order to reduce the pressure on the environment and prevent congestion while maintaining the EU's economic competitiveness.

The overall goal of the European transport policy as outlined by the Commission is to bring modal shares to 1998 levels by the year 2010. Among the sixty-odd measures proposed in the White Paper, the following seem to be the most important with view to trans-Alpine freight transport:

- **New framework for charging:** The Commission is proposing a wide range of measures to develop fair infrastructure charging which takes into account external costs and encourages the use of the least polluting modes of transport as well as to define sensitive areas, in particular in the Alps and Pyrenees. The proposals on a new framework directive on charging are presented in more detail below (see page 20). Another important novelty raised in the paper is the possibility of cross-financing, which would enable transferring part of the revenues from road taxes to the development of other types of infrastructure, such as rail. For sensitive areas, special conditions to allow cross-financing may apply. To some extent, this is similar to the system already in use in Switzerland, where the tax paid by heavy vehicles driving through the country funds the construction of the new trans-Alpine rail links. This approach presupposes adapting current EU legislation (Directive 1999/62/EC).
- **Infrastructure building:** The TEN-T Alpine routes that require the construction of very long tunnels such as Lyon-Turin are encountering numerous difficulties and delays because of technical uncertainties and the difficulty in finding the capital to complete them. To guarantee successful development of

3 COM(92) 494 final.

4 COM(95) 302 final.

5 COM(2001) 370.

the trans-European network, a proposal will be made to amend the funding rules to allow the Community to make a maximum contribution up to 20% of the total cost, currently being 10%. Additionally, the Commission is proposing in the revision of the guidelines for the trans-European network the inclusion of a major project for a high-capacity rail crossing in the Pyrenees.

- **Short-Sea Shipping and Intermodality:** The Commission intends to actively promote freight transport by short-sea shipping. The fact is, though, that short-sea shipping cannot offer a real alternative solution unless the goods can then be carried by waterway and rail instead of by road. Generally, intermodality must be given a firm, practical shape. The proposal is to launch a large-scale programme (**Marco Polo**) to support intermodal initiatives and alternatives to road transport in the early stages until they become commercially viable. Marco Polo should be endowed with an annual budget of around € 30 million.

Development of pricing policy: 1995 Green Paper and 1998 White Paper

In December 1995, the European Commission published a Green Paper entitled *Towards fair and efficient pricing in transport – policy options for internalising the external costs of transport in the European Union*.[6] It is based on the observation that every form of transport has undesirable side effects, such as infrastructure damage, congestions, accidents or pollution, which are ignored under the current taxation system and therefore paid for by others. According to the Green Paper, internalisation of transport costs, i.e. making all users bear the full social costs of their journeys, would reduce transport problems and, consequently, make Europe's economy more competitive. The Green Paper includes propositions about how to deal with the costs of congestion, accidents, pollution and noise. In the Green Paper, the Commission does not make a distinction between different European regions and therefore does not particularly mention the Alpine region.

The 1995 Green Paper was followed by a White Paper presented by the Commission in July 1998, entitled: *Fair payment for infrastructure use: A phased approach to a common transport infrastructure charging framework in the EU*.[7] In its paper, the Commission shows the need for gradual harmonisation at Community level of the charging principles applied in the various commercial modes of transport. Such charges could help to address problems by influencing princes, which in turn can change transport use.

The paper states that the existing charging systems differ greatly between Member States, which leads to

- distortions of competition between Member States;
- distortions of different modes of transport and within modes;
- the failure to consider environmental and social aspects of transport;
- difficulties in funding infrastructure investments.

The White Paper then sets out a Community approach to infrastructure charging based on marginal social cost charging, i.e. charging users for both internal and external costs that they impose at the point of use. Facing real costs, there would be incentives to:

- using vehicles that are less polluting and safer;
- choosing routes and logistics with lower levels of road damage, congestion, accident risks and environmental impact;
- switching to another mode of transport.

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6 COM(95) 691 final.

7 COM(98) 466 final.

The Commission plans to implement the common charging framework in three phases:

- 1998-2002: introduction of charging systems for railway infrastructure and airports, the total amount of charges must not exceed the average infrastructure costs;
- 2001-2004: harmonisation and adjustment of charging systems, in particular for heavy goods vehicles and rail transport; the charges should not exceed the social marginal costs;
- beyond 2004: revision of the Community framework in the light of experience drawn from the first two phases.

The White Paper does not particularly mention the Alps as being especially sensitive. However, the introduction of a pricing scheme for road use according to (marginal) social costs could have a substantial impact on the Alpine region if the marginal costs of trans-Alpine crossing were considered to be higher than average, which would lead to relatively higher charges for trans-Alpine transport.

Charging of heavy goods vehicles for the use of certain infrastructures

Trying to contribute to the creation of the Internal Market, the Commission attempted to harmonize the taxation on heavy goods vehicles in the EC.[8] The resulting Directive was first issued in 1993 and included regulations on vehicle taxes, excise duties on fuel, tolls and user charges.[9]

However, in 1995, the Court of Justice annulled the directive because the Parliament had not been reconsulted in good time. After more than three years of discussions the Council of transport ministers of the European Union finally reached agreement in December 1998 on a Commission proposal for a new system of charging for heavy goods vehicles - known as "the Eurovignette directive".[10] The scheme was approved by the European Parliament in June 1999. The merit of this text is that it opens the way for a very specific application, in the road haulage sector, of the "polluter pays" principle.

At present, heavy goods vehicles attract three types of charge:

- a minimum level of excise duty on diesel
- minimum rates of vehicle tax
- a Eurovignette which hauliers must obtain in order to use the motorways of seven Member States (the three Benelux countries, Germany, Denmark, Sweden and Austria) that do not levy motorway tolls. Countries that do levy tolls are not obliged to levy this charge.

The directive's main innovation is that it scales the rate of the Eurovignette and the vehicle tax according to the damage caused to the environment and road infrastructure. Heavy goods vehicles meeting the EURO-II standard are thus charged less than EURO-I vehicles. Likewise, the least heavy vehicles pay less.

In other words, the new scheme will to some extent build "external costs" into the calculation of the rate, not just the internal costs normally borne by the vehicle owner (fuel, maintenance, driver's wages, etc.). In this way the new Eurovignette directive translates into practice one of the priorities of the EU's transport policy, namely fair pricing. However, with view to the external costs the charges were fixed at a very low

8 See Hey (2001), Die Wegekosten-Richtlinie 1999.

9 Council Directive 93/89/EEC of 25 October 1993.

10 European Parliament and Council Directive 1999/62/EC of 15 June 1999.

level.[11] Research commissioned by the European Commission estimated the external costs of trans-Alpine road freight transport to be much higher.[12]

The Commission's idea of "sensitive corridors", which would have allowed mainly the Alpine countries to levy a surplus charge for trans-Alpine transport, could not be maintained during the difficult negotiation process of the Directive. In order to reach a consensus, most of the elements related to the internalisation of external costs were dropped. Austria, with the help of its right to veto against any decision of the Council could defend the right to charge an extra toll on the Brenner pass. However, the average toll of EUR 84 is much lower than the initial propositions for an Alpine transit toll (EUR 145-165) made earlier by the Commission.[13]

In the new CTP White Paper it is stated, that the Commission plans to propose a framework directive in 2002 to establish the principles of infrastructure charging and a pricing structure for all modes of transport. The proposal, which will leave each Member State wide scope in terms of implementation, will include a common methodology for setting price levels which incorporate external costs, and will specify the conditions for fair competition between modes. For road transport, charges will vary according to the vehicle's environmental performance. They will also be based on the type of infrastructure (motorways, trunk and urban roads), distance covered, axle weight and type of suspension, and degree of congestion. These charges will be introduced gradually and tie in with a reduction in other charges such as vehicle taxes to minimise the impact on the sector.

White Paper: Revitalizing the Community's Railways

Already in 1991, the Council's Directive 91/440 delineated basic guidelines on the liberalization of the traditionally state-owned and state-managed railway systems in Europe, mainly through drawing a distinction between network and services. The directive aimed at creating an internal market for railway transport.

How railway transport could improve the situation in the Alpine region is outlined in the White Paper *A Strategy for Revitalizing the Community's Railways*:[14]

> "One of the major challenges facing the Community and its neighbours is the issue of trans-Alpine traffic. The expansion of the Community has had a major impact on traffic flows through this natural barrier between Northern and Southern Europe. There are a limited number of routes through the Alps and the growth in trade is putting these under increasing pressure. The Alpine environment is particularly sensitive to the effects of pollution; a comprehensive strategy to alleviate the problems of the region would probably give rail a greater role in carrying transit traffic."

However, the reforms taken so far have not produced the desired results. Today, rail accounts for only 8% of the total freight volume in Europe. A further diminution of this modal share is expected to take place over the next ten years. Therefore, the European Union has taken further steps to facilitate a growth of rail freight transport by adopting new Directives in March 2001.[15] The Directives are now better known under the name 'Rail Infrastructure Package', and Member States must implement the provisions of the Directives in national legislation by 15 March 2003 at the latest.

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11 For a very critical position see Hey (2000), 8 Thesen zur europäischen Verkehrspolitik, p. 13.

12 See as an example Neuenschwander/Suter et al. (1998), The economic effects of including external costs of road freight transpot in infrastructure user charges – A case study of the Alps, p. 219ff.

13 See Hey (2001), Die Wegekosten-Richtlinie 1999, p. 75-82.

14 COM(96) 421 final.

15 Directive 2001/12/EC - Directive 2001/14/EC.

Directive 2001/12 modifies Directive 91/440 on the development of the Community's railways. It requests the Member States to adapt their national legislation to enable the extension of access rights for international freight transport services to the national section of the Trans European Rail Freight Network (TERFN). As of 15 March 2008, the TERFN will be extended to the entire European Rail Network. In practical terms, it means that any licensed railway operator can run freight services between Member States over the entire rail network in Europe.

Directive 2001/13 sets the framework for the financial, economic and safety conditions to which railway undertakings must comply to obtain a licence. The allocation and charging of railway capacity or time paths is dealt with in Directive 2001/14 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification.

Common Infrastructure policy (trans-European transport network)

Besides the integration of different modes of transport through liberalisation and harmonisation, the European Union also has the objective of integrating the national transport networks into a trans-European transport network (TEN-T), as outlined for the first time in the Treaty of Maastricht.[16] By now, infrastructure policy became an important pillar of European transport policy. The TEN should not only cover the whole territory of the Community but also allow for its extension to third countries like Switzerland in the case of trans-Alpine crossing. With the development of the TEN, the European Commission pursues three main objectives:

- Development of efficient, integrated and co-ordinated transport systems in cross-border areas of the EU as well as between Member States and third countries;
- Promotion of a public-private partnership for the construction and management of transport systems.
- Promotion of the technical harmonisation (particularly railway systems)

In 1994, the Council of transport ministers identified 14 priority projects. Ten projects are related to the railway network in general and two to trans-Alpine crossing.

- High-speed train/combined transport north-south: Nuremberg – Erfurt – Halle; Leipzig – Berlin; Brenner axis: Verona - Munich
- High-speed train/combined transport France - Italy: Lyon – Turin; Turin – Milan – Venice - Trieste[17]

In 1996, the *Community Guidelines for the development of the Trans-European Transport Network* were adopted.[18] They set out the objectives (Article 2) and priorities (Article 5) of the TEN-T. All links - roads, railways, airports - meeting these priorities and priorities, whether already in place or yet to be built, form part of the Trans-European Network and as such are deemed to be "of common interest". Each section automatically qualifies for financial aid from the European Union. The TEN play an important role in the field of combined transport. The concepts should facilitate shifting freight transport from road to rail, which would have a substantial impact on the Alpine region.

In October 2001, the Commission put forward a proposal for a revision of the guidelines, which will only concern a transitional period: A new proposal in 2004 will introduce more wide-ranging reforms intended to provide a framework for trans-European transport networks up to 2020-2025. To guarantee successful

16 Art. 129b ff. Now Art. 155 (Amsterdam Treaty).

17 The French and Italian government officially approved the construction of the required base tunnel in January 2001. It should be completed between 2015 and 2030.

18 Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996.

development of the trans-European network, the proposal is made to amend the funding rules to allow the Community to make a maximum contribution - up to 20% of the total cost - to cross-border railway projects crossing natural barriers, such as the Lyon-Turin line already approved as a priority project by the Essen European Council. Projects to clear the bottlenecks remaining on the borders with the candidate countries could qualify for the full 20%. The adaptation of existing projects will involve extending the Brenner project from Munich to Verona to add the Verona-Naples route and the Bologna-Milan branch (830 km of new high-speed line). The Commission has also confirmed to high priority it grants to two Alpine tunnel projects (Lyon-Turin and Brenner axis).

In 2004 the Commission will present a more extensive review of the trans-European network aimed in particular at introducing the concept of "sea motorways", developing airport capacity, linking the outlying regions on the European continent more effectively and connecting the networks of the candidate countries to the networks of EU countries.[19]

Another issue within the TEN of importance to the trans-Alpine crossing is the concept of the TERFF (Trans-European Railway Freight Freeway).[20] It basically involves the selection by Member States of a number of routes on which access will be opened on “fair, equal and non-discriminatory” terms to licensed railway operators in the Community. The concept also includes the voluntary co-operation between the infrastructure managers located along these routes with a view to the creation of One-Stop-Shops (“OSSs”) that will market the freeway to licensed railway undertakings. OSSs’ basic functions will include: identification and allocation of capacity, monitoring and control performance on the relevant TERFF, and charging on behalf of the individual infrastructure managers. Two of the five planned or already working freeways cross the Alps. These routes are Hamburg - Verona (Brenner, Austria) and Rotterdam - Genova (Gotthard/Lötschberg, Switzerland). Furthermore, in 1992, the European Commission started to fund innovative pilot projects in the field of combined transport within the programme PACT.

In 1996, the Commission set up a process of Transport Infrastructure Needs Assessment (TINA) to oversee and co-ordinate the development of an integrated transport network in 11 applicant countries. The idea is to co-ordinate infrastructure projects in these countries with those implemented in the EU, with a view to extending the Trans-European Transport Network to the new Member States in future.[21]

Integrating Environment and Sustainable Development into Energy and Transport Policy (Cardiff Process)

In June 1998, the European Council in Cardiff launched a new initiative to implement more effectively the Treaty obligations concerning sustainable development and the integration of environmental aspects into other EU policies. In Gothenburg, on 15-16 June 2001, the European Council will examine the strategies of integration in numerous fields, transport being one of them. In preparation of the Council meeting, the European Commission published a working paper (March 2001) that reviews EU policies on energy and transport in relation to sustainable development. Entitled *Integrating Environment and Sustainable Development into Energy and Transport Policy*, the document evaluates recent trends in the market of these two sectors, describes relevant EU policy initiatives and outlines future actions that contribute to the goal of sustainable development.[22]

The document reiterates the well-known problems caused by transport and stresses the fact that these adverse trends will only augment with the next enlargement. For example, the accession of Spain and

19 COM(2001)370.

20 COM(97) 242 final.

21 See TINA Secretariat and European Commission (1999), TINA - Transport Infrastructure needs Assessment. Final Report.

22 SEC(2001)502.

Portugal was accompanied by an increase of 255% in freight traffic involving the two countries, and 95% of that increase was attributable to road transport.

The Commission's suggestions involve cutting road and rail congestion; revitalising rail; intermodality in freight transport; clean urban transport; intelligent transport systems; developing advanced technologies; alternative fuels and incentive tax measures (possible differentiation of vehicle tax with the objective to increase the demand from consumers for more fuel-efficient passenger cars).

Alpine Convention

The Alpine Convention was signed in Salzburg in 1991.[23] Signatories are Germany, France, Italy, Liechtenstein, Monaco, Austria, Slovenia, Switzerland and the European Union.

The goal of the Convention is a comprehensive policy on the protection and sustainable development of the Alps. The nature and landscape of the Alpine region – one of the largest European ecosystems – must be protected, and at the same time the economic and social needs of the native population should be taken into account. The Alps, being a sensitive region, should be given a preferential status within Europe. With a view to transport, the Convention stresses in Article 2 the objective of "a more substantial shift of transport, in particular heavy goods transport, from road to rail".

In October 2000, seven Signatories of the Alpine Convention (except for the EU and Slovenia) signed the Transport Protocol. The European Union has not taken part in meetings of the Alpine Conference (the legislative body of the Alpine Convention) since 1994 and has consequently not signed several of the additional protocols. The European Commission, however, has expressed her intention to sign the Transport Protocol. Slovenia has not signed yet due to general elections and the formation of a new government. A minister of state, present at the meeting in October 2000, announced that Slovenia would sign the Transport Protocol as soon as the new government was working.[24]

In the Transport Protocol, the Signatories agreed on the following points:

- New construction and substantial modifications of traffic infrastructure are to be co-ordinated between the countries;
- means of transport that respect the environment will be favoured;
- a ban on new trans-Alpine road projects;
- financing of new traffic infrastructure construction according to the polluter-pays-principle.

In addition, in the year 2000, the Alpine Conference adopted twelve guiding principles for the implementation of the Alpine Convention and its logs. Two important guiding principles are:

- the parties will contribute to developing the transport sector by upholding the precautionary, prevention and polluter-pays principles. It follows the principle of sustainability;
- implementation of the Alpine Convention and its protocols based on the principle of subsidiarity.

The Alpine Conference also agreed on the Protocol on dispute settlement and on the establishment of a permanent secretariat, both decisions which will lead to a strengthening of the Convention and its transformation towards an International Organization. One has to bear in mind, however, that these documents have been only signed by the Signatories; it remains unclear, whether the more controversial decisions will ever be ratified by a sufficient number of member states. Generally, a protocol comes into effect

23 Official Jounal of the European Communities Nr. L61/31-36 of 12 March 1996.

24 Information by Mr. Andreas Götz, Executive Secretary of CIPRA International (26.02.2001).

three months after the third Signatory has deposited an instrument of ratification with the Depositary of the Convention, which is the government of Austria. However, the regulations of a protocol are binding only for those countries that have ratified it.[25, 26]

European Spatial Development Perspective (ESDP)

Although spatial development is not within the competences of the European Union, there is obviously a need for co-operation in this field since the policies of the EU (especially transport) have a great impact on spatial development.

After 10 years of preparation, the European Council of EU Ministers responsible for Spatial Planning adopted in Potsdam in May 1999 the final version of a document entitled „European Spatial Development Perspective".

The *European Spatial Development Perspective* (ESDP) is designed as a means of guiding and shaping territorial policies in support of economic growth, employment creation and sustainable development across the EU as a whole. The practical significance of the ESDP, however, is restricted due to the fact that it is not officially binding; the Member States are free to apply it or not.

Summary and Outlook

The analysis of EU policy documents shows that there is no such thing as a European Alpine policy, not to mention a particular policy on the issue of trans-Alpine crossing.

In the European Union, transport is still regarded as a mere precondition for free trade and economic growth. Transport policy has to remove bottlenecks and market distortions in the first place. Today, the Alps are considered as a bottleneck to trans-European transport, which results are congestion costs and environmental problems. In response, the EU declared the need for a modal shift from road to rail, included some trans-Alpine routes into the TEN-T and pushed ahead harmonization in terms of tonnage, working hours and prices.

With its TEN-T policy, the EU focuses on the issue of freight transport, although congestion is very often caused by motorized individual transport – especially in the Alpine region. The improvement of the trans-European transport network however, is likely to attract even more private passenger vehicles, which would on the other hand reduce the benefit from the TEN-T.

Another reason for the EU to neglect the Alps might be the small size of the Alpine region compared with the EU territory. According to the perimeter of the Alpine Convention, the Alps cover less than 5% of the European Union territory, whereas this proportion is as high as 60% and 65% in the case of Switzerland and Austria respectively. It seems only natural that the Alps have a greater importance in the countries mentioned. In addition, Switzerland is not a Member State of the European Union. Austria joined the EU only in 1995.

At this stage, it is necessary to draw attention to politics within the European Union. As the above mentioned policy documents show, it was mostly the Commission that took the initiative to present economically and environmentally innovative transport policy strategies in its White and Green Papers. There has

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25 Information by Mr. Andreas Götz, Executive Secretary of CIPRA International (26.02.2001).

26 According to latest information, Switzerland intends to ratify all protocols to the convention in 2002 (Press release by the Federal Department of Environment, Transport, Energy and Communications, 6 June 2001). However, not all political parties agree with the Ministry of Transport. In October 2001, a liberal party started its campaign against the ratification of the transport protocol for three main reasons: 1) It jeopardizes the cantonal responsibilities; 2) It severely restricts tourism and transport in the Alps; 3) It allows for an "inappropriate ecological interventionism". It is unclear, whether this position will find a majority in the Swiss parliament, which is to ratify the protocol.

been so little progress because the member states finally take the decisions and the national governments were much less in favour of such innovative solutions.

The launch of a Thematic Network like ALP-NET can therefore be explained by the need to strengthen the European Alpine policy. Some Member States – evidently the more affected Alpine countries like France and Austria – were not satisfied with the way the European Union dealt with trans-Alpine crossing issues. Austria defended its right to levy a special Alpine toll on the Brenner axis and in January 1999 the French Ministry of Transport set up a special "Mission des Alpes" which is to deal with Alpine issues.

The Commission has finally published a new White Paper on the Common Transport Policy and is about to publish a review of the trans-European transport network. Nevertheless, the agenda of the EU for the next years does not envisage the drawing up of a special Alpine policy. Beyond 2002, fair and efficient pricing will still be a topic as well as the enlargement of the Union. The admission of the former communist countries of Eastern Europe to the EU will lead to a significant increase of transport mainly on the east-western axis. Under these circumstances, the EU's interest in trans-Alpine crossing policy is likely to take a back seat again. However, for the Alpine Countries, it will be important to explore to what extent they can realise an "Alpine specific policy" within the framework offered by the new White Paper, especially with regard to pricing and financing.

2.1.2 Austria

Author of this section: ICCR

Austrian Transport Policy in Historical Perspective

Until 1985, the clear emphasis of the Austrian transport policy was on the construction of new transport infrastructure. With the emerging environmental awareness of the late 1980s, this focus shifted away from infrastructure and towards issues like decreasing the environmentally harmful emissions from transport and modal shift. Austria was the first European country to make the use of catalytic converters in passenger cars mandatory in 1986. Starting from 1987 Austria committed itself to developing a modern and efficient railway system (for details see below "Restructuring of the Austrian Rail Sector"). In the early 1990s transit traffic through the Alpine regions of Austria became the major concern of the Austrian policy makers. In 1992, a transit agreement with the EC was signed. The 1994 accession agreement of Austria to the EU also specified the details for transit traffic. The most recent Austrian transport infrastructure plan dates back to 1999. One of its aims was to finally proceed with the long promised modernisation of the railway system.

The current Austrian transport policy identifies the following ten objectives:[27]

- Avoiding unnecessary traffic
- Switching traffic to environmentally friendly means of transport
- Using state-of-the-art technology as soon as possible
- Involving the public in transport planning

27 Austrian Transport Policy, Bundesministerium für Verkehr, Innovation und Technologie, Wien 2001, from www.bmv.gv.at

- Fair transport pricing
- Intermodal co-operation
- Introducing new legislation on transport
- Reducing the burden of transit traffic
- Organizing urban traffic in a way which is environmentally an socially tolerable
- Open borders

Austrian Alpine Policy

Until recently there was no clearly defined policy of the Austrian federal government with regards to the Alpine regions of the country. The most important concerns, like agriculture, tourism and transport, were integrated into the sectoral policies of the responsible institutions. The upcoming discussions on the implementation of the Alpine Convention may lead to a more coherent and integrated strategy on the treatment and protection of the Alpine regions but the precise nature of this process is yet unknown. The responsible institution for the co-ordination of all matters related to the implementation of the treaty is the Ministry of Agriculture and Environment.

On a regional level, however, there is a large number of activities, initiatives, regulations and agreements that form the framework of something that could be called an "Alpine Policy". A good overview of the content and direction of these policies, reflecting the different interests of the various regions, can be obtained by observing the positions and initiatives brought forward at the regular meetings of the "Arbeitsgemeinschaft Alpenländer" (ARGE ALP). The ARGE ALP is a body for the multi-regional co-operation of 11 Alpine regions[28] covering a wide range of policy issues from economic development and transport to cultural identity.

Heavy Goods Vehicle Tax in Austria ("Strassenbenützungsabgabe")

The current system of charging for road transport by heavy goods vehicles was introduced in 1994 and modified in 1996. It is based on time periods rather than related to distance driven. The daily/weekly/monthly/yearly charges depend on the weight and size of the vehicle and on the level of its emissions. All domestic and foreign heavy goods vehicles above 12 tons maximum weight are subject to this tax. In addition, there are tolls on some Austrian mountain roads and tunnels.

Transit Agreement Austria - EC

In 1992, after some years of negotiations, a bilateral agreement between Austria and the European Community on the subject of transit traffic through Austria by rail and road was signed. In theory, the scope of the agreement covers freight and passenger transport but all specific and binding measures are related to the former. The text consists of two parts, the first of which addresses the development of rail and combined transport, whereas the second part deals with road transport. At the very heart of the agreement lies the so-called 'Ecopoint System' for road freight transport by heavy goods vehicles through Austria (for details see next section below). The parts on rail and combined transport are formulated in a more general manner. Austria and the EU commit themselves to promoting the development of these modes by

- improving rail infrastructure,
- improving the competitiveness of rail and combined transport,

28 Baden-Württemberg, Bayern, Bozen-Südtirol, Graubünden, Lombardia, Salzburg, St.Gallen, Ticino, Tirol, Trento, Vorarlberg.

- enhancing the interoperability of the various systems,
- creating a uniform legal framework for these operations,
- etc.

The agreement entered into force on 1 January 1993. With Austria's accession to the EU in 1995 it was replaced by Article 9 of the accession agreement that is scheduled to expire at the end of 2003 (see below).

The Austrian Ecopoint System

The Austrian Ecopoint System was first introduced in 1993 as a part of the transit agreement between Austria and the EU. In its original version, it foresaw a 60% reduction of NOx from heavy goods vehicles (above 7.5 tons) in transit through Austria that were registered in one of the 12 EU Member States. Vehicles registered in Austria or other non-EU countries were not subject to this system. The base year for the 60% reduction was 1991.

The Ecopoint System works the following way: Each Ecopoint corresponds to a certain amount of NOx emissions, therefore the less polluting a truck, the fewer points will be required for the same journey. The number of Ecopoints granted to the EU by Austria is steadily decreased each year down to 60% in 2003. In order to guard against a vast increase in transit traffic because of unanticipated technological developments, the Transit Agreement limits the total number of trips under this agreement to 108% of the number of trips in the base year 1991. Exceeding this number of trips in any year automatically results in a substantial reduction of Ecopoints for the following year. The distribution of points among the Member States falls into the responsibility of the EU Commission.

Over the years, some changes to the Ecopoint System were made. The first and most substantial one was connected to Austria's accession to the EU. For reasons of EU legislation on non-discrimination, trucks registered in Austria became subject to the Ecopoint system when crossing the country in transit. Sweden, Finland (1995), Slovenia (1997) and Switzerland (2000) were later integrated into the system.

Since the year 2000, there is an ongoing political and legal dispute between the EU Commission and the Austrian federal government on the number of Ecopoints to be granted. The debate was triggered by a considerable increase of the number of trips during the years 1999 and 2000, which eventually exceeded the 'magical' 108% figure. According to the contract, the EU Commission was obliged to substantially reduce the number of Ecopoints for the following year. The Commission did not meet this obligation and it was sued by the Austrian government. In February 2001, Austria won its case at the European Court in Luxembourg but the effects of this ruling are not quite clear yet. A radical reduction of Ecopoints would mean that nearly no transit traffic across Austria would be allowed during the last few months of the year and it is currently unlikely that the Austrian government will insist on this position.

Agreement on Austria's Accession to the EU

The transport related issues in the accession agreement between Austria and the EU are contained in 'Protocol 9'. The focus of the agreement is on the opening of the Austrian transport markets for competitors from the EU and on the continuation of the Ecopoint System. Article 11/5 explicitly states that after the termination of the Ecopoint system in 2003 the Austrian road network will be subject to the same rules as any other road within the EU.

The development of new transport infrastructure (including the Brenner base rail tunnel) is mentioned in the agreement as one of the priorities but no binding commitments are specified.

Austrian Vignette System for Motorway Use

In 1997, the Austrian government introduced a vignette system for the use of the Austrian motorways, which closely resembles the Swiss system. Vignettes can be bought for different time periods (week, month, year). Trucks with a maximum with of 12 tons or more are subject to the "Strassenbenützungsabgabe" and therefore exempt from the vignette.

Restructuring of the Austrian Rail Sector

The first major step toward the development of a modern Austrian rail network was the establishment of the "Eisenbahn Hochleistungsstrecken AG" (HL-AG). The objective of this company is the planning and construction of an improved rail infrastructure network. In 1995 a separate company for the development of the Brenner axis, including the base tunnel, was formed ("Brenner Eisenbahn GmbH"- BEG). More recently, the Austrian National Railways OeBB underwent an institutional reform, separating the infrastructure from the operation of services.

Austrian Road Pricing Initiatives

The first pilot project for testing the feasibility of electronic road pricing was started in 1994 along the Tauern axis in Salzburg. In 1995, it was decided to introduce electronic road pricing for heavy goods vehicles in 1998. Due to problems with the tendering of contracts and political pressure from the freight operators, the introduction of the system was postponed for three years. In spring 2000, virtually on the eve of signing the final contract for the construction of the selected system[29], the government decided to postpone the decision. The official reason was the speed of technological development and an anticipated technological breakthrough that would allow the implementation of a superior system at a considerably lower price. A new tendering process was started in 2001. This may lead to the implementation of a fully operational system as early as 2003.

The new system will cover only motorways, including those within cities. The charges will be distance related and are expected to range between 0.12 - 0.15 Euro per km.

2.1.3 France

Author of this section: NESTEAR

Overview

Alpine transport policy in France is first considered as part of the global transport policy: Alpine transport is part of international and transit transport in a country crossed by major North-South corridors through the Alps but also through the Pyrenees and through the Channel tunnel and by East-West corridors between France and Germany, France and Benelux.

Therefore a major problem is to define a policy which is compatible with a larger policy context and at the same time to meet specific problems of Alpine crossing: among the general principles there is in particular the pricing policy with tolls on motorways which was adapted as a basic principle for the financing

29 The proposed system was only half electronic. It still required manned toll booths at certain points of the network.

of a motorway network in France. Most of international and transit road transport uses the motorway network.

For rail transport, the policy context was also the general rail policy in France, which cannot be limited to relations between France and Italy although this traffic was an important one for international rail transport in France.

During the last decades, the major problem was to get sufficient capacities to face the road traffic growth due to European integration from bilateral trade between France and Italy as well as for transit flows. Mont Blanc Tunnel and then Frejus Tunnel have been built with toll systems in order to obtain such a capacity: the freight traffic has grown much faster than expected. Until last year, the question of the accessibility to the Tunnel of Frejus, with a motorway, was the last step of this process. The French motorway system was built fairly late in France as compared to Germany or Italy and Alpine motorways have been open in the French Alps after the Swiss or Austrian Governments had decided to develop an Alpine motorway transport system almost forty years ago and then decided to avoid new construction.

As for rail, the major link was the Modane Tunnel: the capacity is limited and the gauge has still to be improved to reach B+ norms. However, the problem was also more general and related to rail operating systems and rail performance in the competition with road. Recently the train operations between France and Italy have been improved, increasing the capacity of the tunnel in order to face short-term increase of the demand.

When considering different alternatives routes in the French Alps, one must consider that only few links can concentrate the most important part of the traffic and that for long distance relations between Northern Europe and Italy, the choice is possible between routes through France and Switzerland. The decisions taken between France and Italy cannot be independent any more of the decision taken in Switzerland or even Austria. According to policy decisions, it has been estimated that more than one million trucks can change their routes between France and Switzerland. For France, it is clear that the road transit increase over the past twenty years is to a large extend due to the restrictions imposed in Switzerland. As long as this traffic was contributing to the financing of new infrastructure in France, it had been accepted or tolerated but with the saturation of the infrastructure and the damage caused to the environment it is less and less accepted in particular by the population living in the Alpine region.

Among the main corridors one must first mention the Mont Blanc and Frejus Tunnel for road and the Mont Cenis for rail: Frejus Tunnel and Mont Cenis tunnel are connecting the same Alpine valleys in France and Italy.

The coastal link on the Riviera is also a major link between France and Italy with rapidly increasing transit traffic from Spain and with very limited rail capacity. Increasing the road capacity by doubling the motorway A8 and drilling a new tunnel under the mountain has appeared so far to be very difficult because of local opposition (density of population along the coast and environmental protectors in the mountains). A new rail link has not been really envisaged because of the cost and the density of population.

Besides these major corridors there do exist many road passes, but with difficult access and in general restricted access for trucks. In summer these passes are much used by tourist cars as in all Alpine regions.

In the Northern part of French Alps, one could however mention possible improvement between France and Switzerland closed to the Leman lake or through the French Jura in order to improve road or rail links and connect French routes with Swiss routes. For rail this is under investigation, and could help for the structuring of a high-speed network with better interconnection between France and Switzerland and reversibly. For road, this is still highly controversial and cannot really be considered as a solution for transit needs in the future.

In the southern part, there is a possible link in the Durance Valley with the construction of a new rail tunnel between Briançon and Oulx; however the line to reach Briançon in France should be upgraded and the capacity would always remain limited.

It is clear that local measures can help to improve Alpine connections and even contribute to the transit in more regional connections that must not be forgotten in the future. Regions are concerned by the improvement of the links with their foreign neighbour regions: PACA with Piedmont and Liguria, Savoy with Val d'Aoste.

Today a major concern of the policy is to prepare the future and to face the expected growth of traffic: capacities are close to saturation and the Mont Blanc tragedy has stress the importance of the problem.

The priority is set on rail transport and recent decisions have been taken on France-Italian summit.

Basic reports on French policy in the nineties

With the increase in trans-Alpine road traffic in France and the limited capacity of road and rail links between France and Italy, several reports have been produced for the Minister of Transport in order to help the government to prepare decisions (reports prepared by the CGPC – Conseil Général des Ponts et Chaussées). These reports have influenced the French policy during the last ten years and have been published officially, although they are not supposed to express the position of the government.

In 1993, the "Legrand" report stressed the importance to be given to rail freight transport in trans-Alpine transport and in particular in the construction of a new link between Lyon and Turin. So far, focus was more put on passenger traffic This link was, indeed, already mentioned as part of the European HST network for passengers. The report also insisted on the interdependence between Swiss and French Policy. It was a first step towards a more global vision on trans-Alpine problems It proposed also a new road tunnel in the Southern part of the Alps (a new "Tende" tunnel, between Nice and Cuneo).

The Besson's report in 1993 was more politically oriented and has promoted closer links between Italian and French authorities, with, in particular, the creation of two intergovernmental commissions (CIG), one for the Southern part of the Alps, and one for the Lyon-Turin connection. Within the French administration, the "Mission des Alpes" was created which hosted the "Secrétariat Général" of the CIG Lyon-Turin, preparing the recent Franco-Italian summit of January 2001.

But, the basic report on which French policy is presently being built is certainly the report published in March 1998 and directed by Christian Brossier from the CPGC: "la politique française des transports terrrestres dans les Alpes" (report number 1998-0066-01-CGPC).

This report gave a broad international approach of the problem considering the European context and the transport policy of all Alpine countries, including Germany.

This approach was also multimodal pointing out intermodal solutions. The question of financing new infrastructure was analysed, as well as the hypothesis of road contribution, through taxation, to rail construction of new infrastructure. In addition, the relations between regional, national, and European policies were discussed.

The next step in the French initiatives for trans-Alpine transport policy was then the presentation in September 1999 of a "French memorandum" for the transport policy across the Alps, stressing again on the question of the financing rail infrastructures and putting emphasis on environmental and safety. Shortly after this, the Alpine Convention was signed.

Since then, concrete steps have been taken with Italian government for the planning-of the Lyon-Turin new link and one can estimate that new conditions are now gathered to progress in a more concerted and compatible approach of trans-Alpine policy between Alpine countries.

2.1.4 Germany

Author of this section: IWW

Distribution of competences

The national government (Ministry of Transport, Building and Housing) is responsible for the network of federal highways (Bundesautobahnen) and other federal trunk roads (Bundesstrassen), which form together the superior road network, as well as national road policy matters, including:

- Making of National Road Master Plan (Bundesverkehrswegeplan BVWP)
- Making 5 year road needs assessment corresponding to the law about the extension of federal trunk roads (Fernstrassenausbaugesetz BVWP)
- Road Financing policy (Earmarked road related taxes and subsidies for communities on road construction and maintenance)

The regional state governments (Landesregierungen) are responsible for the planning, construction, maintenance and management of state roads (Landesstrassen). They often make their own local Road Master Plans. They also perform management tasks for the federal roads by order of the federation and the designation of federal trunk roads (approval of the federal Minister of Transport required). The local communities are responsible for planning, construction and management of the communal roads (Kreisstrassen and Gemeindestrassen). The state roads and the communal roads form together the inferior road network.

Involvement of national government in local matters

Planning

The Ministry of Transport makes the National Road Master Plan, which covers all federal highways and federal trunk roads. The federal states can make proposals for road projects, which are collected and evaluated by the federal Ministry of Transport. The result of the process is a priority listing for all projects and the definition of an investment program. Thus, the states participate especially at the beginning of the planning process. The object planning is made by the federal Minister of Transport by communicating with state planning authorities.

The states have the responsibility for the planning of the state roads (Landesstrassen). The local communities are responsible for the planning of their own communal roads (Kreisstrassen and Gemeindestrassen). These roads are not part of the National Road Master Plan.

Financing

Federal Road projects are financed by national funds. State road projects are financed by state funds. Communal road projects are financed by the communities. Federal road projects within city areas of cities with more than 80000 inhabitants have to be financed by the respective community instead of the federation. For the improvement of traffic circumstances in the communities, the federation supports the communities with subsidies (taken from the earmarked mineral oil tax revenues), which they can use for public transport purposes as well as for communal road construction. The legal fundament of these subsidies is the communal traffic funding law (Gemeindeverkehrsfinanzierungsgesetz GVFG). The total amount of funding in the year 1999 averages 3.280 billion DM. In addition, the states can participate in the funding of federal road projects in the case that they have special interests in these projects. The total amount of investment in road infrastructure in Germany averages 18.810 billion DM in the year 1999, thereof 8.005 billion DM for federal trunk roads (Source: Verkehr in Zahlen 2000).

Recent developments

- Amalgamation of the Ministry of Building and Housing and the Ministry of Transport to the new Ministry of Transport, Building and Housing in 1998.
- Implementation of the ecological tax reform since 1999
- Revising of the federal infrastructure plan (Bundesverkehrswegeplan). The new plan will be put to law probably in the year 2003.
- Planned introduction of a distance related road-charge for HGVs on federal motorways in the year 2003.
- Tax reform 2000.
- Planned Anti-Congestion program financed by the revenues of the distance related road-charge for HGVs on federal motorways
- Future investment program financed by revenues from the auction of UMTS-licenses
- Actual Discussion about the continuation of the rail structure reform from 1994

Financing

Because of the financial situation of the national budget, not all road construction goals defined in the National Road Master Plan can be achieved in time. Therefore, the Ministry of Transports tests the possibilities of private funding of road projects.

Planning

The concept of National Road Master Plan is in the process of revising. Important tasks in the revising process are the better inclusion of environmental aspects, the assessment of environmental impacts and the formulation of environmental goals in the assessment of the proposed road projects. The last National Road Master Plan was created in 1992. The next one will be published about the year 2003.

Investment Program 1999-2002 (Investitionsprogramm 1999-2002)

Generally, the problem of reducing traffic congestion is dealt with by the Federal Transport Infrastructure Program and the Road Infrastructure Programs of the states. The reduction of traffic congestion and therefore the reduction of travel time between transport relations and of negative environmental effects (air pollution, noise immission) is an important part of the Cost-Benefit-Analysis, which takes place in the assessment of proposed transport infrastructure measures. Thus, the goal of reducing traffic congestion is part of the general planning and assessment process of road infrastructure.

The current planned road infrastructure measures are defined in the Infrastructure Investment Program 1999-2002 (Investitionsprogramm 1999-2002) of the Federal Ministry of Transport, Building and Housing. In addition, in February 2000, the Minister of Transport has proposed a new Fighting-Traffic-Congestion-Program (Anti-Stau-Programm) for the 5-year-period 2003-2007 financed by the planned Heavy Vehicle Fee on motorways.

Fighting-Traffic-Congestion-Program

In spite of a substantial amount of investment in transport infrastructure in the last years, the increase in transport volume generates still bottlenecks and traffic congestion in the Federal Motorway Network. Therefore, it is necessary to tap new sources for funding additional infrastructure measures. The planned distance-related road-charge for heavy trucks on Federal Motorways will - starting from 2003 - generate

the required funds for financing the Fighting-Traffic-Congestion-Program. The planned volume for the years averages 7.4 billion DM.

In order to achieve maximum effect, the selection of measures takes place only by traffic-related, objective criteria (especially no regional criteria). For the Federal Motorways these criteria are:

- Motorways with 4 lanes and a minimum of 65000 vehicles per day at an yearly average have to be extended to 6 lanes
- Motorways segments with a high share of trucks, lacking parking lane and high steepness.
- The removing of some important gaps in the network, which are up to now regularly causing congestion in the network

EFRE program of the federation

In the year 2000, the European fund for regional development (EFRE) has been opened for the first time for the improvement of transport infrastructure in the new federal states of Germany. In 1999, the federal government has decided to create an additional federal program "Transport Infrastructure" and to apply for a total amount of 1.592 billion Euro from the financial resources of the EFRE fund for the period 2000-2006. The monies shall be used for reducing bottlenecks in rail and waterway infrastructure and for the construction of new trunk roads of the highest priority according to the federal infrastructure plan.

Planned investments in the federal EFRE program "Transport Infrastructure" 2000-2006 in million DM:

	federal rail ways	federal trunk roads	federal waterways	total
total investments	2665.93	3481.67	25.00	6172.60
thereof: EFRE	1060.53	2036.33	16.82	3113.68

Source: Federal Ministry of Transport, Building and Housing

Future investment program (Zukunftsinvestitionsprogramm)

The financial basis of the future investment programme is the reduction of interest costs because of the revenues resulting from the auction of the UMTS-licenses for Germany in the year 2000. For each year of the period 2001-2003, a sum of 4 billion DM will be provided for specific additional investments in the fields of transport, research and energy. The investments on transport infrastructure will mount up to 2.9 billion DM every year. With these investments, the foundations for a smooth traffic flow will be broadened. Until the year 2003, there will be an investment of 6 billion DM in rail infrastructure. This will enhance the attractiveness of rail transport and therefore will reduce traffic on the roads. As regards road construction the total amount of investment in the frame of the program until the year 2003 will be 2.7 billion DM. With these financial resources, 125 additional city or village bypasses will be funded. The program has been presented to the public by the federal minister of Transport, Building and Housing in October 2000.

Traffic Message Channel (TMS)

Since the year 1998, the German TMC-system is in area-wide operation. With this system, a road user who has the necessary equipment is much better informed about the traffic situation as with the traditional radio traffic message system. Because of the possibility of getting specific information about the traffic situation on the roads of his travelling route at any time it is possible to avoid congestioned roads. Therefore, the TMC-system contributes to smooth road traffic in Germany.

The TMC-system combines traffic information of the police agencies, the traffic control systems installed on federal trunk roads, radio stations, automobile clubs and other institutions. Therefore, an intensive communication between the involved parties had to be achieved.

Traffic information centres

In several urban areas, projects have been launched to create traffic information systems for improving the information of road users about the current traffic situation on roads and parking areas. In addition, information about public transport timetables is provided. This serves for a better connection of the different transport modes.

Distance-related motorway toll for HGVs

The federal government plans to install a distance-related road-charge on motorways for HGVs in the year 2003. The toll serves primarily for financing road infrastructure. However, it is also intended to shift freight transport from the road to the rail sector.

Although until now, there is no official statement, the system to be introduced will use an Electronic Toll Collection (ETC) technique. Most probably, it will consist of a GPS-based system for calculating the kilometres driven combined with a cellular phone network for reporting and accounting purposes. The volume of average tariff values per kilometre driven is also not decided on until now. In the current discussion, a tariff volume between 0.27 DM and 0.37 DM (between € 0.14 and 0.19) per kilometre and vehicle seems to be most probable.

2.1.5 Italy

Author of this section: DITS

A historical overview of rail and road transportation in the Alpine area

Freight transport and mass displacement of people through the alps has taken place since ancient times. As real infrastructures were not available, moving across the Alps was strictly conditioned by the territory and tended to follow the smoothest path, through valleys, over crests and through passes at lower altitude. Thus, some fundamental guidelines were at that time laid down and have proved effective throughout the times (e.g. the Monginevro, the Gran San Bernardo and Piccolo San Bernardo, the Spluga, the Brenner, etc.).

Obviously, economical events played also an important role. In this context, the integration between railways and ports facilities, with the growing of sea transportation, following the opening of the Suez Channel and the beginning of mass European emigration towards North and South America should be underlined.

The development of tourism beyond mere elite phenomena should be not undervalued as a driving factor. In fact, during the period from the end of 1800 and the beginning of 1900, trips to Italy became affordable to a considerable number of groups from Europe's well-to-do classes.

From the railway point of view, the construction of an Alpine line was highly demanding. However, if sustained traffic flows were expected, profits could be substantial, considering the absence of an alternative and efficient transport system.

However it should be noted that, since 1930 with asphalting, and since 1960 through new crossing roads, some of which with motorway characteristics, road transport profited by a considerable competitive improvement that allowed it to absorb, especially in the last two decades, a large part of the increase in Alpine traffic.

Present passenger and freight traffic on the Alpine crossings

The main rail Alpine crossings along the Italian boundaries are:

- From Italy to France: Ventimiglia, Modane;
- From Italy to Switzerland: Sempione, Chiasso and Luino (Gottardo);
- From Italy to Austria: Brenner, Tarvisio;
- From Italy to Slovenia: Gorizia, Villa Opicina.

As far as passenger traffic is concerned, the main lines that include Alpine passes are crossed by 120 trains per day corresponding to 11million passengers a year and a share of 13% of all transport market. This share is subdivided as follows among the different European geographical regions:

- 20% covered by the Western Regions (France, Portugal, Spain);
- 69% covered by the Central Regions (Germany; Austria, Benelux, Scandinavia, United Kingdom);
- 11% covered by the Eastern Region Area (Poland, the Balkan countries, Czech Republic, Hungary).

On the other hand, local lines with border traffic are crossed by 150 trains per day.

As far as freight traffic is concerned, 330 trains per day run along the Alpine passes. It corresponds to 41 million tons of freight a year that is a share of 31% of the entire market. It is important to point out that in Italy imported tonnage exceeds exported tonnage and that this imbalance increases the circulation of partially empty trains.

Summary of political issues, agreements and planning documents: National Planning and Legislation

- Law n. 984 19th of November 1984 – Ratifica ed esecuzione della convenzione europea sulla cooperazione transfrontaliera delle collettività o autorità territoriali, con allegato, adottata a Madrid il 21 maggio 1980. Ratification and execution of the European Convention on frontier co-operation of communities or local authorities, with enclosure, carried in Madrid on the 21st of May 1980.
- D.P.R. (Ordinance of the President of the Republic) of March 31st 1994 - Atto di indirizzo e coordinamento in materia di attività all'estero delle Regioni e delle Province Autonome. Policy and coordination Act concerning the foreign activities of Regions and Autonomous Districts.
- Agreement statement between the Ministries of Transport of the Italian Republic and the Slovenian Republic. Signed in February 2001. With this agreement, the Italian and Slovenian transportation Ministries have decided to strengthen the collaboration between the two countries by means of the construction of an efficient passenger and freight transportation system. In this regard, the two parties have confirmed the strategic importance of the fifth Passage connecting Italy, Slovenia, Hungary and Ukraine. The Ministries have confirmed their political will to agree on the modalities of the transpor-

tation demand realignment, taking into account the Alps Convention directions and promoting the shifting of significant traffic shares from road to railway.

- Agreement statement between the Italian and French governments, signed in January 2001. This document reports all the articles of the general dispositions issued by the Italian and French governments with regard to the project for the realisation of a new railway line from Lyon to Turin. The Italian and French governments bind, in application of this agreement, to carry out all the works of the Italian-France common part that are necessary to the new freight and passenger railway connection between Lyon and Turin.
- Agreement statement between the Italian and Swiss Ministries of Transport, signed in February 2001. With this act, the Italian and Swiss transport Ministries have decided to strengthen the collaboration perspectives between the two countries by means of the construction of an efficient passenger and freight transportation system. In particular, the two Ministries have analysed the state of the art of the projects concerning the new Swiss trans-Alpine railway lines (NFTA) and the Italian high capacity network (RAC).
- New Transportation and Logistic General Plan (Nuovo Piano Generale dei Trasporti e della Logistica – 2000): see in particular the problems related to trans-Alpine crossings in S.N.I.T. (National Transport Integrate System - Sistema Nazionale Integrato dei Trasporti)
- Potenziamento dell'asse ferroviario Monaco-Verona. Costituzione GEIE Galleria di base del Brennero EWIV, 11/11/1999. The document gives the first pieces of information concerning the main tasks of the GEIE activity Phase 1 and the company structure as well. Following the 1987 and 1993 feasibility studies the Italian and the Austrian transportation Ministries have confirmed (April 1999) the common intention to begin the studies and the projects necessary to carry out the Brenner Basis Tunnel. FS S.p.A. and Brenner Eisenbahn Gmbh have signed the GEIE contract in April 1999. The document underlines GEIE's objectives and describes the working program for the first 24 months from the GEIE creation on.

Summary of political issues, agreements and planning documents: Regional Planning and Legislation

Lombardy Region adheres to many associations and takes part with various bodies to the "Collaborazione Transfrontaliera e Programmazione Europea in materia di Trasporti".

- Effective Regional Transportation Plan (approved on the 25th of November 1982) Lombardy Region - Piano Regionale dei Trasporti vigente (approvato il 25 novembre 1982) – Regione Lombardia
- PRS (Development Regional Plan) VII Legislation - Lombardy Region / PRS (Piano Regionale di Sviluppo) VII legislatura – Regione Lombardia
- New Mobility and Transport Regional Plan - Nuovo Piano Regionale della Mobilità e dei Trasporti
- Aim declaration for the identification of possible inter-regional collaboration subjects and the development of friendly relations between the Lombardy Region and Ticino District - signed on the 24th of March 1997 - Lombardy Region - Dichiarazione d'Intenti per l'identificazione di temi di possibile collaborazione interregionale e per sviluppare rapporti di buon vicinato tra la regione Lombardia e la Repubblica e Cantone del Ticino, sottoscritta il 24 Marzo del 1997– Regione Lombardia

2nd Regional Plan for Transportation and Communication – September 1997 – Piedmont Region

2° Piano Regionale dei Trasporti e delle Comunicazioni, Settembre 1997, Regione Piemonte

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This is a regional-level planning document. Nevertheless, it contains a description of the most important trans-Alpine connections planned for the next years that will interest the Piedmont Region. In particular, a description of the structural scheme of the transport network at national and international level is given (with its implications at local level), focusing on the structure of two intermodal corridors. The first in the east-west direction (an "Y" converging towards Turin and directed towards the west side of Piedmont, in addition to the Asti – Cuneo – Nice connection), and the second in the north-south direction (from Genoa to Simplon).

Projects of great significance are included in the above two corridors, both for rail (i.e. the high speed rail between Turin and Lyon) and for road (as the Mercantur tunnel between Cuneo and Nice).

Main interventions to improve rail capacity

The substantial policy initiatives in the field of Alpine transport planned in the near future can be summarised as follows:

- Ventimiglia pass: single-track parts of railway will be redoubled.
- Frejus (Turin, Modane, Lyon) pass: works of adaptation are planned to transform gabarit A in gabarit B plus. They will allow conveying P80 codified trucks by train. These interventions will be executed during the next 4 years. A new railway line between Turin and Lyon is planned within 2013. This line will be suitable for gabarit C.
- Aoste-Martigny: currently there is no a railway line linking Aoste to Martigny. A feasibility study is now in progress. The Region of Val D'Aosta supports the enterprise. (See references)
- Sempione-Loetschberg pass: works of gabarit adaptation are planned in order to allow the transport of P80 codified trucks along Sempione pass. Loetschberg is already suitable for P80 codified trucks (the rolling motorway with trucks of 4m height started the operations in June 2001). A new base tunnel through the Loetschberg is under construction. This tunnel will be suitable for gabarit C template and will be realized within 2007.
- Gottardo pass: it is the main pass as far as freight transport is concerned. The technological adaptation is currently in progress. The Gottardo railway line passes even through Milan, which represents a bottleneck because of the intense traffic. A new base tunnel is planned for the Gottardo pass. It will be located at 300-400m below the present tunnel and will be suitable for gabarit C.
- Brenner pass: it is more than a year that the line has been adapted to gabarit C. The freight traffic increase does not reflect the forecasts. Probably it is due to the absence of economical facilities in favour of railway transport. Technological adaptation work is in progress, which should be completed within 18 months. The bottleneck of this line is located in Austria's Inn valley.
- Camporosso-Tarvisio pass: the bottleneck of the line through Tarvisio is located in Austria and is represented by the Semmering pass. About fifteen years ago, a tunnel through Semmering had been planned but it has not been realized yet. Concerning Tauri pass, the redoubling of the single-track section is in progress on the Austrian side. On the Italian side, only a technological improvement is planned.
- Eastern passes through Villa Opicina and Gorizia: the bottleneck is represented by the Ronchi dei Legionari-Trieste line where local traffic interferes with freight traffic. A railway line running through Venice-Budapest-Kiev is planned (the so-called "Fifth Corridor"). It should be finished in 2013. On the Italian side, interventions are planned near Mestre and for the Ronchi dei Legionari - Trieste line. The rest of the line to Lubliana has excess capacity.

Transports across the Alps

Transports across the Alps – possible alternative solutions to the construction of new big infrastructures - CIPRA (1997).
Trasporti nelle Alpi – Possibili soluzioni alternative alla realizzazione di nuove grandi infrastrutture.

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Details: Published by CIPRA, Italian Section in June, 1997

In this report it is pointed out that in 1970 almost all the freight traffic was handled by rail. On the contrary, nowadays the traffic by road is prevalent. The increase of freight transport is attributed to the transfer of a great deal of intermediate products from an industry to another.

Switzerland and Austria are the only countries that try to contrast the increase of goods transport. In fact, in Switzerland the railway traffic has been supported by the Government whereas in Austria an agreement has been established concerning a 60% of reduction of NOX emission within 2003 in respect of 1991. An Ecopoint system has been organised.

The UE has instituted a transport plan called Horizont 2000 in order to face the increasing of transport demand. A way to improve the transport across the Alps is the conversion of road traffic in railway traffic.

The Rail link of Gran San Bernardo

Direttrice ferroviaria del Gran San Bernardo, ISTIEE (Istituto per lo studio dei trasporti nell'integrazione economica europea, Trieste) Fabio Santorini (1990).

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In this document, the main technical characteristics of the projected rail tunnel are stressed.

2.1.6 Slovenia

Author of this section: MARIBOR

Transport Policy

The document "Transport policy" (written 1996-1997) was put into the parliamentary procedure (in the year 1998), which was never finished. In an interview conducted in May 2001, the new secretary of state responsible for the transport policy stated out that the Transport policy document must be rewritten. The extract of the 1997 document "Transport policy":

"The defining of priority goals in transport policy, which are to ensure cost-effectiveness of transport, protection of the environment and traffic safety, is based on the undesirable trends that have been identi-

fied in the transport system. The economic viability of the measures taken to achieve the goals that have been set is established through an assessment of the external costs of transport, which amount on average in the EU to 4.1% of GDP (2% due to traffic jams, 1.5% due to accidents, air pollution 0.4% and noise 0.2%), while in Slovenia the external costs of transport are estimated at 4% to 6% of GDP, and the great majority of these costs, around 90%, are a result of road traffic."

The basic goals of transport policy

Control of traffic flows

- Ensuring at least a minimum level of mobility
- Reducing the burden of transit traffic
- Preventing unnecessary traffic
- Promoting non-motorised transport (walking, cycling)
- Redirecting passenger traffic to public transport
- Redirecting freight to public transport companies
- Encouraging cooperation between companies providing public transport

Protection of the environment

- Rational use of the physical environment
- Preserving the identity and biodiversity of the environment
- Reducing air pollution from vehicle emissions
- Safe transport of hazardous substances
- Reducing the noise level of road and rail traffic
- Reducing the harmful effects of air traffic on the environment
- Preventing pollution of the sea and the environment from maritime traffic
- Dealing with the problem of recycling old cars and car parts
- Providing public information on protection of the environment

Reducing the number of accidents

- Introducing measures to increase road safety
- Retaining the existing levels of safety in rail and air traffic
- Preserving the high level of safety in maritime transport

Neutralising and tackling the consequences of transport deregulation and liberalisation

- Gradual equalisation of the quality and level of transport infrastructure services with the EU countries
- Retaining the social security of transport workers
- Integrating urban and rural areas using environmentally friendly means of transport
- Integrating demographically threatened regions, special groups and the socially deprived

The general part is followed by a system of measures (see the whole document: http://www.gov.si/mpz/4pod/1/a2pm.html)

National Motorway Construction Programme

The National Motorway Construction Programme (see also: http://www.dars.si) envisages the provision of motorways of an adequate standard, together with the completion of Slovenia's motorway network that shall traverse the country in two basic directions:

Northeast to Southwest - from Lendava on the Hungarian frontier and Šentilj on the Austrian one, to the Adriatic port of Koper and, by way of two western spurs (via Sežana and Gorizia), into northern Italy: 406 km long; as well as

Northwest to Southeast - from the Karawanken Tunnel, which traverses the Austrian frontier, to Obrežje on the Croatian border: 113 km long.

The aforementioned Programme envisages:

- the construction of 518.6 km of motorways and trunk roads
- the construction of 35.2 km of other public roads as feeders to the motorway network
- the improvement and upgrading of 101 km of public roads due to motorway construction
- the execution of 28 re-routing and similar such construction projects at points where motorway construction impinges on the national railway network

Following a number of additions and alterations to the aforementioned Programme, it is estimated that the construction of Slovenia's new motorways, other public roads and pertaining engineering projects will cost some US$ 4.1 billion. It has been calculated that 67% of this total figure will be raised internally, namely through the Fuel Toll scheme (by way of which 20% of the retail price of petrol and diesel fuels sold in the Republic of Slovenia is levied specifically for the requirements of this Programme) together with a portion of the current motorway toll. The remaining 33% of this total shall be raised through domestic and foreign loans, as well as bonds and other sources.

Also included as part of the Programme are several reconstructions and upgrades of sections of main and regional road, which either temporarily undertake the function of unbuilt sections of motorway or facilitate the network's connections and links with larger urban areas and thus enhance European Transport Corridor No. V.

The National Motorway Construction Programme was endorsed by the Parliament of the Republic of Slovenia on 15th November 1995 (and published in the Official Gazette of the Republic of Slovenia (Uradni list RS) No. 13/96). The additions and amendments to this Programme were accepted by Parliament on 23rd April 1998 (and published in the Official Gazette of the Republic of Slovenia (Uradni list RS) No. 11/98).

Slovenia began implementing its National Motorway Construction Programme in 1994. Since 1st January of year 2001, 203.7 km of motorways and other such arterial motorways have been completed and opened for traffic.

Prior to the implementation of the National Motorway Construction Programme, there were a total of 198.5 km (see http://www.dars.si/ang-html/nacionalni/stran1-1.html) of motorways in Slovenia built in a 24-year period between 1970 and the end of 1993. By the time the envisaged National Programme has been fully realised, Slovenia shall have some 600 km of motorways and expressways.

The National Programme of the Slovenian Railway Infrastructure Development

The National Programme of the Slovenian Railway Infrastructure Development was adopted by the Parliament of the Republic of Slovenia on 25. of October 1995 (and published in the Official Gazette of the Republic of Slovenia (Uradni list RS) No. 13/96).

The Integration of Slovenia into the European Transport System

The study worked out by Institute of Traffic and Transport in 1992, was the first Transport policy document after the independence of the Republic of Slovenia.

Spatial plan and transportation infrastructure development needs

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Details: Available (only in Slovenian) at: http://www.gov.si/mpz/2kabinet/1k.html

The study (March, 2001) is a synthesis of all Slovenian documents on transportation infrastructure development needs, which doesn't include only political concepts and priorities but also development, action and construction programmes for all modes of transport. The synthesis was faced with the spatial development plan. The result of the study is a final proposal for the actual and future transport infrastructure of the official Spatial development plan of the Republic of Slovenia.

2.1.7 Switzerland

Author of this section: ECOPLAN

A historical perspective on Swiss transport policies

Up to the early seventies, the development of Swiss transport policy has been shaped by mainly two factors.

- First, the absence of an integrated approach to transport policy. The different modes of transport developed independently of each other. Rail and road were always competitors, not partners.
- Second, Switzerland is historically very aware of its position as a transit country. Whereas in the EU transport policy is mainly an instrument for developing a well-working internal market, transport policy in Switzerland, due to its geographical situation, has always been firmly connected to the issue of trans-Alpine crossing. Many myths are still connected to the Alps and their conquest by vehicles. The Swiss people routinely blame the heavy lorries for the summer congestions at the Gotthard tunnel, whereas in fact the problem is often caused by passenger cars.

In the past, these facts led to a nationally defined transport policy; exceptions were made for technical coordination only.[30]

30 See Wicki (1999), Nachhaltige Alpenverkehrspolitik, p. 47ff.

Swiss Integral Concept of Transport (SICT)

At the beginning of the seventies, the government (Federal Council) envisaged drawing up a global, integrated concept of Swiss transport policy. In 1977, a group of experts presented 40 propositions for a fundamental new alignment of the Swiss transport policy (Swiss Integral Concept of Transport).[31] The results can be summarized with four guiding principles:

- Co-ordination of planning
- Long-term profitability
- Effective dividing up of responsibilities
- Secure financing

The SICT mentioned the problems of trans-Alpine crossing only in passing. Although the goal of shifting trans-Alpine freight transport from road to rail was clearly articulated (proposition 17), a concrete strategy about how to do so, was missing. In the framework of the SICT, the issue of financing transport and transport infrastructure was put forward as well. In a then progressive approach, the SICT demanded that transport should bear its real costs, both internal and external (proposition 20). However, before the government could put these propositions in concrete terms, the Parliament demanded improved funding through the introduction of a highway vignette and a flat rate heavy vehicle tax. After a 1984 popular vote, both taxes were finally introduced. The fierce reaction in other European countries (including measures of retorsion against Swiss hauliers) made obvious, that transport policy was no longer a purely internal issue.

Based on the SICT, the Federal Council presented in 1982 his propositions for a new Co-ordinated Transport Policy (SCTP). It should provide the constitutional basis for the realization of the goals of the SICT. As far as trans-Alpine crossing is concerned in the SCTP, the Federal Council is in favour of new rail/road links through the Alps only if there is a proved demand. In a 1988 compulsory popular vote, the SCTP was rejected by a majority of the Swiss population fearing increasing taxes on motorized individual transport.

New trans-Alpine Rail Link (NARL)

As of the mid-eighties, Switzerland started to feel the effects of the flourishing European Internal market in terms of increasing trans-Alpine transport volume. The Swiss government proposed to face this challenge with the construction of a new trans-Alpine rail link (NARL). Within the NARL concept, it was planned to build two new base tunnels through the Gotthard and the Lötschberg as well as a few new railway branches, connecting Western and Eastern Switzerland to the new rail link.

This policy aimed also at integrating Switzerland into the trans-European transport network (TEN-T) and to offer an alternative to a new Alpine road corridor preferred by the European countries. The Swiss people approved the building of the NARL in 1992 in a national referendum, although the financing of the project was not entirely secured. This problem was solved in 1998 with the approval of an integrated package of public transport financing (see PTFP below). Construction work is currently under way, with the Lötschberg to be opened in approximately 2007 and the Gotthard in 2012/2013.

Transit Agreement between Switzerland and the European Union

While the Swiss Coordinated Transport Policy was overall still based on a national approach to transport policy, it was only with the European Union trying to involve third countries (Switzerland, Austria and

31 See Oetterli (1998), Die Gesamtverkehrskonzeption Schweiz (GVK-CH), p. 11f. and Walter (1998), Einführung, S. 1f.

Yugoslavia) in their common transport policy that Switzerland's policy began to include external aspects as well. It was in the interest of the EU to guarantee a transport flow throughout Europe that was as unhindered as possible.

The negotiation process ended with the Agreement of 2 May 1992 for the improved co-operation between Switzerland and the EU in freight traffic, particularly in trans-Alpine transit traffic. Above all, rail traffic is to be promoted, namely in the form of combined transport. The agreement describes the infrastructure measures to be taken by the contractual partners. Thus, Switzerland undertakes to set up a roll-on, roll-off corridor and, in the longer-term, to build the tunnels planned in the NARL project. The transit agreement that came into force in 1993 guaranteed the 28-tonne limit for lorries, the ban on Sunday and night lorry driving and is valid until 2005 at the latest.

The Constitutional Article on the Protection of the Alps ("Alpine Initiative")

In 1994, Swiss people voted on an initiative ("Alpine Initiative") submitted by environmentalist organisations that did not agree with the official transport policy, especially with the issue of transit freight traffic. The initiators were not only concerned with the ecological situation in the Swiss Alps but they also sought to ensure political efforts (i.e. accompanying measures) in order to shift freight traffic from road to the NARL. The Federal Council rejected the initiative because of the inconsistency with the Transit Agreement with the EU.[32]

On 20 February 1994, the initiative was supported by a majority of the Swiss people and the cantons. Thus, the following article became part of the federal constitution:

> Article 84:
>
> 1 The Swiss Confederation protects the Alpine region from the negative consequences of transit traffic and limits the impact of transit traffic to a degree which does not harm people, animals and plants or their habitats.
>
> 2 Goods in transit from one border to another, crossing the Alps, must be transported by rail. The Federal Council (the Swiss cabinet) will decide the measures that need to be taken by the standard procedures. Exceptions to this rule will only be allowed in case of necessity; the conditions for this will be specified by law.
>
> 3 The capacity of transit roads in the Alps must not be increased. The only exception are bypasses for the relief of villages and towns from transit traffic.
>
> Article 196 (Temporary legislation):
>
> Freight traffic in transit through our country must have been transferred to rail by February 20, 2004.

The adoption of the Alpine Initiative caused a severe setback for the negotiations on the Agreement on Land Transport between Switzerland and the EU. Only in 1995, after the Federal Council presented a EU-compatible implementation concept for the Alpine Initiative, the negotiations were resumed. In a first step, the Federal Council defined the concerned transit roads (San Bernardino, Gotthard, Simplon and Great St. Bernhard) and the capacity that must not be increased further following to Article 84, Section 3 of the Constitution.[33]

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32 Sollberger (1996), Auswirkungen eines EU-Beitritts auf den Transitverkehrs, p. 47.

33 Federal law on Road traffic in the Alpine region; SR 725.14.

In order to implement Sections 1 and 2 of Article 84 of the Constitution, the government planned mainly three measures:

- Introduction of a mileage-related heavy vehicle tax (MRHVT) – see below;
- Introduction of a Alpine Transit Tax (ATA) – currently not on the agenda anymore;
- Promotion of combined transport (rail/road) through a railways reform and improving railway infra-structure – see NARL.

All measures are to be based on a market economy, non-discriminatory approach and to be in line with the principle of "true costs". At that time, Switzerland was engaged in the negotiation process on the Agreement on Land Transport with the EU. This close co-operation should ensure that Switzerland adopted no measures that were against European interest. In fact, the Swiss government had the difficult task to satisfy at the same time both the European Union and the Swiss population.

Mileage-related Heavy Vehicle Tax (MRHVT)

The objective of the mileage-related heavy vehicle tax (MRHVT) is to introduce "true costs" (i.e. fair prices) in heavy goods transport: Since January 2001 heavy goods traffic has to pay the costs it actually causes. This principle was approved by the Swiss electorate and the cantons on 20 February 1994 when they adopted the relevant Constitutional Article:

> Article 85:
>
> 1 The Confederation may levy a charge on heavy goods traffic related to motor power or consumption. The charge may only be levied to the extent to which heavy goods traffic creates public costs which are not already covered by other contributions or charges.
>
> 2 The net revenue from the charge shall be used to cover costs in connection with road traffic.
>
> 3 The cantons should receive portions of the net revenue from the charge. These portions shall be calculated by taking into account the specific repercussions of the charge in mountainous and remote areas.

The application law for the MRHVT was accepted in a referendum in 1998.[34]

The revenues from the MRHVT will considerably contribute to the financing of the major infra-structure projects in public transport (RAIL 2000, NARL), the connection of Eastern and Western Switzerland to the European high-speed rail network and noise reduction measures on the Swiss railways). All these measures aim at making rail transport faster, more convenient and therefore more attractive compared to road transport, which is to help shifting transport from road to rail.

Furthermore, the MRHVT will cushion the effects of the gradual increase of the weight limit for heavy goods vehicles from 28 to 40 tonnes. Switzerland and the European Union have set a 40-tonne weight limit in the new Agreement on Land Transport (see below).

Finally, the MRHVT is indispensable in achieving the transfer from road to rail of as much trans-Alpine heavy goods traffic as possible. This transfer is required by the Constitutional Article on the Protection of the Alps (see above).

The MRHVT covers all heavy road vehicles over 3.5 tonnes carrying either goods or passengers. The MRHVT is levied according to the following main criteria:[35]

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34 Federal law on a mileage-related heavy vehicle tax; SR 641.81.

- the maximum permissible overall weight and the pollutant category of the HGV as well as the number of kilometres it has covered in Switzerland.
- According to the MRHVT law, the tax rate can be not lower than CHF 0.60 (EUR 0.39) and not higher than CHF 3.00 (EUR 1.96) per metric tonne and 100 kilometres travelled (t/100km).[36] The maximum transit price agreed in the Agreement on Land Transport between Switzerland and the EU of CHF 300 (EUR 195) for a 40-tonne HGV that covers a distance of 300 km (Basle-Chiasso) approximates to a MRHVT rate of an average of CHF 2.50 (EUR 1.63) per t/100km.
- HGVs that fall into the EURO II and EURO III emissions categories (clean vehicles) pay a lower than average tax rate: dirty HGVs (EURO 0) pay a higher rate. The following tax rates apply: for vehicles of the category EURO 0: CHF 2.00 (EUR 1.30) per t/100km, for vehicles of the category EURO I: CHF 1.68 (EUR 1.10) per t/100km and for vehicles of the categories EURO II and III: CHF 1.42 (EUR 0.92) per t/100km.
- Coaches pay a flat-rate tax: CHF 1,600 (EUR 1,040) per year for vehicles between 3.5 and 8.5 tonnes; CHF 2,400 (EUR 1,560) per year for vehicles between 8.5 and 18 tonnes; CHF 3,200 (EUR 2,080) per year for vehicles over 18 tonnes.

Modernisation of the Swiss railways (PTFP)

The Swiss people voted in favour of RAIL 2000 and the NARL already in 1987 and 1992, respectively. Since then, however, various framework conditions have changed considerably - the financial situation of the Confederation had markedly worsened. For this reason the Federal Council gathered all the major railway projects together with the required financing in a single parliamentary bill "Public Transport Financing Package" (PTFP). In this way the financing of the projects could be ensured for the next twenty years and at the same time, the additional indebtedness of the Confederation was reduced from 75 to 25%.

On 29 November 1998, the Swiss electorate and the cantons approved the financing package for the modernisation of the Swiss railways. Thanks to the positive vote on the Federal Decree concerning the building and financing of infrastructure projects in public transport, railway infrastructure can now be comprehensively expanded and modernised.[37]

The financing of the major projects has been well-founded with the help of a special fund. This fund will be fed from four sources:[38]

- Two thirds of the revenue from the MRHVT;
- revenue from the fuel tax;
- by a 0.1% increase in the rate of VAT;
- long-term capital market loans.

Railways reform

Public transport structures have grown in the past, though they must now be adapted to the requirements of a modern transport system. The framework conditions for public transport must be comprehensively modernised so that the Swiss Federal Railways (SBB/CFF) and the licensed transport enterprises can work more productively and perform their services more efficiently. The Railways Reform, which entered

35 Federal decree on a mileage-related heavy vehicle tax; SR 641.811.

36 1 Euro equals 1.54 Swiss Francs (March 2001).

37 Federal Resolution on Regulations concerning the fund for large-scale rail projects; SR 742.140.

38 See BAV (2000), BAV – Fact-Sheets: Modernisation of the Railway.

into force on 1 January 1999, ensures this fundamental change. It is one of the most important preconditions to ensure that public transport in Switzerland is strengthened and that it can win an increased share of the market.

The main aim of the Railways Reform is to increase productivity and efficiency in public transport and to improve the costs-benefit ratio. To these ends, the Railways Reform introduces elements of competition into the public transport system - above all with the advent of free access in goods transport. The railways are to act in a more entrepreneurial manner in order to exploit the market potential and provide customer-orientated services. Measures applying to all railway enterprises are:[39]

- The introduction of free access in goods transport and in irregular passenger transport: in return for a fee, a railway enterprise may use the rail network of another railway. This creates competition between the individual railway enterprises;
- The separation of the infrastructure and transport sectors in terms of accounting brings increased transparency in the performance of services;
- The introduction of the commissioning principle for all types of traffic: in future, the railways shall only provide those services that either cover their costs or are commissioned in advance by the state. In this way, only the uncovered costs agreed in advance between a railway enterprise and the Confederation or the cantons will be compensated;
- The liberalisation of goods transport: goods transport is to be fundamentally ex-posed to the forces of the free market and should be able to survive without state compensation. However, the state continues to have the possibility of securing a basic service by commissioning goods transport services, depending on how the framework conditions develop.

The Railways Reform is, moreover, the domestic political condition for the implementation of free access in goods transport agreed in the Agreement on Land Transport between Switzerland and the European Union.

Agreement on Land Transport between Switzerland and the EU (BALT)

When Switzerland and the EU negotiated the Transit Agreement in the early nineties, the political leadership of Switzerland intended to join the European Economic Area (EEA), which would have served as an institutional framework for all future discussions in the field of transport-related issues. However, the Swiss people voted against the EEA on 6 December 1992. In his reaction to this vote, the Federal Council decided in February 1993 to start negotiations with the European Union of bilateral agreements in different policy fields, land transport being one of them. Finally, the Agreement on Land Transport was signed in Brussels on 21 June 1999, together with six other sector-specific agreements. It is expected to take effect by the end of the year 2001 after all EU member states having ratified all of the agreements.

The Agreement on Land Transport liberalizes and harmonizes European road transport with Switzerland and at the same time secures implementation of Swiss transport policy. In this agreement, the EU recognizes the Swiss policy objectives like switching transport from road to rail and the related instruments, especially the MRHVT. The agreement therefore supplements the 1992 Transit Agreement which runs until the beginning of 2005 and thereafter replaces it. It ensures that relations between Switzerland and the EU in overland transport are regulated in the long term.

The Agreement on Land Transport has huge effects on trans-Alpine crossing. By 2005, Switzerland will gradually raise the maximum weight limit to 40 tonnes, but at the same time gradually increase the comprehensive and emission-related MRHVT to the agreed maximum level. In addition, there will be greater

39 See BAV (2000), BAV – Fact-Sheets: Railways Reform.

co-operation between Switzerland and the EU in the areas of railway infrastructure and combined transport. This will create market economy incentives to use the environmentally friendly railways.

The Agreement on Land Transport provides for a transitional phase and a definitive regime from 2005 or 2007/2008. The 28-tonne limit for lorries in force in Switzerland will be increased in stages: in 2001 to 34 tonnes and in 2005 to 40 tonnes. Alongside this, a sharp increase in road taxes (MRHVT) will undoubtedly help to switch goods transport from road to rail as laid down in Article 84 and 192 of the Federal Constitution.

However, the agreement addresses not only road transport, it also gives Swiss railways free access to the EU rail network and vice versa. Granting of this free access and a co-ordinated policy of promoting trans-Alpine rail traffic will improve the competitiveness of the railways and lead to increased productivity and performance. For the Swiss railways, expansion and co-operation with partners in the EU is a matter of survival in the longer term.

The operation of the Agreement on Land Transport will be monitored by a Joint Committee made up of representatives from Switzerland and the EU. It will also be responsible for dealing with disputes over application or interpretation of the Agreement.

In general, the bilateral negotiations leading to the transport agreement between Switzerland and the EU and the agreement itself can be considered as a success for Swiss transport policy. The EU recognizes the general objective of shifting transport from road to rail and accepts a road tax at an unprecedented level as an instrument to achieve this objective. In addition, the agreement includes a commitment to develop a coordinated transport policy in the Alpine region.

Accompanying measures

The four pillars of Swiss transport policy (MRHVT, railways reform, NARL and BALT) will not unfold their full benefits overnight, particularly as the NARL will come into operation only between 2007 and 2014. Therefore, additional measures are needed in order to give effective support to the switch to rail during the transitional period.

At the suggestion of the Federal Council, parliament has passed a special law on switching transport to rail[40] and a whole range of accompanying measures. The switch from road to rail cannot be made compulsory and so these are not obligatory measures, but market economy incentives to use the railways.

The law on switching transport to rail sets the details on the aim of switching from road to rail and firmly establishes it: as soon as possible, but no later than two years after the opening of the Lötschberg tunnel (ca. 2009), no more than a maximum of 650,000 lorries should be crossing the Alps by road. The remainder of trans-Alpine goods transport should be carried by rail. Thus, the Federal Council believes to reach the goal set by the Alpine Initiative, although not as fast as demanded initially.

CHF 2.85 billion (EUR 1.85 billion) have been set aside for the years 2000 to 2010 for implementing the accompanying measures. Examples of such measures are:

- price reductions for railway transport,
- contributions to rail loading terminals,
- more intensive heavy vehicle checks,
- railways reform II (not exclusively, but also promoting combined transport).

For the time being, however, the Federal Council intends to forego an Alpine transit tax (ATA) since, according to the Agreement on Land Transport, the comprehensive MRHVT would have to be reduced to

40 Federal law on switching transport to rail; SR 740.1.

the same extent. This would prejudice the competitiveness of the railway in non-trans-Alpine, domestic, import and export traffic. With a view to the fiscal safeguard clause in the Agreement on Land Transport, the Federal Council plans to create a legal basis for the introduction of an Alpine transit tax in the implementation decree to the Constitutional Article on the Protection of the Alps. This decree will replace the mentioned law on switching transport to rail at the latest by the end of 2010. The Federal Council must submit its message concerning this implementation ordinance by 2006 at the latest.

Summary and Outlook

The analysis of how the Swiss transport policy developed shows that a lot of substantial work has been done during the last years. In little more than ten years after the refusal of the co-ordinated transport policy in 1988, the Swiss government succeeded to develop a more sustainable transport policy with support of the EU and the Swiss population. In fact, in 27 popular votes on transport policy issues since 1977, the public rejected government proposals only twice (Co-ordinated Transport Policy and Alpine Initiative).[41]

The general principles of such a "voter-supported" sustainable transportation policy can be summarized as follows:

- Increasing the attractiveness of public transportation (predominantly the railway system)
- Coordinated planning (e.g. the combination of NARL and MRHVT)
- Promoting environmental protection
- No to limitations (with the exception of freight transport) on individual road transportation

In a speech at the final conference of the National Research Programme 41 ("Transport and Environment"), Hans Werder, secretary general of the DETEC, explained the goals of the Swiss transport policy as well as important issues in the future (until 2020/2030).[42] Basically, Werder said that the most important decisions had been taken and that it was now time for their implementation before making further steps. According to him, important principles and contents of a future-oriented transport policy are:

- intensified adjustment of transport policy to the principles of sustainable mobility (new strategy of the DETEC).
- strengthening of the Swiss position in a globalizing transport industry;
- co-ordinated planning of the infrastructure for different transport modes;
- addressing the specific problems of transport in and around conurbations, which will become more critical in the next years. Priority should be given to public transport and to human powered mobility;
- improving the railway system, particularly cross border heavy goods transport must become faster and much more reliable. As far as inland rail transport is concerned, the results of the first railways reform should be evaluated carefully before adopting new reforms;
- improve road safety and maintenance of the road infrastructure;
- shift short haul passenger transport from air to rail; commitment to the introduction of market economy instruments to improve environmental standards for air transport;
- new instruments for financing the transport infrastructure are not as badly needed as the academic community claims; the current system is better than its reputation;

41 Vatter/Sager et al. (2000), Akzeptanz der schweizerischen Verkehrspolitik bei Volksabstimmungen und im Vollzug, p. 53.

42 URL: http://www.nfp41.ch/download/Tagung/abschluss/werder.doc.

- intensify all forms of co-operation with the European Union, particularly with the neighbouring countries; coordination of the European and our future transport policy.

Now, two initiatives are pending in the field of transport policy. One of them is of minor importance to trans-Alpine crossing, the other might have a more substantial impact.

The **„Sunday Initiative“** demands the introduction of four traffic-free Sundays a year, one per season.[43] All roads (including highways) should be closed for motorized individual transport and opened to human powered mobility. Public transport (railway, buses) should be maintained during that day. The initiative calls for an experimental status of the new regulation. Four years after its adoption, the population can decide in a repeated vote whether to keep the traffic-free Sundays or not. Since Swiss law knows a ban on Sunday driving for heavy goods vehicles anyway, this initiative is of minor importance.

The **“Avanti Initiative for safe and efficient highways”** demands an expansion of the highway network in Switzerland.[44] It aims at reducing bottlenecks, mainly around and between conurbations. However – more importantly for trans-Alpine crossing – the initiative also demands a second road tunnel through the Gotthard. This would mean a renunciation of the current policy since both the Article on the protection of the Alps and the Alpine Convention do not allow new trans-Alpine road constructions. The text of the constitution (Alpine Initiative) can be changed by a successful initiative at any time, but the Alpine Convention – once ratified by the Swiss parliament – is international law and therefore cannot be subject to an initiative.

2.1.8 Liechtenstein

Author of this section: ECOPLAN

Introduction of the Swiss MRHVT

The Principality of Liechtenstein is politically very closely connected to Switzerland. For instance, the Swiss Franc is also the national currency of Liechtenstein. Since 1924, the two countries build a customs union that implies open borders between them.

In order not to have to introduce customs control at the Swiss-Liechtenstein border the government of Liechtenstein decided to introduce the Swiss MRHVT.[45] However, people of Liechtenstein initiated a popular referendum against this decision, which in a popular vote on 24 September 2000 was not supported by a majority. The MRHVT was thus introduced simultaneously with Switzerland on 1 January 2001.

As Liechtenstein is – unlike Switzerland – a member of the EEA, the European Union was initially opposed to the introduction of the MRHVT in Liechtenstein. Even though the European Commission did not see any contradiction to the European law, opposition especially came from the Ministers of several member states who questioned the legitimacy of the Liechtenstein decision.

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43 URL: http://www.sonntags-initiative.ch.

44 URL: http://www.initiative-avanti.ch.

45 Message of the Swiss Federal Council on the introduction of the mileage-related heavy vehicle tax in Liechtenstein of 29 March 2000.

According to a legal expert[46] within the Liechtenstein administration responsible for topics related to the EEA, negotiations between Liechtenstein and the EU will be brought to a close soon. However, it is not yet sure whether the results of these negotiations will have to be approved by the parliament. Detailed information about the solution agreed upon is not available until a decision has been taken on this matter.

Overall Transport Concept

In 1997, the Government announced the elaboration of an Overall Transport Concept for the Principality of Liechtenstein. Since 1998, a Staff Office for transport co-ordination is in charge of this task.

In March 2001, an Intermediate Report on the Overall Transport Concept was published by the Staff Office.[47] This document provides a very useful overview on the transport policy of Liechtenstein. In the introduction, the current problems of different transport modes are described. It then presents ten guidelines of the transport policy of Liechtenstein, which do not explicitly deal with trans Alpine crossing. However, it is stated that new (road) infrastructure should be constructed only as a last resort.

46 Interview with Mrs. Beatrice Hilti, Stabsstelle EWR, Regierungsgebäude, Städtle 49, 9490 Vaduz, Phone: +42 3 236 60 37, E-mail: beatrice.hilti@sewr.llv.li.

47 Regierung des Fürstenstums Liechtenstein. Stabsstelle Verkehrskoordination (2001), Zwischenbericht zum Gesamtverkehrskonzept.

2.2 Governmental key actors

Since the overall aim of ALP-NET is to establish a Thematic Network, this chapter includes all important governmental actors in trans-Alpine Crossing policy. More specifically, ALP-NET is interested in national ministries and other governmental agencies that are involved in transport policy-making. For some countries, however, it is useful to include governmental agencies of a sub-national (regional or even local) level as well.

2.2.1 European Union

Author of this section: ECOPLAN/ICCR

EU Parliament

www.europarl.eu.int

The European Parliament represents, in the words of the 1957 Treaty of Rome, 'the peoples of the States brought together in the European Community'. Some 375 million European citizens in 15 countries are now involved in the process of European integration through their 626 representatives in the European Parliament.

The Committee on Regional Policy, Transport and Tourism is on of the 17 standing committees of the European Parliament. It is responsible for matters relating to the Community regional policy understood as a structural policy designed to foster the convergence of economies, economic and social cohesion, the harmonious, balanced and sustainable development of the Union (Article 2 of the EC Treaty) and the lessening of socio-economic imbalances among the various areas of the Union. Furthermore, the committee is responsible for topics in the field of the common transport policy (articles 70 to 80 of the EC Treaty), incorporating rail, road and inland waterway transport and maritime and air transport, in particular:

- the creation of a European transport network, and in particular the establishment and development of trans-European networks in the transport infrastructure sector (Articles 154 to 156 of the EC Treaty);
- the drafting of common rules applicable to international transport;
- discrimination, harmonisation and coordination in the transport sphere and
- the European Union's policy on ports and airports.

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Council of the European Union

http://ue.eu.int/en/info/index.htm

The Council of the European Union is a Community institution exercising the powers conferred upon it by the Treaties. The Council is composed of one representative at ministerial level from each Member State, who is empowered to commit his Government. Council members are politically accountable to their national parliaments.

Under the Treaty establishing the European Community, the main responsibilities of the Council are the following:

- the Council is the Community's legislative body; for a wide range of Community issues, it exercises that legislative power in co-decision with the European Parliament (see below);
- the Council coordinates the general economic policies of the Member States;
- the Council concludes, on behalf of the Community, international agreements between the latter and one or more States or international organisations;
- the Council and the European Parliament constitute the budgetary authority that adopts the Community's budget.

Under the Treaty on European Union,

- the Council takes the decisions necessary for defining and implementing the common foreign and security policy, on the basis of general guidelines established by the European Council;
- coordinates the activities of Member States and adopts measures in the field of police and judicial cooperation in criminal matters.

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Commission: DG Energy & Transport

http://www.europa.eu.int/comm/dgs/energy_transport/index_en.html

This Directorate General, operational since 1 January 2000, was formed by the Commission's decision of 30 September 1999 to merge the Directorates General for Transport and Energy. The Directorate General for Energy and Transport has around 650 staff, divided into seven Directorates. It manages programmes with a total budget of EUR 850 million, centring on trans-European networks, technological development and innovation. Its most important tasks are as follows:

To deploy the transport and energy networks, to interconnect them and to make sure that they operate smoothly. To this end, the Commission co-funds projects of common interest, most of them submitted by the Member States. A list of 14 major priority transport projects was adopted by the Heads of State and Government at the Essen European Council in 1994. This year the Commission has a budget of around EUR 550 million for transport and EUR 25 million for energy. This can go towards construction of a stretch of road or railway track, combined transport terminals, airports, major infrastructure projects and

feasibility studies on interconnection of energy networks (access to electricity lines, supply terminals, gas pipelines, etc.). The priority, however, is to get to grips with the problem of congestion, by clearing bottlenecks. Beyond deployment of new infrastructure, better traffic management is the aim. Intelligent transport and navigation systems (such as the Galileo satellite navigation project and the ERTMS rail traffic management system) are therefore playing a growing role in our activities.

- To remove obstacles at frontiers, to create a smoother traffic flow and to make the energy markets more competitive, giving consumers a better service and a wider choice.
- To contribute to protecting the environment and to sustainable development. The objective is to reduce emissions causing local and urban pollution and also emissions of the gases to blame for the greenhouse effect in order to meet the commitments given under the Kyoto Protocol.
- To reach agreements with the non-member countries on which the European Union depends for its security of supply, to open up access to their markets and to develop stronger transport and energy links.

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Commission: DG Environment

http://www.europa.eu.int/comm/dgs/environment/index_en.htm

The most important tasks of this Directorate General are as follows:

- To maintain and improve the quality of life through a high level of protection of our natural resources, effective risk assessment and management and the timely implementation of Community legislation.
- To foster resource-efficiency in production, consumption and waste-disposal measures and to integrate environmental concerns into other EU policy areas.
- To promote growth in the EU that takes account of the economic, social and environmental needs both of the citizens and of future generations.
- To promote growth in the EU that takes account of the economic, social and environmental needs both of the citizens and of future generations.
- To address the global challenges notably combating climate change and the international conservation of bio-diversity.

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OECD/EST Environmentally Sustainable Transport

URL: http://www.oecd.org/env/ccst/est.htm

The OECD's Environmentally Sustainable Transport (EST) project was running from 1994 to 2000. The EST project involved some 25 countries across the world in a search for a new approach to help solve today's transport problems. The overall objectives of the project are to provide an understanding of EST, its implications and requirements, and to develop methods and policy guidelines towards its realisation.

Among the results are a set of ten **guidelines** that governments everywhere can use to put transport on a sustainable path, a **synthesis report** and est! **best practices** for environmentally sustainable transport.

One of the six core case studies of the project was dealing with the **Alpine Space** (including parts of France, Switzerland and Austria. In a first step, common, specific and quantitative criteria for environmentally sustainable transport were defined. This included mainly reduction goals for carbon dioxide CO2, nitrogen oxides NOx and volatile organic chemicals VOC.

In Phase 2 of the project, a so called "BAU" (business as usual, assuming no major changes of policies or economic determinants) scenario was compared with three sustainable scenarios[48] with regard to the possible compliance with the goals of EST.

The results of the analysis first showed that if the BAU scenario was to become reality, none of the reduction goals could be met. Furthermore, the results show that EST1 and EST2 are not feasible. Technological measures only (EST1) are not enough to reach sustainability; transport demand and model shifts

48 EST 1 is focusing on technological measures; EST 2 concentrates on transport demand and modal shifts and EST 3 is based on a combination of all relevant measures and instruments.

(EST2) could well bring the desired ecological results, though their political and social acceptability is very problematic. Only a combination of these two measures (EST3) can lead to acceptable ecologically sustainable transport.

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EIB European Investment Bank

http://www.eib.org

The task of the European Investment Bank, the European Union's financing institution, is to contribute towards the integration, balanced development and economic and social cohesion of the Member Countries. To this end, it raises on the markets substantial volumes of funds which it directs on the most favourable terms towards financing capital projects according with the objectives of the Union. Outside the Union, the EIB implements the financial components of agreements concluded under European development aid and cooperation policies.

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EUROSTAT Statistical Office of the European Communities

http://europa.eu.int/comm/eurostat/

Eurostat is the Statistical Office of the European Communities situated in Luxembourg. Its task is to provide the European Union with statistics at European level that enable comparisons between countries and regions.

This is a key task. Democratic societies do not function properly without a solid basis of reliable and objective statistics. On one hand, decision-makers at EU level, in Member States, in local government and in business need statistics to make those decisions. On the other hand, the public and media need statistics for an accurate picture of contemporary society and to evaluate the performance of politicians and others. Of course, national statistics are still important for national purposes in Member States whereas EU statistics are essential for decisions and evaluation at European level.

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2.2.2 Austria

Author of this section: ICCR

Federal Ministry of Transport, Innovation and Technology

Bundesministerium für Verkehr, Innovation und Technologie
URL: http://www.bmv.gv.at/

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Government of the Austrian Province of Corinthia

Amt der Kärntner Landesregierung,
URL: www.ktn.gv.at

Construction of Roads and Bridges (Abteilung 17 Straßen und Brückenbau)
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Government of the Austrian Province of Upper Austria

Amt der Oberösterreichischen Landesregierung
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Government of the Austrian Province of Salzburg

Amt der Salzburger Landesregierung
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Government of the Austrian Province of Styria

Amt der Steiermärkischen Landesregierung
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Public Transport and Transport Planning
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Government of the Austrian Province of Tyrol

Amt der Tiroler Landesregierung
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Construction of Roads
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Government of the Austrian Province of Vorarlberg

Amt der Vorarlberger Landesregierung
URL: www.vlr.gv.at

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Austrian Ministry for Agriculture, Forestry, Environment and Water Management

Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft
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Bundesministerium für Land- und Forstwirtschaft, Abteilung I U/5

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Bundesministerium für Land- und Forstwirtschaft, Umwelt, Wasserwirtschaft

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Statistics Austria

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Austrian Environment Agency

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2.2.3 France

Author of this section: NESTEAR

French Ministry of Transport

Ministère de l'Equipement, des Transports et du Logement
URL: www.equipement.gouv.fr

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Region Provence – Alps – Cote d'Azur

Région Provence-Alpes-Cote d'Azur

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GEIE Alpetunnel

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Commission Intergouvernementale pour la Nouvelle Liaison ferroviaire Lyon-Turin

This Commission is composed of French and Italian delegation and composed of representatives of different ministries of both countries: transports, foreign affairs, finances ministries.

Franco-Italian Summits

This summit takes place regularly with the participation of heads of states and chiefs of government for major decisions.

Conseil Général des Ponts et Chaussées

The “Conseil Général des Ponts et Chaussées” is presided by the “Ministre de l’Equipement et du Transport et du Logement” and has produced a report in 1998 on the “French transport policy across the Alps” (report of C. Brossier, J.D. Blanchet and M. Gérard, La documentation française – Paris 1998)

SES Service Economique et Statistiques

SES Service Economique et Statistiques is part of the DAEI (Direction des Affaires Economiques et Internationales of the French Ministry) in charge of statistics and economic studies: the SES has been responsible in France of the tri-national survey – France, Swiss, Austria, across the Alps launched in 93/94 and recently in 1999.

Regional Council of Rhone-Alps

The Regional Council of Rhone-Alps is concerned by the project but also other departmental and municipal institutions.

2.2.4 Germany

Author of this section: IWW

The Federal Ministry for Traffic, Construction and Housing (BMVBW)

Bundesministerium für Verkehr, Bau- und Wohnungswesen (BMVBW)

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Organisation

- Central Services Directorate-General (Z)
- Policy Principles Directorate-General (A)
- Housing Directorate-General (W)
- Railways/Waterways Directorate-General (EW)
- Aviation, Aerospace and Shipping Directorate-General (LS)
- Roads Directorate-General (S)
- Building/Urban Development Directorate-General (BS)
- Task Force of the Federal Government's Co-ordinator for the Transfer of the Federal Government and Parliament to Berlin

Directorates and Responsibilities

Central Services Directorate-General (Z)
Contact Person: MDir. Keidel
Function: Head of Unit

The Central Services Directorate-General is the service provider for the Ministry and its area of responsibility. It performs administrative functions for the technical directorates-general.

- Personnel management: Providing and administering the personnel at the Ministry and – unless delegated - in the Federal Transport, Building and Housing Administration;
- Organisation and information management;
- Budgetary and financial matters;
- Internal services, including management of the entire infrastructure of the Ministry (offices, office supplies, etc.);
- General legal affairs;
- Administration and privatisation of federal holdings in business enterprises.

Policy Principles Directorate-General (A):
Contact Person: MinDir. Dr. Schüller
Function: Head of Unit

The Policy Principles Directorate-General is responsible for strategically developing basic policies and ensuring that they are implemented.

- Federal transport infrastructure planning;
- Organisation of a sound traffic management system;
- Formulation of long-term regional development perspectives;
- Development of new transport policy concepts;
- Fair infrastructure charging, e.g. distance-related road user charges for heavy goods vehicles;
- Promotion of research projects and pilot schemes for the introduction of new technologies;
- Co-ordination of the Federal Government's transport investment;
- Concepts for housing and building policy issues.

Railways/Waterways Directorate-General (EW):
Contact Person: MDir. Kohl
Function: Head of Unit

This directorate-general is a "double-track" unit, so to speak. Directorate 1 is responsible for all matters relating to railways, while Directorate 2 is responsible for the approximately 7,700 km of German federal waterways.

Railways Directorate (EW 1):

- All matters relating to German and international railway policy and railway law. This also includes funding the construction of new federal railway infrastructure and the upgrading of existing infrastructure in line with requirements;
- Basic issues relating to investment aids and local public transport;
- Issues relating to railway technology and safety;
- Administration of the Federal Government's holding in Deutsche Bahn AG.

Waterways Directorate (EW 2):

- Construction, upgrading and maintenance of German waterways;
- Investment and financial planning;
- Technical standards for construction and operation;
- Environmental protection;
- Waterway law;
- Traffic safety using state-of-the-art traffic guidance systems (telematics);
- Control over the Federal Waterways and Shipping Administration.

Aviation, Aerospace and Shipping Directorate-General (LS)
Contact Person: Mdir. Dr. Froböse
Function: Head of Unit

A prominent feature of both shipping and aviation is their international nature, and this is reflected in the Aviation, Aerospace and Shipping Directorate-General. Its two directorates the aviation and aerospace directorate and the shipping directorate (maritime and inland waterway shipping) - ensure that in Germany air and shipping traffic, the volumes of which are increasing throughout the world, are managed in a manner that is as efficient, safe and environment-friendly as possible.

Aviation and Aerospace Directorate (LS 1):

- Aviation and airports policy;
- Aviation safety;
- Policy issues relating to air traffic control and airspace planning;
- Environmental friendliness of aviation equipment and air transport.

Shipping Directorate (LS 2):

- Shipping and ports policy;
- National and international maritime law; seafarers' living and working conditions;
- Maritime safety, prevention of marine pollution, marine scientific research.

Roads Directorate-General (S):
Contact Person: Mdir. Dr.-Ing E.h. Jürgen Huber
Function: Head of Unit
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This directorate-general is responsible for the construction and maintenance of federal trunk roads, which currently comprise around 11,309 km of federal motorways and around 41,419 km of federal highways. Road construction is also a field in which it is becoming increasingly important to consider environmental aspects and the urban habitat. Alongside road construction, the directorate-general is also responsible for road safety and road traffic law.

- Financing, network design, preparation of trunk road upgrading programmes;

- Highway engineering research;
- Road construction engineering;
- Automotive engineering;
- Road safety;
- Legal alcohol limit;
- New driving licences;
- Motorway posters.

Federal Highway Research Institute (BASt)

Bundesanstalt für Straßenwesen (BASt)

URL: http://www.bast.de

Address:
Brüderstraße 53, 51427 Bergisch Gladbach
Postfach 10 01 50, 51401 Bergisch Gladbach
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Fax:: +49 2204-43-6 73

Work aims of the BASt:

- Improvement in the efficiency of road construction and maintenance
- Improvement in the efficiency of the construction and maintenance of bridges and civil engineering structures
- Road safety improvements
- Improvement in road use efficiency
- Prevention or reduction of environmental impacts caused by highway traffic

Organisation:

- S: Department of Highway Construction Technology
- B: Department of Bridges and Structural Technology
- F: Department of Traffic Engineering
- V: Department of Automotive Engineering
- U: Department of Behaviour and Safety in Highway Traffic
- Z: Administrative Services

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)

Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit

http://www.bmu.de

Until 1986 environmental matters were dealt with by three different ministries within the Federal Government: the Ministry of the Interior, the Ministry of Agriculture and the Ministry of Health. On 6 June 1986 the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety was established. Since then it has been responsible within the Federal Government for (lead-managing) national environmental policy.

The Federal Environment Ministry's sphere of responsibility also embraces three federal agencies with a combined total of more than 2,000 employees: the Federal Environmental Agency (Umweltbundesamt), the Federal Agency for Nature Conservation (Bundesamt für Naturschutz) and the Federal Office for Radiation Protection (Bundesamt für Strahlenschutz). The ministry also receives advice in the form of statements and expert opinions from several independent expert bodies. The principal advisory bodies are the Council of Environmental Advisors (Rat von Sachverständigen für Umweltfragen) and the Advisory Council on Global Change (Wissenschaftlicher Beirat Globale Umweltveränderungen).

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Federal Environment Agency (UBA)

Umweltbundesamt (UBA)
http://www.umweltbundesamt.de/

The mission of the Federal Environmental Agency (Umweltbundesamt - UBA), which was established on 22 July 1974, is to provide scientific and technical support for the Federal Environment Ministry, especially with the preparation of legal and administrative regulations in the fields of air quality control, noise abatement, waste management, water resources management, soil conservation, environmental chemicals, and health-related environmental issues.

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Federal office for freight transport (BAG)

Bundesamt für Güterverkehr (BAG)

URL: http://www.bag.bund.de/

Amongst other things the BAG is responsible for the allocation of Ecopoints for the alp transit via Austria.

Address: Bundesamt für Güterverkehr, Werderstraße 34, D-50672 Köln
PO: 19 01 80, D-50498 Köln
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Federal office for building and regional planning (BBR)

Bundesamt für Bauwesen und Raumordnung (BBR)

URL: http://www.bbr.bund.de

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Federal Office for Statistics

Statistisches Bundesamt
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Statistischer Informationsservice
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The German key statistics are published annually in the statistical yearbook or in special topic-related series of the Federal Statistical Office. In addition, most data published by is available via Internet-download.

Important State Ministries of Transport

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Kernerplatz 9, D-70189 Stuttgart.
URL: www.uvm.baden-wuerttemberg.de

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Phone: +49 / 711 / 126-0, Fax: +49 / 711 / 126-2881
URL: www.uvm.baden-wuerttemberg.de

Bayerisches Staatsministerium für Wirtschaft, Verkehr und Technologie
Prinzregentenstraße 28, D-80538 München
Phone: +49 / 89 / 2162-01, Fax: +49 / 89 / 2162-2760
URL: www.stmwvt.bayern.de/

2.2.5 Italy

Author of this section: DITS

Infrastructures and Transportation Department

Section: Transportation
Address: Piazza della Croce Rossa 1, 00161 Roma
Phone: +39 06 44101

Ministry Office
Address: Via dell'Arte n.16, Roma
Phone +39 06 59081 - 59083250
http://www.trasportinavigazione.it

Contact person: Mr.Basoli
Function: Responsible for International Projects
Address: Piazza della Croce Rossa 1, 00161 Roma
Phone: +39 06 44267186
Fax: +39 06 44267106
E-mail: affari.internazionali@trasportinavigazione.it

Infrastructures and Transportation Department

Section: Infrastructures
Address: Piazzale di Porta Pia, 00198 Roma
Phone: +39 06 44121
Fax: +39 06 44267371
http://www.llpp.it/

Contact person: Mr. Cialdini
Function: Traffic and Safety Department Director
Address: Via Nomentana n.2 Roma
Phone: +39 06 44126109(5111)
Fax: +39 44267338
E-mail: paola.marchionne@mail.llpp.it

Contact person: Mrs. Rossella Napolitano
Function: National Co-ordination Body – DiCoTer – IV Technical Office
Phone: +39 06 44123182
Fax: +39 06 44267373

Environment Department

Address: Via Cristoforo Colombo 44, 00147 Roma
Phone: +39 06 57221
Fax: +39 06 57225098 - VIA (Environmental Impact Assessment) service
http://www.miniambiente.it/

Contact person: Mrs.Carmela Bilanzone
Function: VIA (Environment Impact Assessment) service.
Phone: +39 06 57225935
Fax: +39 06 5722 59 94
E-mail: bilanzone.carmela@miniambiente.it

FS - Italian State Railways

Address: Piazza della Croce Rossa 1, 00161 Roma
Phone: +39 06 44101
http://www.fs-on-line.com/

Contact person: Mr. Goliani
Function: Head of International Transit Project Office
Address: Piazza della Croce Rossa 1, 00161 Roma
Phone: +39 06 44102414
Fax: +39 06 44103887
E-mail: m.goliani@tiscalinet.it

ANPA – National Agency for Environment Protection

Address: Via Vitaliano Brancati 48, 00144 Roma
Phone: +39 06 50071
Fax: +39 06 5013429
http://www.sinanet.anpa.it/

ANAS – National Highway Administration – Central Office

Address – Via Monzambano 10, 00185 Roma
Phone: +39 06 44461
Fax: +39 06 4454956
http://www.enteanas.it/

Public Relation Department
Address: Via Monzambano 10, 00185 Roma
Phone: +39 06 44462352
Fax: +39 06 4463613
E-mail: urp@enteanas.it

AISCAT - Italian Association of Motorway and Tunnel Concessionaire Companies

Address: Via Sardegna 40, 00187 Roma
Phone: +39 06 4827941
Fax: +39 06 4746968
http://www.aiscat.it/

AISCAT is the Italian Association of Motorway and Tunnel Concessionaire Companies. AISCAT's interests are focused on problems regarding the planning, design, construction, operation, maintenance and management of motorways and tunnels. In addition, it carries out studies and researches in the field of safety, planning and transport economics with the primary aim of contributing to raise the level of service provided to the user and to represent the sector on every occasion.

Contact person: Mr. Schintu
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Autostrade S.p.A

Address: Via Bergamini 50 – 00159 Roma
Phone: +39 06 43631
Fax: +39 06 43634089
http://www.autostrade.it

Contact person: Mr. Eduardo Angelozzi
Function: Director
Phone: +39 06 43632049
Fax: +39 06 43632012

SITAF - Frejus Road Tunnel Highway Company

Address: Via Lamarmora 18 – 10123 Torino
Phone: +39 011 5621201
Fax: +39 011 5621466
Val di Susa Department, Fax: 0122 622036

Contact person: Mr. Ugo Jalasse
Function: Operation Director
Address: Bardonecchia Department
Phone: +39 0122 909011
Fax: +39 0122 901589
E-mail: sitaf@interbusiness.it

CEMAT - Combined European Management And Transportation

Address: Via Valtellina 57, Milano 2010
Phone: +39 02 66895224
Fax: +39 02 66895310
http://www.cemat.it/

Contact person: Mr.Muzio
Function: General Director
Phone: +39 02 66895249
Fax: +39 02 66800204
E-mail: amazzola@cemat.it, resdpt@cemat.it

ISTAT – National Statistical Institute

Address: Via Cesare Balbo 16, 00184 Roma
Phone: +39 06 46731
Fax: +39 06 47888088
http://www.istat.it/

Contact person: Mr.Putignano
Function: Head of Transport Section
Address: Viale Liegi n.13, 00198 Roma
Phone: +39 06 852271- 85227296
Fax: +39 06 8415152

Contact person: Mr.Menghinello
Function: Economical Section
Address: Via Cesare Balbo 16, 00184 Roma
Phone: +39 06 46732569
Fax: +39 06 46732569
E-mail: menghine@istat.it

Agenzia delle Dogane (Customs Agency)

Address: Via M. Carucci 71, 00143 Roma
Phone: +39 06 50246109 - 6113 - 6083
Fax: +39 06 50242143

Contact person: Mr. Valle
Function: Public Relation Department Director
Address: Via M. Carucci 71, 00143 Roma
Phone: +39 06 50246091
Fax: +39 06 50957346

CONFETRA – Italian Association of Transportation and Logistics

Address: Via Panama 62, 00198 Roma
Phone: +39 06 8559151
Fax: +39 06 8415576
http://www.confetra.it

Contact person: Mr.Antonio Giacoma
Function: Vice-President and Responsible of the Research Area
E-mail: confetra@tin.it

CIPRA Italy – Italian branch of the International Committee for the Protection of the Alps

Address: Via Pastrengo 20, 10128 Torino
Phone: +39 011 548626
Fax: +39 011 534120

CIPRA local branches co-ordinate the different organisations in the respective countries and regions. Their activity consists in the detection, the analysis and the exchange of pieces of information concerning the Alps.

They moreover promote the implementation of projects and models that have revealed to be effective and aim to create a strong connection among organisations, politics, administration, research and media.

Contact person: Mr.Helmuth Moroder
Function: President
Address: Via Orazio 30900, Bolzano
Phone: +39 0471 283520
Fax: +39 0471 283520
E-mail: helmuth.moroder@libero.it

Contact person: Mr.Francesco Pastorelli
Function: Director
Address: Via Pastrengo 20, 10128 Torino
Phone: +39 011 548626
Fax: +39 011 534120
E-mail: cipra@arpnet.it

Val D'Aosta Region – Transportation Department

Address: P. Deffeyes 1 - 11100 Aosta
Phone: +39 0165 273111
http://www.regione.vda.it/

Contact person: Mr. Antonio Pollano
Function: Head of Transport Section
Phone: +39 0165 272905
Fax: +39 0165 272933
E-mail: a.pollano@regionevda.it

Contact person: Mr. Farinet
Function: Railway Transport Office
Phone: +39 0165 272914
Fax: +39 0165 272933

Piedmont Region – Transportation Department

Address: Piazza Nizza 44, Torino
Phone: +39 011 43211
http://www.regione.piemonte.it/

Contact person: Mr. Manto
Function: Head of Transport Department
Phone: +39 011 4324246
Fax: +39 011 4323648
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Contact person: Mr. Rosa
Function: Head of Transport Planning Department
Phone: +39 011 4322557
Fax: +39 011 4323648
E-mail: gianni.rosa@regione.piemonte.it

GEIE ALPETUNNEL

Address: Via Nizza, 4 10125 Torino, Italia
Phone: +39 011 6690435
Fax: +39 011 6653000

Contact person: Mr. Cavagnaro
Function: President
Address in Rome: Via Vicenza 5/a 00185
Phone: +39 06 44703403
Fax: +39 06 49380716
E-mail: alpe.tunnel@flashnet.it

Italian – French Intergovernmental Commission for the new Turin – Lyon railway line

Contact person: Prof. Eugenio Borgia
Function: President of the Working Group on Economy and Financing
Address: c/o DITS, Via Eudossiana 18 – 00184 Roma
Phone/Fax: +39 06 44585089
E-mail: eugenio.borgia@uniroma1.it

Lombardy Region – Transportation Department

Address: Palazzo della Regione, Via Filzi, 22 – 20124 Milano
Phone: +39 02 67651
http://www.regione.lombardia.it/

Contact person: Mr. Triches
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Phone: +39 02 67655320
Fax: +39 02 67655508
E-mail: danilo_triches@regione.lombardia.it

Contact person: Mr. Marco Cesca
Function: Head of the road section
Phone: +39 02 67654809
Fax: +39 02 67655689
E-mail: marco_cesca@regione.lombardia.it

Liguria Region

Address: Via Fieschi 15, 16121 Genova
Phone: +39 010 54851
Fax: + 39 010 5702732
http://www.regione.liguria.it/

Bolzano Autonomous District

Address: Via Crispi 3, 39100 Bolzano
Phone: +0471 412030
Fax: +0471 412199
http://www.provincia.bz.it/

Contact person: Mr. Roberto Rubbo
Function: Director of Transport Department
E-mail: roberto.rubbo@provincia.bz.it

Trento Autonomous District

Address: Via Romagnosi 9, 38100 Trento
Phone: +0461 49511
http://www.provincia.tn.it/

Contact person: Mrs. Laura Boschini
Function: Director of the Transport Department
Address: Via Romagnosi 9, 38100 Trento
Phone: +39 0461 497981

Friuli Venetia Julia Region

Address: Piazza dell'Unità d'Italia 1, 34121 Trieste
Phone: +040 3771111
Fax: +040 3773615
http://www.provincia.fvg.it/

Contact person: Mr. Vittorio Zollia
Function: Director of Transport and Road Division
Address: Via Giulia 75/1 - Trieste
Phone: +39 040 377 4745

Venetia Region

Address: Dorsoduro 3901, 30123 Venezia

Phone: +041 2750540
http://www.regione.veneto.it/

Rome office:
Address: Piazza Borghese 91, 00186
Phone: +39 06 6873788 – 785 – 348
Fax: +39 06 6873344

Contact person: Mr.Vernizzi
Function: Director of Regional Secretary of Transport
Address: Palazzo Linetti – Calle Priuli - Cannaregio 99 – Venezia
Phone: +39 041 279 22 61

2.2.6 Slovenia

Author of this section: MARIBOR

Ministry of Transport of the Republic of Slovenia

Ministrstvo za promet Republike Slovenije
URL: http://www.gov.si/mpz/index.html

Address: Langusova 4, 1000 Ljubljana, Slovenia
Phone: 386 1 478 80 00,
Fax: 386 1 478 81 39

Ministry Office: Transport Policy and International Relations Office

Urad za prometno politiko in mednarodne odnose
URL: http://www.gov.si/mpz/4pod/1/a1pm.html

Contact person: Peter Pengal, M.Sc.
Function: State Secretary

Contact person: Franc Žepič, M.Sc.
Function: State Undersecretary

Address: Langusova 4, 1000 Ljubljana, Slovenia
Phone: +386 1 478 8272
Fax: +386 1 478 8141

Ministry Office: Roads Office

Urad za ceste
URL: http://www.gov.si/mpz/4pod/2/a1c.html

The Roads Office is comprised of the Sector for Motorways - responsible for motorways and expressways, and the Sector for State Roads - responsible for other state roads.

Contact person: Anton Šajna
Function: State Secretary

Address: Langusova 4, 1000 Ljubljana, Slovenia
Phone: +386 1 478 82 19
Fax: +386 1 478 81 48

Ministry Office: Railways Office

Urad za železnice
URL: http://www.gov.si/mpz/4pod/3/a1z.html

The Office for Railways is in charge of:

- preparation of developmental documents
- preparation of legal acts and regulations,
- organizing and supervising of the financing and executing investment works in the field of railway infrastructure,
- railway traffic security,
- development and stimulation of the combined transport,
- co-operation with international organizations.

Contact person: Dr.Slavko Hanžel
Function: State Secretary
Address: Langusova 4, 1000 Ljubljana, Slovenia
Phone: +386 1 478 82 18
Fax: +386 1 478 81 46

Railways Directorate

Direkcija za železniški promet
URL: http://www.gov.si/mpz/4pod/3/8z-5.html

Contact person: Anton Medved
Address: Kopitarjeva ulica 5, 2000 Maribor, Slovenia
Phone: +386 2 234 14 12
Fax: + 386 2 234 14 52
e-mail: anton.medved@gov.si

Contact person: Boris Živec
Address: Kopitarjeva ulica 5, 2000 Maribor, Slovenia
Phone: +386 2 234 14 12
Fax: +386 2 234 14 52

Traffic Inspectorate

Prometni inšpektorat

Contact person: Jurij Kos
Address: Langusova ulica 4, 1000 Ljubljana, Slovenia
Phone: +386 1 478 81 77
Fax: +386 1 478 81 49
e-mail: jurij.kos@gov.si

Road Directorate

Direkcija Republike Slovenije za ceste
URL: http://www.gov.si/drsc/

Contact person: Vili Žavrlan
Address: Tržaška cesta 19, 1102 Ljubljana, Slovenia
Phone: +386 1 478 80 10
Fax: +386 1 478 80 12
e-mail: vili.zavrlan@gov.si

Ministry of Finance of the Republic of Slovenia

Ministrstvo za finance Republike Slovenije
URL: http://www.gov.si/mf/angl/apredmf1.html

Contact person: Darko Končan
Function: State secretary
Address: Župančičeva 3, 1502 Ljubljana, Slovenia
Phone: +386 1 478 52 11
Fax: +386 1 478 56 55

The Customs Administration of the Republic of Slovenia

Carinska uprava Republike Slovenije
URL: http://www.gov.si/mf/angl/apredmf6.html

Address: Šmartinska 55, 1523 Ljubljana, Slovenia
Phone: +386 1 478 38 00
Fax: +386 1 478 39 00
e-mail: carina@gov.si

Tax administration of the Republic of Slovenia

Davčna uprava Republike Slovenije
http://www.sigov.si/durs/

Ministry of the environment and spatial planning of the Republic of Slovenia

Ministrstvo za okolje in prostor
URL: http://www.gov.si/mop/vsebina/angl/index.htm
Address: Dunajska cesta 48, Ljubljana

Ministry of the Environment and Spatial Planning deals with matters concerning:

- protection of the environment and nature;

- water and the water industry;
- geological, seismological, meteorological and other geophysical or natural phenomena;
- spatial planning, alterations to the landscape, construction of buildings and property-law cases relating to real estate;
- nuclear safety;
- housing matters;
- geodesy and geo-oriented information systems, and inspection monitoring in these areas.

Ministry Office: Office for the Environment

Urad za okolje

Contact person: Radovan Tavzes, M.Sc.
Function: State Secretary
Address: Dunajska cesta 48, Ljubljana
Phone: +386 1 4787 310
Fax: +386 1 4787 425

Ministry Office: Office of the Republic of Slovenia for Spatial Planning

Urad za prostor

Contact person: Jože Novak
Function: state secretary
Address: Dunajska c. 47, 1000 Ljubljana
Phone: +386 1 4787340
Fax: +386 1 478 7426

Environmental Agency of the Republic of Slovenia

Agencija Republike Slovenije za okolje

Contact person: Dr. Andreja Čerček Hočevar
Function: director
Contact person for Alpine Convention: Mateja Klinar
Address: Vojkova cesta 1/b, 1000 Ljubljana, Slovenia
Phone: +386 1 4784421
Fax: +386 1 4784052

Office for Spatial Planning of RS

Urad Republike Slovenije za prostorsko planiranje

- supervises the implementation of laws, other regulations and general acts which govern environmental protection and conservation, and ecological monitoring at the state border;
- water regime, and water management and use;
- land and settlement issues, alterations to the landscape and the construction of buildings;
- housing issues;
- geodesic activities

Contact person: Valentina Lavrenčič
Function: director
Address: Dunajska cesta 21, Ljubljana
Phone: +386 1 4787 016
Fax: +386 1 4787 182

Surveying and mapping authority of the Republic of Slovenia
Address: Zemljemerska ul. 12, 1000 Ljubljana, Slovenia
Contact person: Aleš Seliškar
Phone: +386 1 478 4901
Fax: +386 1 478 4909

Statistical Office of the Republic of Slovenia

Statistični urad Republike Slovenije
URL: http://www.gov.si/zrs/eng/index.html

The Statistical office of the Republic of Slovenia provides national statistics on the current situation and movements in the economic, demographic and social spheres as well as on environmental and natural resources for bodies and organizations of public administration, the commercial sector and the general public.

Contact person: Mr. Tomaz Banovec
Function: director
Address: Vožarski pot 12, 1000 Ljubljana, Slovenija
Phone: +386 1 241 51 04
Fax: +386 1 241 53 44

Government office for European affairs

Služba Vlade Republike Slovenije za evropske zadeve
URL: http://www.gov.si/svez/

Basic working areas/functions of GOEA:

- harmonisation and monitoring of Slovenia's preparation for EU membership;
- management of inter-ministerial preparations for the negotiations and harmonisation of the negotiations with the EU;
- harmonisation of the implementation of the effective agreements signed with the EU and of activities of the common bodies set up under the aforementioned agreements;
- the drafting of the priorities and the supervision and harmonisation of the implementation of PHARE programmes and other programmes of support relating to the process of Slovenia's integration into the EU;
- harmonisation of Slovenia's cooperation with EU institutions and bodies.

Negotiation team for accession of the Republic of Slovenia to the EU

Contact person: Cveto Stantič, M.Sc.
Function: Member of the negotiation team, responsible for Transport policy
Address: Šubičeva 11, 1000 Ljubljana, Slovenia
Phone:+386 1 478 24 51
Fax: +386 1 478 24 85
e-mail: cveto.stantic@gov.si

Institute of Macroeconomic Analysis and Development

Urad Republike Slovenije za makroekeonomske analize in razvoj

URL: http://www.gov.si/zmar/index.html

IMAD is engaged in a widespread publishing activity and has its own library and documentation centre. IMAD's publishing includes six periodicals, of which four are published monthly and two are translated in English. IMAD publishes books (around four per year).

IMAD's publications:

Slovenian Economic Mirror

Spring and Autumn Report

Public Finance

IB Review (in Slovene)

Journal for Institutional Innovation, Development, and Transition (IB Review)

Working Papers

books

Contact person: Dr. Janez Šušteršič
Function: director
Address: Gregorčičeva 25, 1000 Ljubljana, Slovenia
Phone:+386 1 178 21 21
Fax: +386 1 178 20 70
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2.2.7 Switzerland

Author of this section: ECOPLAN

Federal Department of Environment, Transport, Energy and Communications (DETEC)

Departement für Umwelt, Verkehr, Energie und Kommunikation (UVEK)

URL: http://www.uvek.admin.ch

DETEC is the Federal Department (= ministry) dealing with infrastructure issues. Since almost all transport-relevant decision are taken in this department, it is responsible for nearly all aspects of trans-Alpine crossing. Various Federal Offices and Agencies deal with trans-Alpine related issues within the DETEC. They are listed below.

Contact person: Dr Hans Werder
Function: Secretary-General of the DETEC
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Fax: +41.31.324.96.22
E-Mail: hans.werder@gs-uvek.admin.ch

Federal Office for Spatial Development

Bundesamt für Raumentwicklung (ARE)

URL: http://www.raumentwicklung.admin.ch

The Federal Office for Spatial Development is a new Federal Office dealing with all aspects of Spatial Development such as spatial planning and co-ordination of transport. The Federal Office for Spatial Development will be of great importance within the planned network, because it also deals with the issue of sustainable development and is responsible for the implementation of the Alpine Convention in Switzerland. The Federal Office for Spatial Development furthermore does a lot of research in the relevant fields of ALP-NET, especially on the topic of trans-Alpine freight transport. It provides a great deal of studies and statistics on this issue. The section of spatial planning deals with questions concerning the European-Swiss integration.

Contact person: Mr Kurt Infanger
Function: Head of Transport Study Section
Address: ARE, 3003 Bern
Phone: +41.31.322.55.55
Fax: +41.31.322.78.06
E-mail: kurt.infanger@are.admin.ch

Contact person: Dr Daniel Wachter
Function: Head of Section for Sustainable Development and the Alpine Convention
Address: ARE, 3003 Bern
Phone: +41.31.324.14.50
Fax: +41.31.322.78.69
E-mail: daniel.wachter@are.admin.ch

The ARE also published an overview on transport research in Switzerland and the EU.[49] This document contains an up-to-date overview on the most important activities in the field of transport research in Switzerland and the relevant European research programmes related to transport research. Ongoing as well as planned projects are listed here. This overview aims at enhancing co-ordination, transparency and transfers from research to policy. The document will be updated in autumn 2001.

49 ARE Bundesamt für Raumentwicklung (2000), Übersicht Verkehrsforschung Schweiz und EU. Aktualisierung November 2000. Bern. Available from: http://www.admin.ch/gvf/inhalte/verkehrsforschung_g.html.

Contact person: Mrs Yvonne Achermann
Address: ARE, 3003 Bern
Phone: +41.31.322.55.56
Fax: +41.31.322.78.06
E-mail: yvonne.achermann@are.admin.ch

Agency for the Environment, Forests and Landscape

Bundesamt für Umwelt, Wald und Landschaft (BUWAL)

URL: http://www.buwal.ch

The Swiss Agency for the Environment, Forests and Landscape deals with aspects of environmental policy in Switzerland such as:

- Legislation and supervision within the areas soil, water, air, climate, etc.
- Co-operates with other offices in the evaluation of large projects (New trans-Alpine Rail Link, Heavy Vehicle Tax).
- Preparation and implementation of the international environmental policy and conventions in Switzerland.
- Cooperation in international committees.
- Consultation of cantons, municipalities, industry and individuals.
- Environmental monitoring, statistics, financial incentive measures, scientific publications.

Contact person: Mrs Françoise Dubas
Function: Head of section: Research and Environmental Monitoring
Address: BUWAL, 3003 Bern
Phone: +41.31.323.42.44
Fax: +41.31.322.79.58
E-mail: francoise.dubas@buwal.admin.ch

Federal Roads Office

Bundesamt für Strassen (ASTRA)

URL: http://www.astra.admin.ch

The Federal Office of Roads supervises the construction, maintenance and operation of motorways, provides financial aid and compensation for main roads and other activities, and is responsible for legislation regulating the behaviour of road users as well as for all aspects of road safety. The traffic counting, also organised by this office, delivers important figures on the traffic situation in Switzerland.

The Federal Office of Roads is in charge of assessing applications for research projects and providing the necessary funding. These duties are performed by the "Commission for Road and Traffic Research". Its research strategy is drawn up on the basis of the importance of the various topics, i.e. in accordance with the objectives of the Federal Government's road traffic policies and a list of areas of focus in their order of priority.

Contact person: Mr Andreas Gantenbein
Function: Head of section: Logistics
Address: ASTRA, 3003 Bern
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Fax: +41.31.323.23.03
E-mail: andreas.gantenbein@astra.admin.ch

Federal Office of Transport

Bundesamt für Verkehr (BAV)

URL: http://www.bav.admin.ch

The Federal Office of Transport is responsible for all projects in the public transport sector. It provides an advisory and supervisory service in support of some 200 licensed transport enterprises, as well as the cantons and the local authorities. It therefore will be an important governmental partner for all questions concerning trans-Alpine railway crossing.

Contact person: Mr Hauke Fehlberg
Function: Section Analyses and Research
Address: Bollwerk 27, 3003 Bern
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Fax: +41.31.322.58.11
E-mail: hauke.fehlberg@bav.admin.ch

Contact person: Mr Erwin Wieland
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Fax: +41.31.322.58.11
E-mail: erwin.wieland@bav.admin.ch

Federal Statistical Office

Bundesamt für Statistik (BFS)

URL: http://www.statistik.admin.ch

In the ALP-NET, the Swiss Federal Statistical Office will be an important partner with a strong focus on statistical data on transport issues.

Contact person: Mrs Gerda Suter
Function: Transport Section
Address: Espace de l'Europe 10, 2010 Neuchâtel
Phone: +41.32.713.66.55
Fax: +41.32.713.69.81
E-mail: gerda.suter@bfs.admin.ch

Integration office DFA/DEA

Integrationsbüro EVD/EFD

URL: www.europa.admin.ch

The Integration office is a joint administrative body of the Departments of Economic Affairs and Foreign Affairs established in 1961. It monitors the European integration policy, analyses and evaluates its effects for Switzerland; it is responsible for the co-ordination of legal and political integration affairs as well as for negotiations of contracts with the EU, in close co-operation and joint responsibility with the competent authorities. Therefore, it was strongly involved in the negotiation process of the bilateral agreements between Switzerland and the EU.

Contact person: Mr Philippe Guex
Function: Head of Co-operation and Co-ordination Section
Address: Bundeshaus Ost, 3003 Bern
Phone: +41.31.322.22.22
Fax: +41.31.322.23.80
E-mail: philippe.guex@seco.admin.ch

Federal Customs Administration

Eidgenössische Zollverwaltung

URL: www.zoll.admin.ch

The Federal Customs Administration is responsible for the implementation of the Mileage-related Heavy Vehicle Tax (MRHVT), entered into force on 1 January 2001. Due to the experience the Administration is gaining at the moment, it will be a competent partner for questions related to the practical side of the introduction of such a tax.

Contact person: Mr Walter Holzscheiter
Function: Section vehicles and road traffic taxes
Address: Montbijoustr. 40, 3003 Bern
Phone: +41.31.322.66.63
Fax: +41.31.322.78.72
E-mail: walter.holzscheiter@zoll.admin.ch

INTERREG III B: Alpine Space Programme

URL: http://www.interreg.ch

INTERREG III offers the continuation of EU initiated proven cross-border co-operation by INTERREG I and II and with it the successful economic promotion of peripheral regions. But apart from cross-border co-operation, INTERREG III promotes two other types of co-operation: transnational (III B) and interregional (III C).

Within the framework of INTERREG III B, an Alpine Space Programme was launched. The whole of the country being part of the defined Alpine Space, Switzerland decided to take part in the work of Alpine Space Programme. For all projects within INTERREG III, the federal government is providing a total of

CHF 35 million as support for the representatives of Swiss projects, of which 6-7 million are expected for Alpine Space Programme.

One of the three priority actions of the programme deals with the "development of sustainable transport systems with particular consideration of efficiency, inter-modality and better connections". The different research carried out within the Alpine Space Programme is likely to contribute to the work of ALP-NET. Particularly the partners of the Alpine Space Programme will naturally have a strong connection to the work of ALP-NET and have therefore to be contacted. However, the project is not expected to start before autumn 2001.

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Swiss National Science Foundation

Schweizerischer Nationalfonds (SNF)

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The Swiss National Science Foundation funds National Research Programmes (NRP) and other projects on various topics. Within the framework of the NRP 41 (1997-2001), 54 research projects on "Transport and Environment; Interactions Switzerland/Europe" have been carried out.[50]

2001 is the starting year of a new NRP 48 "Landscapes and Habitats of the Alps", which will have some connections to transport issues also.[51]

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Interacademic Commission for Alpine Studies (ICAS)

Interakademische Kommission Alpenforschung

50 URL: http://www.nfp41.ch (28.02.2001).

51 URL: http://www.snf.ch/NFP/NFP48/Home_d.html (28.02.2001).

URL: http://www.alpinestudies.unibe.ch/icas.html

The ICAS is a joint Commission set up by two Swiss Academies of Science. Its objectives are to build a platform for inter- and transdisciplinary co-operation in the field of Alpine studies. Therefore, the ICAS stimulates the dialogue between research on the one hand and interested circles of politicians, the administration and the public. The Commission also contributes to a better access of information on ongoing research in the field of Alpine studies through the maintaining of a data base.

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2.2.8 Liechtenstein

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2.3 Other important actors

Whereas Governmental actors have been listed in the previous chapter, this chapter focuses on other important actors, such as non-governmental organisations, pressure groups, operators, etc.

2.3.1 European Level

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European Conference of Ministers of Transport (ECMT)

URL: http://www.oecd.org/cem

The European Conference of Ministers of Transport (ECMT) is an inter-governmental organisation established by a Protocol signed in 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.

As of January 2001, there are 40 full Member countries, 6 Associate countries and 2 Observer countries. Twenty-one of these countries have joined since 1991.

Different working groups direct research and prepare reports for the Deputies, as the basis for conclusions, Recommendations and Resolutions for discussion at the annual Ministerial Session of the Conference. Important issues are:

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

The ECMT also does a lot of research work in the field of transport. For all these reasons, it will be an important partner to be included in ALP-NET.

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International Road Union (IRU)

http://www.iru.org

The IRU, through its national associations, represents the road transport industry worldwide. It speaks for the operators of coaches, taxis and trucks, from large transport fleets to driver-owners. In all international bodies that make decisions affecting road transport, the IRU acts as the industry's advocate. Among its practical services to the industry, the IRU is international guarantor of the TIR carnet system under which trucks are sealed by customs upon departure and can cross several borders without further checks until they reach their destinations. The IRU maintains working relationships with the competent national, inter-governmental and non-governmental organisations and works for harmonisation and simplification of procedures affecting road transport. It alerts the industry to changes in national and international legislation and strives to lift the barriers to international transport and trade.

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Community of European Railways (CER)

http://www.cer.be

The Community of European Railways (CER), created in its current form in 1988 and based in Brussels, brings together the 35 main railway undertakings and rail infrastructure managing bodies of the member states of the European Union plus Norway, Switzerland and eight Central and Eastern European countries to EU membership. The CER promotes the development of rail as essential to the creation of a transport system, which is both efficient and environmentally sound. In this respect, the CER acts as a collective voice for the railways vis-à-vis the decision-makers at EU level.

The CER works in close collaboration with the Paris-based International Railway Union (UIC), the worldwide association of railway companies. Whereas the CER is responsible for the political environment of the EU, technical support is often provided by the UIC.

Among others, the main themes of the CER are the common transport policy of the EU, external costs, transport safety, interoperability, trans-European networks and bottlenecks, the environment, freight and taxation. The CER frequently issues press releases, commenting on policy developments relevant to its work at European level.

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European Environment Agency (EEA)

http://www.eea.eu.int

The EEA aims to support sustainable development and to help achieve significant and measurable improvement in Europe's environment through the provision of timely, targeted, relevant and reliable information to policy-making agents and the public. It is the aim of the EEA to establish a seamless environmental information system. This is done to assist the Community in its attempts to improve the environment and move towards sustainability, including the EU's efforts to integrate environmental aspects into economic policies.

The EEA was initially established by the European Union, so all fifteen EU member states are Agency members.

The EFTA countries, Iceland, Liechtenstein and Norway, have also joined as full members. The EEA Regulation states that the Agency is open to countries that share the objectives of the Agency and are able to participate in its activities. It is expected that the membership base will increase in the future with several of the Central and East European countries joining. The EEA does not aim to replace existing structures, but attempts instead to bring together, in compatible formats, the best available environmental data from the individual countries. This data forms the basis of integrated environmental assessments. The results are disseminated and made accessible to EU bodies, governments, the business community, academia, NGOs and the public.

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International Union of Railways (UIC)

http://www.uic.asso.fr

The UIC was founded in 1922, in the wake of the intergovernmental conferences of Portorosa and Genoa, with the aim of creating uniform conditions for the establishment and operation of railways. Today it is the worldwide organisation for cooperation among railway companies. Its activities encompass all fields related to the development of rail transport.

To adapt international cooperation initiatives to the new challenges on the transport market and in society, UIC has prepared an ambitious action plan, the UIC Rail Plan, which was drawn up in liaison with all its members and with the railways' partners and approved at the end of 1997. This plan aims to make the railway one of the most efficient and popular transport modes. It is the reference framework for all projects based on international cooperation carried out within the UIC.

The role of UIC is to promote cooperation between railway enterprises at world level and to carry out activities to develop international transport by rail. The UIC maintains and develops the overall coherence of the railway system and enhances interoperability in order to improve railway competitiveness. To achieve this goal, it strives to encourage state-of-the-art technology and modern management methods among its members. It also prepares statements and common position papers to promote the role of rail transport. The UIC's tasks include:

- preparing standards, regulations and recommendations to facilitate international traffic;
- representing the rail transport mode, worldwide, in outside bodies;
- carrying out projects, particularly in the field of international passenger and freight transport, infrastructure management and research;

- promoting exchanges of information and experience, international training schemes;
- concluding agreements with international organisations and cooperating with all organisations specialising in rail matters and transport issues.

Projects and studies needed to improve international rail transport are conducted within the Commissions (Passenger, Freight, and Infrastructure) with the support of the specialist Committees (Research, Rolling Stock, Finance, and Information Technology) and the assistance of the Departments at UIC Headquarters. UIC represents the railways in their relations with over 40 intergovernmental bodies and trade associations. It represents the rail sector with observer status at the United Nations.

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Transport&Environment (T&E)

http://www.t-e.nu

The European Federation for Transport and Environment (T&E) is a European umbrella for non-governmental organisations working in the field of transport and the environment, promoting an environmentally responsible approach to transport. T&E was created in 1989 with the realisation that many political decisions that influence the environmental damage caused by transport - both positively and negatively - are taken at a European level.

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European Environmental Bureau (EEB)

http://www.eeb.org/

The EEB is a federation of 134 environmental citizens organisations based in all EU Member States and most Accession countries, as well as a few neighbouring countries. They range from local and national to European and international. The aim of the EEB is to protect and improve the environment of Europe and to enable the citizens of Europe to play their part in achieving that goal. The EEB office in Brussels was established in 1974 to provide as a focal point for its members to monitor and respond to the emerging EU environmental policy. It has an information service, it runs ten working groups of EEB-members, it produces position papers on topics that are, or should be, on the EU agenda and it represents the Membership in discussions with the Commission, European Parliament and the Council. It closely coordinates EU-oriented activities with its Members on the National levels. Furthermore, it is working on an envi-

ronmentally attractive enlargement of the EU as well as some pan-European issues. The EEB is a federation of Non-Governmental Organisations (NGOs) having a consultative status at and relations with:

- the Council of Europe;
- the Commission of the European Union, the European Parliament;
- the Economic and Social Committee of the European Union;
- the OECD and
- the UN Commission on Sustainable Development.

The aim of the EEB is to become an efficient instrument in visibly improving EU's environmental policies and realising sustainable development by effectively integrating environmental objectives in horizontal and sectoral policies of the EU.

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International Commission for the Protection of the Alps (CIPRA)

Commission Internationale pour la Protection des Alpes (CIPRA)

http://www.cipra.org

The International Commission for the Protection of the Alps was established in 1952. It is a non-governmental organisation representing about one hundred associations and organisations in all Alpine countries. CIPRA has an official observer status with the Alpine Convention and the Council of Europe. The Commission carries out her work by means of conferences, publications, research and networking. The objectives of the CIPRA are:[52]

- To initiate and promote measures for the protection of nature and landscapes;
- To bring development projects in the Alps into line with the precautionary principle and to make them environmentally and socially compatible;
- To reduce environmental pollution to a harmless degree efficiently and in a sustainable way;
- To promote an "Alpine consciousness" inside and outside the Alpine arc.

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52 See CIPRA (2001).

International Scientific Committee for Alpine studies (ISCAS)

Internationales Wissenschaftliches Komitee Alpenforschung (WIKO)

http://www.alpinestudies.unibe.ch/wiko.htm

The ISCAS was set up in 1999, supported by the Academies of Science of six Alpine countries (Italy, France, Austria, Germany, Slovenia, Switzerland).

The Committee aims at the co-ordination of research on the Alps as well as the cooperation among scientists active in the field of Alpine research. An important issue of its activities is a straight benefit for policies in the context of the Convention on the Alps. The Committee's working plan for the forthcoming years includes also problems related to transports and transport infrastructures in the Alps. This topic was the major theme of the AlpForum in September 2000 in Bergamo&Castione (Italy). This AlpForum, a international conference on Alpine studies taking place every other year, is organized by the Committee.

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2.3.3 France

Author of this section: NESTEAR

Actors can be classified in many ways. In France, almost all the actor organisations take part in the trans-Alpine debate in a more and more active way

- national public actors with major ministries, not only Ministry of Transport but also Ministry of Environment, Ministry of Finances and their services and advisory councils (SES-CGPC)
- major transport companies among them RFF, SNCF but also motorways companies
- different public national organisations: CNT (Conseil National des Transports), CGP (Commissariat General du Plan), DATAR (Delegation à l'Amenagement du Territoire et à l'Action Régionale)
- professional national organisations, professional association for road, rail, automobile industries, rail industries and users association (FNAUT)

- regional organisations and local organisations as regional, department, municipal councils and local organisations of users.
- Specific organisations that are devoted to trans-Alpine projects as GIP and GEIE.

French Railway Network Owner and Manager

Réseau Ferré de France
URL: http://www.rff.fr

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French Government Research Centres

Les Centres d' Etudes Techniques de l' Equipement (CETE)
URL: http://www.equipement.gouv.fr/recherche/default.htm

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Fax: + 33 4 72 14 31 60
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French National Railways

SNCF
URL: www.sncf.fr

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French Federal Association of Transport Users

Fédération Nationale des Associations d'Usagers des Transports
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2.3.4 Germany

Author of this section: IWW

Deutsche Bahn AG

URL: http://www.bahn.de (German only)

The DB AG is the big German national rail carrier, which was founded out of the unification of the western-German Deutsche Bundesbahn (DBB) and the eastern-German Deutsche Reichsbahn (DR). The DB holding comprises of four branches, which are:

- DB Reise & Touristik (for long-distance passenger traffic)
- DB Region (for short-distance passenger traffic)
- DB Cargo (for all types of freight traffic).
  Email: DB-cargo@bku.db.de, Tel.: 0180-5331050
- DB Netz (for rail track infrastructure)
- DB Stations and Service.

Contact: Dr. Markus Pennekamp
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Fax: +49 30 297-61973
Email: Markus.Pennekamp@bku.db.de

Kombiverkehr

URL: www.kombiverkehr.de

KOMBIVERKEHR is Germany's intermodal-transport company, which organises and develops combined transport.

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Email: info@kombiverkehr.de

Other associations in combined transport

Studiengesellschaft für den kombinierten Verkehr e.V. (SGKV)
http://home3.ecore.net/sgkv/
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Bundesverband Güterkraftverkehr, Logistik und Entsorgung (BGL) e.V.
Breitenbachstraße 1
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Phone: +49 / 69/ 79 190
Fax: +49 / 69 / 79 19 227
E-Mail: bgl@bgl-ev.de
http://www.bgl-ev.de

Bundesvereinigung Logistik (BVL) e.V.
Schlachte 31
28195 Bremen
Phone: +49/421/17 38 40
Fax: +49/421/16 78 00
E-Mail: bvl@bvl.de
Internet: http://www.bvl.de

Gesamtverband der Deutschen Versicherungswirtschaft e.V.
Abt. Transport
Bjoern von Diepenbrock
Friedrichstr. 191
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Phone +49 / 30 / 2020 5361
Fax +49 / 30 / 2020 6612
E-Mail: b.diepenbrock@gdv.org
Internet: http://www.tis-gdv.de

Güterkraftverkehrsunternehmer der Bundesbahn eingetragene Genossenschaft
Sprendlinger Landstraße 175
D-63069 Offenbach
Phone: +49 / 69 / 83 00 0
Fax: +49 / 69 / 83 00 258
E-Mail: zentrale@gdb-offenbach.de
Internet: http://www.gdb-offenbach.de

Gütegemeinschaft Paletten e.V. EPAL-NK Deutschland
Hermelinweg 14
D-48157 Münster
Phone: +49 / 251 / 16 20 171
Fax: +49 / 251 / 16 20 176
E-Mail: gpal.de@t-online.de
Internet: http://www.gpal.de

VDV Verband Deutscher Verkehrsunternehmen
Kamekestraße 37-39
D-50672 Köln

Phone: +49 / 2 21 / 5 79 79 - 0
Fax: +49 / 2 21 / 51 42 72
E-Mail: admin@vdv.de
Internet: http://www.vdv.de

German Umbrella association for geoinformation systems (DDGI)

Deutscher Dachverband für Geoinformation e.V. (DDGI)

URL: www.ddgi.de

The German Umbrella association for geoinformation systems is a friendly society based in Bonn and member of the European Umbrella Organisation for Geographical Information (EUROGI). The main objective of the association is to stand for and to support the interdisciplinary German interests in the field of geoinformation and to stimulate and coordinate the development and the use of geoinformation on both the national and the international level. Because of the association's work, the quality of geoinformation services shall be improved, which is hoped to result in a stimulation of the development of suitable software, hardware and of the supply of services.

Strategies:

- Stimulation of strategic thinking and innovation by inter-communication of the various compartments and organisations in economy, science and administration
- Enforcement of standards to enhance the use of geoinformation
- Motivation of activities in research and development by formulating actual needs in the field of geoinformation
- Dissipation of technical developments

Coordination:

- Improvement of the cooperation of all institutions dealing with geoinformation by serving as a central information place
- Reduction of redundant activities by giving information about all actual activities
- Coordination of German conferences in the field of geoinformation
- Overcoming of the specific disadvantages of the German federal structure by taking the role of an integrated forum

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GeoForschungsZentrum Potsdam
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E-mail: wae@gfz-potsdam.de

Federal Agency for Nature Conservation (BfN)

Bundesamt für Naturschutz, BfN

The BfN started work in August 1993. It was formed from the Federal Research Centre for Nature Conservation and Landscape Ecology and from species protection boards of the Federal Nutrition and Forestry Agency. It was also assigned species protection functions from the Federal Economic Agency. The BfN is the central scientific authority at federal level for national and international nature conservation and landscape management.

It is based in Bonn and has branches in Leipzig and on the island of Vilm (off the coast of the larger island of Rügen). The International Nature Conservation Academy of the Island of Vilm is part of the Vilm branch. The BfN has around 290 employees.

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Konstantinstr. 110, D-53179 Bonn
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Fax +49 228 8491-200
Email: pbox-bfn@bfn.de (German only)

The Federal Vehicle Administration (KBA)

Das Kraftfahrt-Bundesamt (KBA)
URL: http://www.kba.de

- Authorises different vehicle types and parts;
- Supervises the quality of official control stations and repair shops (certification, verification).

Adresses:
Kraftfahrt-Bundesamt, Fördestraße 16, D-24944 Flensburg
Phone: +49 46 1 3 16-12 93
Fax: +49 46 1 3 16-18 21
+49 46 1 3 14-17 19

CIPRA Germany- German branch of the International Committee for Alps Protection

Internationale Alpenschutzkommission CIPRA

URL: http://www.cipra.de

CIPRA comprises the following member organisations: Bergwacht im Bayerischen Roten Kreuz (www.bergwacht.de) Deutscher Alpenverein e.V. (www.alpenverein.de) Landesbund für Vogelschutz in Bayern e.V. (www.lbv.de) Landesjagdverband Bayern e.V. (www.jagd-bayern.de) Schutzgemeinschaft Deutscher Wald (mail: sgdwald@aol.com) Touristenverein "Die Naturfreunde" e.V. (www.naturfreunde.org/kern.html) Verband Deutscher Berg- und Skiführer (www.bergfuehrer-verband.de) Verein zum Schutz der Bergwelt e.V.

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2.3.5 Italy

Author of this section: DITS

Autostrada dei Fiori S.p.A.

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Fax: +39 0183 295655
http://www.autostradadeifiori.it

Contact person: Mr. Federico De Vecchi
Function: Operation Director
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Traforo del Monte Bianco

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Traforo del Gran S.Bernardo

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BBT - Brenner Basistunnel

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CIPRA Südtirol department

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ISTIEE and University Of Trieste

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2.3.6 Slovenia

Author of this section: MARIBOR

CIPRA

URL: http://www.cipra.org/

Slovenian members of Cipra:
Društvo za varstvo narave Slovenije
EPSI (Turizem in založništvo)
Občina Maribor
Občina Tolmin
OIKOS-okoljsko svetovanje
Planiska zveza Slovenije
Ribiška zveza Slovenije
Triglavski narodni park
Zavod za varstvo narave

Motorway Company in the Republic of Slovenia

Družba za avtoceste v Republiki Sloveniji
URL: http://www.dars.si

In December 1993, the Government of the Republic of Slovenia founded DARS d.d. - Družbo za Avtoceste v Republiki Sloveniji (Motorway Company of the Republic of Slovenia), a public concern established in the form of a joint-stock company, which is 100% owned by the Republic of Slovenia and has a nominal capital of Euro 233,000. The company's mandate is to prepare, organise and oversee the building and maintenance of this nation's motorway network, a system which it will then be responsible for managing.

By way of contract, the Republic of Slovenia transferred the management of all existing motorways, as well as pertaining infrastructure and plant, to DARS d.d. Thus, DARS d.d. has inherited the right to collect motorway tolls as a source of income necessary for the management and maintenance of Slovenia's motorway network, as well as an important source for the building of new ones. Further financing for the building of public roads, as described by the National Programme for such, has also been secured in the form of a purposely designated fund - the so-called Fuel Toll. Through this scheme, which is described and facilitated by the Law on the Provision of Funds for the Construction of the National Motorway Network and shall operate until 2007, a 20% share of the retail price of each litre of fuel sold in Slovenia (both petrol and diesel fuels) will be spent for the building of new motorways.

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The Port of Koper

Luka Koper

URL: http://www.luka-kp.si/

Situated in the heart of Europe, it represents the southern gate to international commercial links between Europe and overseas. It lies on the shortest transport route linking commercial centres in the Central and

Eastern Europe with both Mediterranean countries and countries along the Suez. These facts contribute to the development of the Port of Koper into a logistic and distribution centre significant at all times.

With its entire offer of quality essential and additional port service, affirmed by the ISO 9001 quality certificate, as well as with all the advantages offered by the Free Trade Zone, the Port of Koper establishes opportunities for partners' business success. In making contacts, it also offers logistic, marketing, financial, information and investment support.

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Slovenian railways

Slovenske železnice
URL: http://www.slo-zeleznice.si/

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Adria Kombi

URL: http://www.adriakombi.si/

Adria Kombi has been the leading Slovenian company carrying out intermodal transport in all its forms. Along with the rolling road, road-rail transport of complete goods motor vehicles - the so-called accompanied transport - the company has promoted in particular the development of all forms of unaccompanied transport, i.e. the transport of containers, swap bodies and semi-trailers.

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Anton Melik Geographical Institute

Geografski inštitut Antona Melika
URL: http://www.zrc-sazu.si/gi/

The Geographical Institute was founded in 1948 by the Slovenian Academy of Sciences and Arts. One of its projects is providing The Geographical Information System. The main task implemented through the GIS is the provision of supplements for the requirements of the other projects and tasks.

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Function: Head of the Institute

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Geographic institute

Inštitut za geografijo
URL: http://www2.arnes.si/~ljigeo1/

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Institute of Traffic and Transport

Prometni Institut

URL: http://www.prometni-institut.si/

The Institute of Traffic and Transport is a specialised research institution in different fields of traffic and transport. The company main spheres of activities are:

- research in the fields of transport economics, transport planning and marketing
- research and development in the field of railway transport technology
- research and development in the field of railway infrastructure
- working out pre-investment studies and investment documentation
- computer support for projects and development of software

The company co-operates with many research organisations and scientific institutions in Slovenia and abroad.

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Traffic Technical Institute

Prometno tehniški inštitut

URL: http://www.pti.fgg.uni-lj.si/

The main activities of Traffic Technical Institute are education, research, development and design in connection with traffic theory and practice. The following fields are of special interest in our research work:

- transportation planning
- traffic control
- traffic safety
- traffic ecology
- roadway design
- roadway construction and maintenance
- railway design, construction and maintenance
- geographic information systems in traffic engineering

The research work is oriented towards:

- development and application of new traffic simulation models
- development of new design technologies based on better road alignment due to environmental incorporation
- the geometric elements of roads based on the real vehicle dynamic and road conditions to minimise the accident rates
- the application of GIS in traffic engineering
- preparation of the basics for technical regulation and legislation in the traffic engineering field
- environmental protection

These activities enable the realization of postgraduate study in the field of transportation, which is divided into four areas: roads, railways, traffic and civil works organization and technology. The activities are related to basic research, studies and design projects, expertises, information system design and development, software design and development. The results of the research work have been published in national and international journals and conference proceedings.

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OMEGAconsult

URL: http://www.omegaconsult.si/

OMEGAconsult is one of the leading Slovenian consultancy company on the field of transportation.

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Centre for Spatial Studies

URL: http://www.zrc-sazu.si/pic/

The Centre for Spatial Studies conducts research in two rather distinct areas. First, there is the use and development of geographical information systems (GIS) and satellite imagery in various natural and humanistic sciences. We have made several test studies on the use of GIS and satellite images in different sciences, from archaeology over biology to linguistics.

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Urban planning institute of the Republic of Slovenia

Urbanistični inštitut Republike Slovenije

URL: http://www.urbinstitut.si/

Contact person: Dr. Kaliopa Dimitrovksa Andrews
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2.3.7 Switzerland

Author of this section: ECOPLAN

Association for Transport and Environment (ATE)

Verkehrsclub der Schweiz (VCS)

URL: http://www.vcs-ate.ch

The ATE is an NGO supporting a environmental compatible mobility within a united society and sees its major task in the development of environmental friendly solutions of traffic problems and the sensitisation of the population.

Contact person: Mr Hans-Kaspar Schiesser
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E-mail: hk.Schiesser@vcs-ate.ch

Alpine Initiative

Alpen - Initiative

URL: http://www.alpeninitiative.ch

The "Alpine Initiative" is in the first instance the name of a Swiss movement that successfully started a popular initiative to fight the problems caused by transit traffic. The term "Alpine Initiative" also stands for the popular initiative itself whose full name is "Federal popular initiative for the protection of the Alps from transit traffic (see page 43.)

Over the years, the small movement made up of 42 people which started the Initiative at the end of the eighties has grown into an ever bigger association which now has nearly 50,000 members and sympathisers and makes political pressure for the implementation of the constitutional article on the protection of the Alps.

The Alpine Initiative is a broad-based coalition of people and organisations fighting to preserve the unique but very sensitive ecosystem in the Alps. It is made up largely of the anti-transit movements along the trans-Alpine transit routes in Switzerland. The Alpine Initiative also sees itself as part of the international opposition to transit traffic in the Alps. It therefore is in close contact with citizens' initiatives in other Alpine countries.

Contact person: Mr Fabio Pedrina
Function: President
Address: Alpen – Initiative; Kapuzinerweg 6, Postfach 28, CH - 6460 Altdorf 1
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CIPRA Suisse

Commission Internationale pour la Protection des Alpes (CIPRA)

URL: http://www.cipra.org

CIPRA Suisse is part of the International Commission for the Protection of the Alps. A short description of this non-governmental organisation representing about one hundred associations and organisations in all Alpine countries has already been given above.

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E-mail: cipra@mountainwilderness.ch

ASTAG

Schweizerischer Nutzfahrzeugverband (ASTAG)

URL: http://www.astag.ch

ASTAG is the lobby organisation of the Swiss trucking, bus and taxi industry with about 4'400 members in 18 regional and local sections. Its main aims are:

- to promote road freight transport;
- to represent the Swiss trucking industry on all political platforms;
- to support the trucking, bus and taxi industry by providing and co-ordinating pertinent information and services;
- to improve transport safety by offering training opportunities to drivers of its members.

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Swiss Federal Railways (SBB)

Schweizerische Bundesbahnen (SBB)

URL: http://www.sbb.ch

SBB's share in the railway transport market is 87 % in passenger traffic, and as much as 94 % in goods transport. Since 1st January 1999, the Swiss Federal Railways SBB are a limited company by special law, owned by the state, and at the same time Switzerland's biggest services company in the public transport sector. The company is managed by a nine-headed Board of Directors.

The Swiss Federal Railways are an important link in the public transport chain in Switzerland, which is composed of around 500 railway, bus and lake boat enterprises. More than 224'000 holders of "General Abonnements", and around 1.8 million holders of the Half-Fare Card, but also a great number of occasional customers are using the trains of the SBB, which stop at around 740 stations all over Switzerland.

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Fax: +41.512.20.42.65
E-mail: walter.moser@sbb.ch

Bern-Lötschberg-Simplon Railways (BLS)

Lötschbergbahn (BLS)

URL: http://www.bls.ch

The BLS Lötschberg Railway is one of the largest private railway companies in Switzerland. As a standard gauge Alpine railway, it is an important link in the railway connection between Northern Europe and Italy, as well as between the Swiss capital of Bern and major European metropolises. This is why international high-speed trains such as ICE, Pendolino and TGV run on the BLS rail network.

BLS is also active in freight transport. Because the trunk line is fully double-track, a large portion of the European freight traffic is routed in transit through Switzerland via the Lötschberg Line.

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Fax: +41.31.327.29.10
E-mail: direktion@bls.ch

HUPAC

URL: http://www.hupac.ch

Hupac operates a Europe-wide network for intermodal road-rail transport and is group leader of a European company in the transport and logistics sector. The purpose of the Company is to reconcile economic and environmental requirements in freight transport and thus to contribute to improved living quality.

The Company owns 1,900 wagons for carrying HGVs, containers, swap bodies and semitrailers. It also ensures the construction and operation of terminals for road/rail transhipment.

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3. Research on horizontal themes (WP2)

This chapter deals with the horizontal themes of ALP-NET: methods and models, data and statistics and geographic information systems (GIS). To solve problems or to answer research questions, in many cases all these themes or phases are passed through. For example, when the impact of new infrastructure will be analysed, first a method has to be determined how to handle this problem, what work should be done, what results are expected, what models are necessary and most appropriate and what data is needed. So within a method a general framework is constructed of how to handle the problem in the best way. Next, models are used for the implementation of ideas from the method phase to generate specific results. Data and statistics are used as input for these models, but are also output of these models; especially models can generate data that are not available in existing statistics. Finally, GIS can be used to analyse and visualise the final results and to get more insight in the relations between different kinds of data and results. This example shows that the four themes are strongly connected with each other.

It is not always easy to make a distinction between these four themes for the different projects and reports described in this chapter. For example, the ATIS project (TransAlpine pilot study and demonstrator) belongs to all four themes, but the project is described in the sections about methods, data and statistics because this project is considered most applicable to these themes. This way, for all described projects and reports an attempt has been made to describe them under the themes that are most appropriate for them.

3.1 Methods

3.1.1 European Union

Author of this section: NEA

TRANS-TALK Thematic Network on Policy and Project Evaluation Methodologies

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Details: Reports are available on: http://www.iccr-international.org/trans-talk/

TRANS-TALK thematic network is part of the current 5th Framework Programme of the European Commission. The project is carried out in the period January 2000 – January 2002.

TRANS-TALK project brings together scientists, professionals, policy-makers and stakeholders with experience in the development of transport policies and in project evaluation methodologies and/or have used these in their work, to assess the specificity of elaborating a framework for their integration. The main question to be addressed in TRANS-TALK is one of complexity in variation: how to decide which assessment method best suits which decision-making situation and how to integrate the results. The

framework for integration will contribute to the further development of the Common Transport Policy (CTP).

Three workshops are planned in the framework of TRANS-TALK. The results of the first workshop, which has addressed the context of policy and project evaluation, are available in May 2001. The results of the second workshop are expected to be available within few months.

SPOTLIGHTS Keys to bring advanced modelling techniques to life

Contact: Mr. Marc Gaudry, (Dcode); marc.gaudry@sympatico.ca
Mr. Arnaud Burgess, NEA (Mdir); abu@nea.nl
Mr. Benedikt Mandel, MKmetric (GTF); mandel@mkm.de
Andreu Ulied, Mcrit (LTvisions); ulied@mcrit.com

Details: Reports are available on: www.mcrit.com/spotlights

SPOTLIGHTS thematic network is part of the 5th Framework Programme of the European Commission. The project runs from January 2000 to June 2001.

SPOTLIGHTS TN is a scientific forum for European Transport Modellers to explore ways for making advanced transport models fully transparent to end-users, open and more integrated into policy-making processes. SPOTLIGHTS activities follow four different discussion lines:

- Dcode (Deontological Code)
- Mdir
- GTF (Generalised Transportation-data Format)
- LTvision

The work of the thematic network is built around four workshops, each one in relation to a discussion line. Before the celebration of each workshop, an open electronic conference will be organised.

Workshop1: Dcode-Quality control for modelling works

The goal of this discussing line is the development of a standard quality control guideline helping modellers to produce robust models and provide to end-users a security on the model scientific consistency and policy relevance (DCode). Dcode will be proposed as standard mandatory annex to be included in modelling contracts between client institutions and modellers.

Workshop 2: Mdir-Directory of Models and Modellers

The goal of this discussion line is to develop clear, fair and harmonised information concerning advanced transport models. Resulting from the discussions, a first directory of models, useful for European policies, will be produced (Mdir).

Workshop 3: GTF-Generalised transport data format allowing communication between models. The goal of this discussion line is exploring the interest and feasibility of adopting a generalised transport data format (GTF) as import/export process between advanced transport models. The work will take the already existing GTF as starting point, and the final goal is reaching an overall agreement in relation to a generalised data model (GTF).

Workshop 4: LTvisions- Strategies to get friendly and interactive access to advanced models. LTvisions goal is exploring new software and modelling solutions to improve model's usability. As a conclusion, a Long-Term assessment of the interest of alternative solutions will be provided (LTVisions).

QUITS Quality Indicators for Transport Systems

Contact: Ing. Andrea RICCI, ISTITUTO DI STUDI PER L'INFORMATICA ED I SISTEMI; Via Flaminia, 21; 00196 Roma, IT; Tel: +39-6-3212655, Fax: +39-6-3213049; E-mail: andrea.ricci@mclink.it

Details: Final summary report is available from: http://www.cordis.lu/transport/src/quits.htm

The QUITS project is answering to the Task 1.2.14 of the 4th Framework Programme of the European Commission. The project was carried out in the period 1996 – 1998.

The objective of the QUITS project was to develop a methodology that will improve decision-making in the transport sector by drawing attention to the internal and external quality dimensions. The investigation is based on the assumption that the quality of a transport system depends on both internal and external variables.

Internal quality of the transport system is assessed on the bases of two macro-aspects, travel time and direct costs. This is consistent with most of the studies developed so far.

External quality is assessed on the base of external costs, which are negative externalities that occur when transport consumers/producers impose higher costs on the society than they bear themselves. The following external costs of transport are considered:

- air pollution
- climate change
- traffic noise
- accidents (as far as they are not internalised by insurance premiums)
- transport infrastructure costs (as far as they are not covered by charges) and
- subsidies for infrastructure use.

Based on the detailed analysis of these three areas of interest: travel time (or value of travel time), direct costs and externalities, a comprehensive valuation framework of the global quality of the transport system has been established. The result of this valuation is expressed in the form of the total cost of travel, which is estimated by transport mode (road, rail, air, ship) on specific routes, for both passenger and goods traffic.

The methodology is tested on a set of three specific routes, which have been selected based on features of transnationality and intermodality:

- Lille – London
- Milan – Frankfurt
- Munich – Patras.

For each route, disaggregated data are collected for the estimation of the total cost of travel.

The valuation of the external costs within QUITS is based on the methodology developed in the study ‘External Costs of Fuel Cycles’ (ExternE) commissioned by the European Commission (DG XII).

Above the achievement of the initial objectives of the project, the suggestions and the recommendations drawn by the QUITS team should be considered for further work:

- the need for further validation case studies;
- generalisation and extension of the QUITS methodology;
- value of time;
- data requirements: basic O/D information is severely lacking;
- application to urban transport recommendations
- the meaningful of the quality indicators
- interaction with other research
- the QUITS software (original software for calculation of the internal quality indicators was developed, existing software was used – for externalities, a comprehensive package of the software tools was not designed, due to the commercial nature of the models used for emissions and dispersion calculation).

PETS Pricing European Transport Systems

Contact: Prof. Christopher NASH; UNIVERSITY OF LEEDS; Woodhouse Lane, LS2 9JT Leeds, GB; Tel: +44-113-2335326, Fax: +44-113-2335334; E-mail: cnash@its.leeds.ac.uk

Details: Final summary report is available from: http://www.cordis.lu/transport/src/pets.htm

The PETS project was developed within the 4th Framework Programme of the European Commission. The project was carried out in the period 1996 – 1999.

The intention of the project was to provide practical advice on how to implement appropriate pricing policies and to estimate the consequences of doing so. The added value of the PETS project consist of the application of existing knowledge to the specification and testing the optimal pricing policies in the context of real corridors.

The main objectives of the PETS project were:

- To examine the current pricing situation of passenger and freight modes in Member States;
- To assess whether such prices provide appropriate price signals in the light of all relevant internal and external costs;
- To forecast the consequences of moving to a more appropriate price level and structure in the light of transport demand and supply developments – as well as financial and other constraints.

The following case studies were considered:

- Cross Channel passenger and freight study;
- Trans-Alpine Freight study;
- Finnish passenger and freight study;
- Oslo – Gothenburg passenger study;
- Lisbon, Tagus Crossing passenger study.

In each of the case studies, the producer costs, user costs and external costs associated with the passenger and freight transport were fully identified. The associated prices were compared with existing taxation

and charging levels and structures. Each of the case studies included all the key passenger and/or freight modes of relevance in the study area in a modelling framework.

The starting point of the PETS pricing principles is the price-relevant cost. Three components of the marginal cost are identified: the producer marginal cost, the price-relevant user cost which represents the cost imposed on existing users of a transport system by entry of additional users and the transport system external marginal cost. These cost estimates have been used as inputs for the design of four different pricing scenarios.

The Trans-Alpine Case Study has been chosen to:

- assign different scenarios of a co-ordinated pricing policy for following the pricing principles developed in the theoretical work of PETS, and to
- assess the likely effects of these pricing scenarios on mode and route choice of trans-Alpine freight transport.

The pricing instruments distinguish between instruments for the European level and Alpine-specific pricing instruments.

For the analysis of the impacts, a multi-modal transport model developed by IWW Institute of the University of Karlsruhe has been used. The IWW model was developed for this purpose exclusively. The pricing principles, together with changes in transport demand and in the road and rail network are integrated in the model.

On these bases, the model estimate the impacts of the four different pricing scenarios for year 2010 in terms of:

- the transport volumes of the different modes of trans-Alpine freight transport measured in tonnes;
- the modal split of trans-Alpine freight transport;
- the traffic performance of the different modes measured in vehicle- and train-kilometres;
- the revenues from trans-Alpine freight transport.

ATIS Trans-Alpine pilot study and demonstrator

Contact: Philippe Tardieu, NEA Transport Research and Training, http://www.nea.nl; Sir Winston Churchilllaan 297, P.O. Box 1969, 2280 DZ Rijswijk, The Netherlands; Phone: +31 70 3988 369, Fax: +31 70 3988 411, e-mail: pta@nea.nl

Details: MESUDEMO Deliverable 10, contract no. ST-97-SC.1186; Project funded by the European Commission under the transport RTD; Programme of the 4th framework programme.

ATIS pilot study and demonstrator is the first attempt in building a European Transport Information System - ETIS applied to the Alps in order to demonstrate its feasibility. Here the transport chain information derived from national and international sources, made available at NUTS 2 level through the NEAC transport information system, was successfully combined with transport chain and route information derived from local surveys: CAFT database. More information is found within 3.3 Data and statistics.

NEAC (NEA transport simulation system for the Community)

Contact: Jaco van Meijeren, NEA Transport Research and Training, http://www.nea.nl; Sir Winston Churchilllaan 297, P.O. Box 1969, 2280 DZ Rijswijk, The Netherlands; Phone: +31 70 3988 337, Fax: +31 70 3988 411, e-mail: jme@nea.nl

Details: The NEAC model; 1997-2020; Western Europe description database; Construction and forecasting module; NEAC website: http://www.nea.nl/neac

NEAC transport information system is important as a method in relation with the transport chain approach for flows of goods and in relation with algorithms to combine data from various sources. More information is found under 3.3 Data and statistics.

ASSEMBLING Assembling a European Network of Monitoring Centres for Transport infrastructures

Contact: Mcrit, Salvador Espriu 93, 08005 Barcelona, Phone: 34 93 225 03 13; Fax: 34 93 225 51 12; E-mail: info@mcrit.com

Details: Project funded by the European Commission under the Transport RTD Programme of the 4th Framework Programme
http://www.mcrit.com/ASSEMBLING/assemb_central/Assembling_about.htm

The main goal of ASSEMBLING research is to explore and apply methodologies and technologies to assemble heterogeneous transport related monitoring sources at European level.

- On one hand, ASSEMBLING explores the use of recent developments in information and communication technologies to manage, harmonise and disseminate regional, field-oriented, and even informal databases, into an homogeneous European-wide knowledge system to be used by European experts and policy-makers.
- On the other hand, ASSEMBLING analyses the institutional and financial strategies to create and sustain the network of field-oriented information sources (so called "Observatories" or "Monitoring Centres").
- ASSEMBLING was designed as a "learning by doing" research and five pilot observatory cases were selected.

ASSEMBLING main outcome is the constitution of an Internet service based on an Executive Support System concept that integrates monitoring information into a European knowledge-base providing relevant indicators to assess strategic transport planning and decision-making.

BRIDGES Building Bridges between Digital Transport Databases, GIS applications and Transport Models

Contact: Mcrit, Salvador Espriu 93, 08005 Barcelona, Phone: 34 93 225 03 13; Fax: 34 93 225 51 12; E-mail: info@mcrit.com

Details: Project funded by the European Commission under the Transport RTD Programme of the 4th Framework Programme
http://www.mcrit.com/BRIDGES/index.htm

The output from Bridges is a set of software tools and data formats designed to provide necessary backing for a European Transport policy Information System (ETIS). It consists of a "software technology" to develop open multi-software systems integrating independent external applications, such as Database managers, GIS and, in particular, transport models. Bridges software tools are research outputs, 100% owned by the EC.

Systems developed using Bridges technology can be customised to include all of these options. Any existing sub option can be substituted by a module more appropriate to the specific problem the user is dealing with. Bridges is a fully scalable technology, so it is easy to develop and include new options in the future. Bridges technology can work on a LAN. In this case, each user will have his own personal workspace and

the first screen when entering into Bridges will require the declaration of a name and password and the selection of an available workspace.

Behind the utilities accessible through the user interface, there are a number of specialised Bridges modules for managing open systems:

- The Communication System Bridges/CS
- The Management System Bridges/SYS
- The translators for transport databases Bridges/GTF/GIS
- The directory of European Data Sources Bridges/DDG

These utilities need to be enriched with specialised tools to develop modules able to provide for an "intelligent intermediation" between system's outputs and policy meaningful answers: This is the role of Bridges/DSS. This report is focused on the user level, the user access to Bridges main utilities, instead of the analysis of the utilities themselves.

3.1.2 Austria

Author of this section: ICCR

Policy and Project Evaluation in Austria

Bundesminsterium für Verkehr, Innovation und Technologie (2000), Position paper presented at the first TRANS-TALK workshop, May 2000, Brussels.

Contact: Ernst Lung, Bundesminsterium für Verkehr, Innovation und Technologie, Unit II/A/1 Transport Planning, A-1030 Vienna, Radetzkystrasse 2, Phone: +43 1 71162 1102, Fax: +43 1 71162 1199, e-mail: ernst.lung@bmv.gv.at

Details: http://www.bmv.gv.at

Standard project appraisal techniques based on cost-benefit analysis and environmental impact assessment (EIA) were used in Austria for many years without including strategic components. Methods taking into account more than one mode of transport were first used in the framework of the new transport infrastructure plan (Bundesverkehrswegeplan) in the mid 1990s. Later these approaches were combined with the first fully-fledged large scale strategic environmental assessment (SEA) which was carried out as a demonstration study for increasing the capacity of the Danube Transport Corridor in Austria.

Project MEMOSA – Measurements and Modelling of the Pollutant Dispersal in the Alpine Region

DLR (Deutsche Forschungsanstalt für Luft- und Raumfahr) (1993)
Projekt MEMOSA – Messungen und Modellierung des Schadstoffverhaltens im Alpenbereich, DLR, Oberpfaffenhofen.

Contact: Dr. Hans Schlager, DLR, Institut für Physik der Atmosphäre, http://www.op.dlr.de/ipa/, Postfach 1116, D-82230 Weßling; Phone: +49 8153 28 2510, Fax: +49 8153 28 1841, Email: Hans.Schlager@dlr.de

Details: Available from DLR, http://www.dlr.de

The objective of this project was to evaluate the spatial dispersal and the origin of pollutants in selected Alpine regions. It was the aim to consider primary and secondary pollutants. The DLR undertook the following analyses:

- Measurements with aeroplanes of the pollutants NO, NO2, VOC, O3, H2O2 and SO2 as well as the meteorological parameters in the regions of Bavaria, the south Alpine upland as well as Tyrol and South Tyrol during smog.
- Modelling calculations regarding current and dispersion processes in the Alpine region and the local photo-chemical ozone formation.

The analysis was complemented by measurements at the valley and mountain stations along the measurement routes of the aeroplanes during the measurement periods.

The project included seven days of measurement in the summer of 1990, spring 1991, and summer 1992.

The results of the measurements and numerical simulations show that parts of the Alpine region are specifically burdened with pollutants, especially because of different traffic volumes. The highest concentration of pollutants could be identified in the big Alpine valleys where there is transit traffic. The highest loads are primarily home-made. The atmospheric transport of pollutants from regions north and south of the Alps is of minor importance.

The report concludes that a general decrease of ozone load in the Alpine region is only possible by reducing the primary pollutants. Due to the special conditions of the Alpine regions regarding topography and meteorology local measures can be very effective.

Conceptualisation of the Analysis of the trans-Alpine Freight Transport

Bundesministerium für Verkehr, Innovation und Technologie - BMVIT (1995)
Konzipierung der Untersuchung des transalpinen Güterverkehrs, Bundesverkehrswegeplan (Arbeitspacket A3-G1), Wien, BMVIT.

Contact: Gerd Steierwald, Ziviltechniker GmbH für Verkehr, Lindengasse 38, A-1070 Wien; Phone: +43 1 523 02 51; Fax: +43 1 523 02 51 31; Email: office@nast.at

Details: Available from http://bvwp.bmv.gv.at/Erstellung/a3_g1.html

This study analyses data gathered in a survey about trans-Alpine freight road transport in 1994. The work undertaken in this work package for the Austrian Federal Transport Infrastructure Plan was to:

- encode the data;
- quantify the random sample on the average daily and annual traffic;
- create a standardised summary consistent with the already undertaken summaries for trans-Alpine freight transport;
- investigate the daily number of trips; the load of traffic and vehicle modes; travel distances, and traffic and vehicles modes; travel distances and times;
- creation of a sheet for commodity groups.

Preparation of the Survey about Alpine-Crossing Freight Transport 1999 for the Continuation of the Austrian Federal Transport Infrastructure Plan

Bundesministerium für Verkehr, Innovation und Technologie – BMVIT (1998)
Vorbereitung der Erhebung Alpenquerender Güterverkehr 1999 zur Weiterführung des österreichischen Bundesverkehrswegeplanes, Bundesverkehrswegeplan (Arbeitspacket AGV99-0), Wien, BMVIT.

Contact: Friedrich Nadler & Gerd Steierwald, Ziviltechniker GmbH für Verkehr, Lindengasse 38, A-1070 Wien; Phone: +43 1 523 02 51; Fax: +43 1 523 02 51 31; Email: office@nast.at

Details: Available from http://bvwp.bmv.gv.at/Erstellung/agv99_0.html

In 1999, a survey on trans-Alpine freight transport was undertaken together with Switzerland and France. Austria extended this survey from the western part of the Austrian Alps (Brenner, Reschenpass) to all other Alpine crossings as well as to the neighbouring countries Slovenia, Hungary, Slovakia, and the Czech Republic.

Work package AGV99-0 comprised the following issues:

- the co-ordination of the survey;
- a rough calculation of the costs for the six Alpine crossings in question as well as for the neighbour countries;
- the predefinition of detail random sample plan for the six Alpine crossings;
- the preparation of base data set for the survey software; and
- the preparation of a technical report as basis of a tendering procedure regarding the survey.

Elasticities in Freight Transport

Bundesministerium für Verkehr, Innovation und Technologie – BMVIT (1997)
Elastizitäten Güterverkehr, Bundesverkehrswegeplan (Arbeitspacket R2-E), Wien, BMVIT.

Contact: Georges Oksakowski, Oksakowski & Partner, Ziviltechniker GmbH, Runastrasse 90, A-6800 Feldkirch; Phone: +43 5522 3442 0; Fax: +43 5522 79742; Email: management@oksakowski.com

Details: Available via http://bvwp.bmv.gv.at/Erstellung/r2_e.html

The aim of this work package was the evaluation of dependencies of transport demand from parameters of transport supply, as well as of elasticities for freight transport which could be used in the freight transport model.

Work was conducted in two steps: First, a qualitative elasticity analysis was undertaken with the aim to evaluate a rough estimation of the most important elasticities. Second, a quantitative elasticity analysis was undertaken for the relevant elasticities including a survey in the field of transport economy.

The basis for the analysis of results was the creation of a data base. The analysis of results was a two step process: First, the results of the survey were described in percentages and transport quantities. Second, the results in percentages were transformed into elasticity functions and brought into a necessary form for a transport model.

Update of Freight Transport Matrices for Austria

Bundesministerium für Verkehr, Innovation und Technologie – BMVIT (1998)
Aktualisierung der Güterverkehrsmatrizen für Österreich, Bundesverkehrswegeplan (Arbeitspacket R2-F), Wien, BMVIT.

Contact: Max Herry, Planungsbüro Herry, Argentinierstrasse 21, A-1040 Wien; Phone: +43 1 504 12 58; Fax: +43 1 504 35 36; Email: office@herry.at

Details: Available from http://bvwp.bmv.gv.at/Erstellung/r2_f.html

This study developed a method to guarantee an ongoing update of freight transport matrices in Austria. The work package comprised the following steps: First, development of a method for distributing data, including the discussion in the respective bodies, the documentation of methods used and the development of procedures. Second, the actualisation for the years 1995-97.

The data had to continue the following information:

- transport numbers in tonnes per year;
- traffic numbers in lorries per year;
- freight groups;
- transport modes (railway, road, ships);
- source/destination in Austria: political districts;
- source/destination abroad.

Validation of the Austrian Transport Infrastructure Plan – Traffic Predictions

Bundesministerium für Verkehr, Innovation und Technologie –BMVIT (1999)
Validierung der Bundesverkehrswegeplan-Verkehrsprognosen, Bundesverkehrswegeplan (Arbeitspacket R-V), Wien, BMVIT.

Contact: Walter Fusseis, Phone: +43 1 597 37 33.

Details: Available from http://bvwp.bmv.gv.at/Erstellung/r_v.html

The subject of this work package was the evaluation of the differences between the traffic load on the primary roads, as compared with a transport model for the year 1995, with the expected distribution of traffic load in the year 2015. For this reason, data was made available from the transport model 'Polydrom'.

There is a special emphasis on networks in

- collateral primary roads;
- sections near neighbour countries; and
- primary roads near urban areas.

For the evaluation of the predicted numbers, there was a quantification of the changes from the current state in 1995 to the future scenario for 2015 for individual and freight transport in each county (Bundesland). The aim was to compare the average value as well as to evaluate significant changes and possible explanations for them.

3.1.3 France

Author of this section: NESTEAR

Several methods and models have been used for trans-Alpine studies, by French institutions and consulting companies as well as by ECMT:

- ECMT: “rapport du groupe restreint sur l’arc alpin” CEMT/CM (80) 3
- ECMT: “Trafic international et besoins en infrastructure” CEMT Paris 1986
- ECMT: Tendances du transport européen et besoins en infrastructures” CEMT Paris 1995. Report of the group on Trends and International Transports in Europe (chaired by C. Reynaud)
- ECMT: “Transports et loisirs” Round table 111 ECMT Paris 2000
- ECMT: “Les prévisions du trafic transalpin: une absence de cohérence au niveau européen” report for the Group Trends in International transport – March 2001 – CEMT/CS (2001) 20

The studies of ECMT have given a good overview of the existing studies and have compared the results, analysed the policies. However, they do not develop specific methods and just mention the methods used by different parties, referring to the original papers for more details. In March 2001 ECMT has stressed within the group on Trends and International transports in Europe the differences in the data, scenarios and results, and recommended co-ordinated surveys, common reference scenarios, as well as the used of compatible tools.

In these overviews, most documents refer to freight. Only few studies are devoted to passengers. For passengers, the main purpose of trips is tourism and the most important studies were realised in relation with the development of High-Speed Transeuropean network. In France passengers studies have been realised for European network and for Lyon-Turin. In the European network study the model used, MATISSE, has focussed on mode competition between air, rail and motorways. This model takes into account a very detailed description of the supply and demand characteristics: The details on pricing (differentiated prices according to the period of travel) are comfort parameters, as well as introduction of different values of time for different types of trips, for passengers, the purpose of the trip, the length of trips are necessary in order to assess the conditions of competition between these modes.

In freight different models have also been used in France: simple trend models, O/D models based on sectoral analysis per type of products with a modal split functions including the evolution of prices for rail and road. Desegregated models have also been used but only to assess the choice of the route for road freight, through France or Switzerland. A difficult problem of modelling appeared for the estimation of intermodal traffic. In this case, analogy solutions have been adopted with an estimation of the intermodal share based on the observed existing situation where price and quality references could be benchmarked as regards road transport (existing best practises).

In French organisations

- CCFE-CRE: Evaluation de schémas à grande vitesse européens – INRETS – Intraplan using MATISSE model and Intraplan model for passengers
- French transport policy across the Alps: CGPC (Conseil Général des Ponts et Chaussées - Paris 1998)
- SNCF, FS: “Nouvelle liaison Lyon-Turin: étude de franchissement alpin – trafic fret” 1993
- CATRAM, SEMAL, GEODE: “Etude de transport, potentialités pour le transport de marchandises” GIP Transalpes 1996

- INRETS-DEST: “Prévisions de la demande de transport fret sur l’axe Lyon-Turin; méthodologie et premières projections” – GEIE Lyon-Turin.

3.1.4 Germany

Author of this section: IWW

General Investment Plan

The legal framework of the Federal Investment Plan for the construction of new or the extension of existing infrastructure projects requires an appraisal of effects on traffic safety, environmental pollution and noise exposure of the population. The procedures to be applied are laid down in the

- Handbook of environmental sustainability assessments (Handbuch der Umweltverträglichkeitsprüfung, HdUP) and - for road projects - in the
  - Guidelines for the design of roads (Richtlinie für die Anlage von Straßen, RAS-W) and the
  - Recommendations for Economic Appraisals of roads (Empfehlungen für Wirtschaftlichkeitsuntersuchungen an Straßen, EWS).

For safety effects, the officially used assessment methodology in Germany requires the calculation of emissions, the dispersion and the exposure of the population with air pollutants and noise. Thereby, the determination of exposure levels depends on traffic characteristics, local factors, meteorology, etc. Accidents are based on risks per road category. In the official procedures, the environmental assessment is carried out after the project as been designed separately for each project.

FGSV (1997): Empfehlungen für Wirtschaftlichketsuntersuchungen an Straßen. Bonn.

Storm, P.C., Bunge, T., Niklas, C. (1988): Handbuch der Umweltverträglichkeitsprüfung (HdUVP), Berlin.

BMV (1991): Richtlinie für die Anlage von Straßen, Teil Wirtschaftlichkeit. Bonn.

BMV (1992)
Bundesverkehrswegeplan 1992. Bonn.

BMVBW (2001): Verkehrsbericht 2000, Bonn. (http://www.bmvbw.de).

Proposal of the Federal Environment Agency

The German Federal Environment Agency (UBA) has conducted a study on the possibility of an integrated assessment of inter-urban transport infrastructure projects. In contrast to the traditional approach of the Federal Investment Plan (BVWP), the study has worked out procedures how to integrate the effects of the presence and the use of traffic infrastructure on natural habitats, biodiversity and other effects, which so far are neglected by the official procedure. Further, joint consideration of several projects is suggested, as network effects must not be neglected.

IWW, ifeu, Kessel & Partner, PÖ+U, PTV (1998)
Entwicklung eines Verfahrens zur Aufstellung umweltorientierter Fernverkehrskonzepte als Beitrag zur Bundesverkehrswegeplanung" (Development of a Procedure for the Design of Environmentally Sustainable Transport Plans as a Contribution to Federal Transport Infrastructure Planning). Studie im Auftrag des Umweltbundesamtes, Schlußbericht, Karlsruhe. Final Report on Behalf of the German Federal Environmental Agency, UBA-Bericht 4/99, Berlin, Karlsruhe.

Gühnemann, Astrid (2000)
Methods for Strategic Environmental Assessment of Transport Infrastructure Plans. Baden-Baden.

IWW (1998)
STEMM case study. Trans-Alpine passenger transport.

Greenhouse Gas Reduction / Emission Trading

Contact: ifeu - Institut für Energie und Umweltforschung Heidelberg
Wilckensstraße 3
D-69120 Heidelberg
Fon: +49 (0) 6221 / 47 67 - 0
Fax: +49 (0) 6221 / 47 67 -19
E-Mail: ifeu@ifeu.de
URL: www.ifeu.de

In Germany, a debate on possibilities for meeting the environmental goals defined by the Kyoto conference is currently going on. It is seriously discussed in how far a publicly regulated framework of trading emission certificates may include the transport sector. For this purpose, the ministry for transport and the environment of the federal state of Baden-Württemberg has launched a respective study. It is carried out by IFEU (Heidelberg) and includes several industry branches in order to work out the detailed framework for an operable system of emission trading. The project is expected to be finalised in 2002. More information might be obtained from the address given above.

3.1.5 Italy

Author of this section: DITS

Analysis on the effects on traffic flows due to the closedown of the Monte Bianco Tunnel

See section 3.2.5 for a complete description of this document

New railway line for the south side of the Gottardo tunnel – Feasibility study / Final Report

FS Spa – Italferr SpA (2000):
Nuova linea ferroviaria di accesso sud alla galleria di valico del Gottardo – Studio di fattibilità / Rapporto finale.

Contact: Mr. Goliani
Piazza della Croce Rossa 1, 00161 Roma

Phone: +39 06 44102414
Fax: +39 06 44103887
E-mail: m.goliani@tiscalinet.it

- This is the final report for a feasibility study committed by FS SpA to Italferr SpA for the new railway line on the south side of the Gottardo tunnel. In particular, the study includes the following objects:
- updating of the traffic studies, and forecasting for new scenarios based on specific layouts for new infrastructures
- updating of the thematic mapping
- updating and completion of the technical, economic and environmental studies, with a final choice of two main alternatives for the new line
- study of solutions for the connection between the new line and the Malpensa airport
- study for the connection between the new line and the Italian high speed network
- financial / economic analysis and multicriteria study for the selected options

3.1.6 Slovenia

Author of this section: MARIBOR

Development of Branches on Corridor V

Prognos AG (Germany)

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Details: PHARE Multicountry programme
Available from: Ministry of Transportation of Republic of Slovenia

The main objective of this project is development of corridor V as a key transit artery linking the EU Member States with the countries of Central and Eastern Europe and with the CIS countries beyond.

The report presents an identification of bottlenecks and priority projects, pre-feasibility study and identification of financing sources. The study is being conducted for Bosnia and Herzegovina, Hungary, the Slovak Republic and Slovenia.

Extension of Trans-European Rail Freight Freeways to Central and East European Countries

Ove Arup UK

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Details: PHARE Multicountry programme
Available from: Ministry of Transportation of Republic of Slovenia

The project is dealing with assessment of the potential for developing Trans-European Rail Freight Freeways on selected routes between the Phare countries. Analysis included marketing, institutional and regulatory requirements as well as operational needs of One Stop Shops in the CEECs.

ERTMS Strategic Study for Central and East European Countries

TRACTEBEL Development Engineering Belgium

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Details: PHARE Multicountry programme
Available from: Ministry of Transportation of Republic of Slovenia

The main point of study was assessment the viability of implementing the ERTMS (European Rail Traffic Management System) in the 10 Phare candidate countries for accession.

Result was identification of priority corridors for implementation of ERTMS and preparation of complete set of technical specification for open competitive tenders.

Improvement of Competitiveness of Rail Transport in CEECs

Halcrow Transmark UK

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Details: PHARE Multicountry programme
Available from: Ministry of Transportation of Republic of Slovenia

The study identifies the obstacles to the improvement of competitiveness of the railways in the CEECs and to prepare an Action Plan to regenerate them.

The result of study is assessment of the obstacles to the development of the railways in all 13 Phare countries together with an Action Plan to improve competitiveness. This is designed to increase the attractiveness of rail services to freight shippers and passengers.

Transport Master Plan Study for the Republic of Slovenia

Prognos AG and Institute of Traffic and Transport, Slovenia

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Details: National PHARE programme
Available from: Ministry of Transportation of Republic of Slovenia

In 1991, Slovenia has regained its sovereignty as an independent state. One of the major policy concerns for the development of the country is the development of its infrastructure and in particular of transport

infrastructure. A plan for the expansion of the motorway network has been by parliament. This plan envisaged the construction of approximately 300 kilometres of new motorways by the completed by the year 2000. In addition, draft plans for the development of the railway and highway networks have been drawn up and are at present under consideration by parliament.

The Slovenian Ministry of Transport and Communications (MOTC) has taken a new approach to transport infrastructure planning by switching from single mode planning to multi-modal or integrated planning in order to use financial resources in the economically most efficient way. This means that the planning is no longer supply oriented (building of roads on the basis of projected traffic growth into the future) but rather demand and cost oriented in order to provide for the railways a fair opportunity to develop their potential. The MOTC has therefore requested financial support under the PHARE program of the European Communities (EU) to develop a new transport infrastructure master plan simultaneously for roads and railways. Prognos has been retained to carry out this study together with the PROMETNI INSTITUT of Ljubljana as the Slovenian partner.

The new approach of the MOTC goes beyond the traditional master planning exercise by simultaneously commissioning a study for the "strategic environmental assessment for the Slovenian transport sector" as well as the "revision of guidelines for highway feasibility studies" which were originally developed in 1974. Now, they need a complete overhaul under a changed policy framework and changed concerns, in particular with regard to an environmentally sustainable development of the transport sector. The three studies are, of course, interrelated and require co-ordination during their implementation so that in the end the pieces will fit together.

The Objectives of the Transport Master Plan Study have been defined on the Terms of Reference as follows:

1. The basic purpose of the Transport Master Plan Study is to assist the Ministry of Transport and Communication in:
    (i) forecasting the growth of traffic flow on main routes in accordance with different development patterns over a period of 20 years;
    (ii) defining the potential and possible »modal split« from the point of view of economy and ecology;
    (iii) comparing the current and forecast capacities of the Slovenian traffic infrastructure with the traffic flows;
    (iv) outlining different strategies of transport policy measures for the different transitional periods until the construction of the motorway transport infrastructure is completed.

2. The study is expected to provide the Ministry of Transport and Communications with:
    (i) a definition and elaboration of the instruments of transport policy;
    (ii) a model for the permanent statistical monitoring of traffic flows which will be based on generally available statistical data;
    (iii) a review of the current development plans of the transport infrastructure in the light of the results of the Transport Master Plan and any recommended changes and supplements.

3. In order to provide proposals for, and an outline of transport policies, the study will be focused on the following key problems:

(i) the description, analysis and forecast of freight and passenger transport focusing on different aspects such as local regional/inter-regional transport and transit;

(ii) forecasts and proposals for directing international and domestic freight from road to rail during the transitional periods;

(iii) co-ordination of transport system in order to eliminate bottlenecks;

(iv) advice in the elaboration of the new transport strategy and on the main aspects/steps of the new transport policy.

The Transport Master Plan Study shall focus on inter modal traffic development and shall cover all aspects of the goods and passenger transport including ancillary services and storage.

Strategic Environmental Assessment of the Transport Masterplan

DHV Consultants BV Netherlands; Traffic Technical Institute, Slovenia

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Details: National PHARE programme
Available from: Ministry of Transportation of Republic of Slovenia

Slovenia expects a massive growth of demand for transport. New roads and railways will be constructed and upgraded; infrastructure will be used more intensively·. This may, have significant impact on the environment. How can Slovenia make economic objectives compatible with ecological objectives? In order to address these issues, Slovenia is preparing a Transport Masterplan and simultaneously a Strategic Environmental Assessment (SEA) of the Slovene transport policy. Both projects are financed by the European Union - PHARE program.

The main objective of the SEA is to give a view on Slovenia's environmental problems with respect to transport and infrastructure, and to offer a framework for environmental evaluation of strategic options in this sector. A second objective is to suggest powerful options for an environmentally sound national policy.

Conclusions of the study

The future use of Slovene motorway infrastructure will double. A large number of people living near the motorway experiences too high noise emission levels. Acid precipitation, photochemical smog and contribution to the greenhouse effect will increase considerably. A more environmentally sound transport policy can have significant beneficial environmental impact.

Slovenia should develop general transport policy, trading-off environmental objectives with economic objectives. The implementation needs considerable government effort and funding.

Powerful policy options

Slovene policy makers should first target on the reduction of number of short distance trips (up to 15 km). Emphasis should be focused on:

- promotion of public transport for home-work traffic, expansion of busses services and possible introduction of light railway in urban areas (e.g. in Ljubljana);

- promotion of bicycle use. Geographical advantages in cities like Maribor and Ljubljana create large potential for an increased use of bicycles. Infrastructure, lighting systems and other »hardware« should be improved for large scale cycle use;
- introduction of restrictive parking policies in urban areas. If no parking is allowed in the city centres, people will choose other modes of transport than the car.

In addition, the following items should be considered:

- modal split change by reduction of car-use and increase of attractiveness of public transport
- integration of physical planning in the transport policy cycle
- combined transport for freight transport
- pricing policies
- promotion of telematics
- awareness raising campaigns and targeted public-relations.

Slovenia signed International Treaties, in Rio on Climate Change, Biodiversity and Photochemical Smog, with the EU, e.g. in the field of transport, and with neighbouring countries, like the Alpine Agreement. Implementation of above mentioned policy options would give Slovenia opportunity to meet some of the Treaties' objectives.

Regional and Spatial Development Orientations for the Republic of Slovenia with regard to Different Level Integrations in Europe

Urban planning institute of the Republic of Slovenia

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In the framework of the project, relevant research reports and other official EU and Slovenian documents in the fields of regional and spatial development for the EU, macro-regional, state and local (regional) community levels have been identified and analysed. Based on geostrategic, economic, sustainable development, urban planning, spatial, as well as legal aspects elaboration, strengths, weaknesses, opportunities and threats for the Slovenian territory with regard to the processes of European integration have been identified, analysed and structured. Possible spatial development scenarios for Slovenia - trend, ideal and active scenario - have been defined and applied to evaluate the identified strengths, weaknesses, opportunities and threats. In order to examine the accuracy of the formulated development orientations, perform the choice of the scenario and rank the orientations by significance, feasibility and time-frame for their implementation, two rounds of Delphi method have been carried out. Concluding, orientations and measures have been proposed, which could help enhance the strengths and diminish weaknesses of the Slovenian territory with regard to the European integration processes.

3.1.7 Switzerland

Author of this section: ECOPLAN

Overview

Assessment methods in the field of transport can be split up in two categories, one of them dealing with the assessment of comprehensive programmes or policies. In this context, the most important methods used in Switzerland are Concept and Sectoral Plans. They aim at the comprehensive planning and coordination of federal activities and projects with direct spatial impacts. They are set up for individual sectors, contain concrete territorial and spatial instructions and are approved by the Federal Council. Up to now, Sectoral plans for aviation infrastructure as well as for road and rail transport have been elaborated or are currently in progress. Even though Sectoral Plans do partly deal with environmental and other aspects of transport projects, there is a strong need to combine these plans with a Strategic Environmental Impact Assessment (SEIA) or even with broader instruments like Strategic Impact Assessment (SEA) and assessment based on the sustainability concept. Research in the field of sustainable development has made important progress in the framework of the National Research Programme (NRP, http://www.nfp41.ch), where several attempts have been undertaken to put this slogan into concrete terms.

A second category of assessment methods encloses the assessment of specific and often unique projects. The main instruments for the ex-ante-analysis of large infrastructure projects in Switzerland are planning and assessment instruments as for example Feasibility Studies (FS) and Cost-Benefit-Analysis (CBA), even though, in Switzerland, the latter are not based on a long tradition. However, there is practice – even though not harmonised – for Multi-Criteria-Analysis (MCA).

It is astonishing to see that there are very little legally specified instruments available in this context. The federal law on environmental protection requires that the environmental compatibility be investigated in all cases where infrastructure and/or installations may have major environmental impacts. However, the analysis of environmental aspects only is not appropriate to evaluate sustainability.

Challenged by a severe increase in trans-Alpine transport volumes in the mid-eighties, the Swiss Government proposed to build two new trans-Alpine rail tunnels to be constructed until 2007 (Lötschberg link) and 2012/2013 (Gotthard link) respectively (New trans-Alpine Rail Link, NARL). With respect to this largest rail infrastructure project ever proposed in Switzerland, MCA as well as efficiency and profitability studies have been carried out in order to evaluate the project ex-ante.

The most important assessment method in this context was developed by the SACTRA of the British Department of the Environment, Transport and the Regions (http://www.detr.gov.uk). It is foreseeable that this method will be of increasing importance in the framework of the assessment of upcoming transport projects in Switzerland.

Criteria for Sustainable Mobility

Ernst Basler + Partner AG (2000)
Nachhaltigkeit: Kriterien im Verkehr. NFP41-C5. Bern.

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Details: National Research Programme 41 Transport and Environment, Interactions Switzerland/Europe, http://www.nfp41.ch, Report C5.
Available from: EDMZ, CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.604.d

See also Report M3 on Measuring the Sustainability of Transport Projects. Available from: Eidgenössische Drucksachen- und Materialzentrale (EDMZ), CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.609.eng

The main objective of this research project C5 is the development of criteria and indicators for a sustainable transportation development. In addition to ecological and economic criteria, the study also considers social criteria and indicators as far as they are relevant to the subsystem 'traffic'.

The study applies the general concept of sustainable development to the transportation sector which, due to its rapid growth, is one of the most important causes of a deterioration of the environment. The criteria derived for the transport sector are climate, ozone layer and natural habitats/landscapes for the field of ecology; resources, social costs, price, safety/security, solidarity for the field of economy; and air pollution, noise, settlements/areas, individuality and participation for the field of society. To measure each of these criteria, the study tries to derive corresponding indicators. In many cases, especially with respect to economic and social criteria, the existing theoretical foundations of the sustainability concept are not yet adequate for deriving unambiguous sector-specific indicators. This holds particularly for the derivation of indicators describing individuality or aspects such as quality of the transportation system (time and reliability). Further research and better statistical data are required to provide for a complete set of indicators in the field of transportation.

Further details are given in report M3 on Measuring the Sustainability of Transport Projects, where a guide to apply the derived criteria and indicators in research projects is presented.

Sustainability in the field of transport: Planning and assessment instruments

Ernst Basler + Partner AG (2000)
Nachhaltigkeit im Verkehr: Planungs- und Prüfinstrumente. NFP41, Bericht C6. Bern.

Contact: Thomas Schneider, Ernst Basler + Partner AG, http://www.ebp.ch
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Details: National Research Programme 41 Transport and Environment, Interactions Switzerland/Europe, http://www.nfp41.ch, Report C6.
Available from: Eidgenössische Drucksachen- und Materialzentrale (EDMZ), CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.654.d

The project C6 of the Swiss National Research Programme 41 examines how to introduce criteria for sustainability into strategies, plans and projects within the frame of currently existing planning, assessment and control instruments. It also proposes recommendations on how these instruments might be improved.

The planning, assessment and control instruments investigated are the Legislative Programme, the Concept and Sectoral Plan, Feasibility Studies as well as Environmental Impact Assessment. Touched upon, but not investigated in depth were Technological Assessment as well as Strategic Environmental Assessment. The report focuses on the following main issues:

- Do current planning and control instruments take into account sustainability criteria?
- How might such criteria be integrated? Do we need new concepts?

The following specific examples serve to illustrate the investigations:

- The Federal Legislative Programme 1995-1999
- The AlpTransit Project (Feasibility Study, Sectoral Plan, Environmental Impact Analysis)

- The Sectoral Plan for Air Traffic Infrastructure (Concept and Sectoral Plan)

The various functions of the instruments in the overall domains of planning, provisions and opinion building are elaborated in the project. It is shown that the sustainability of strategies and plans depends on the effective co-ordination of the various instruments. A set of criteria for the various planning and assessment instruments in the area of transport would represent a major step for their orientation towards sustainability, even though they have to be developed further. Sustainability is not only a question of public policies, planning and projects; it also involves the awareness and knowledge of all interested and concerned parties. This means that the results of research on criteria for sustainability should be communicated as widely as possible.

Evaluation Concept for Swiss Transport Policy

Balthasar Andreas, Bächtiger Christine (2000)
Evaluationskonzept für die schweizerische Verkehrspolitik. NFP41-D14. Bern.

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Details: National Research Programme 41 Transport and Environment, Interactions Switzerland/Europe, http://www.nfp41.ch, Report D14.
Available from: Eidgenössische Drucksachen- und Materialzentrale (EDMZ), CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.690.d

The objective of the report is the development of a long-term strategy proposal for ex-post-evaluations of Swiss transport policy. It assumes the necessity of an integrated system to evaluate the effects of transport policies, and defines ex-ante-analysis, controlling, transport statistics and ex-post-evaluation as its foundations. These four instruments for evaluation have different functions for the formulation, decision, implementation and optimisation of public policies. The report focuses on ex-post-evaluation, thus complementing the results of other projects of the National Research Programme 41 on Transport and Environment which are concerned with the requirements for future transport statistics as well as with procedures for advanced analysis of transport projects.

The report presents an inventory of existing transport policy ex-post-evaluations and summarizes the most important reasons for systematic ex-post-evaluation of transport policy as well as success factors of such evaluations. Furthermore, objectives and procedural principles as well as a proposal for institutionalising the evaluation of transport policies are elaborated with respect to the organisations responsible for ex-post-evaluations in Switzerland.

The main findings of the report were subject to discussion at the occasion of a decision maker's workshop in June 2000. The attendees agreed with the study's assumption regarding ex-post-evaluation of transport policy. However, it was pointed out that ex-ante-analysis receives only marginal attention although they are of major importance for transport policies. ex-post-evaluations, ex-ante-analysis, controlling and transport statistics are explicitly understood as components of an integrated system to evaluate the effects of transport policies. Furthermore, the attendees supported the request to institutionalise ex-post-evaluation in transport policy.

Multicriteria Analysis of Road Traffic Infrastructure projects

Jenni und Gottardi AG (1997)
Zweckmässigkeitsbeurteilung von Strassenverkehrsanlagen, Forschungsauftrag 47/95 auf Antrag der Vereinigung Schweizerischer Verkehrsingenieure (SVI). Zürich.

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Details: Research Project 47/95 of the Vereinigung Schweizerischer Verkehrsingenieure (SVI).
Available from: Vereinigung Schweizerischer Verkehrsingenieure (SVI), PO Box 155, CH-8034 Zürich.

Within this project, a manual of feasibility studies for road traffic projects has been elaborated. It intends to give a procedural and methodical guidance for decision makers and planners in allocating and working out feasibility studies. The manual shows what to do how in which situation and demonstrates the procedure and special problems in the different phases of a feasibility study.

The feasibility study comprises the evaluation of single measures or projects to solve specific traffic problems, as for instance excessive noise pollution, traffic congestion and insufficient road safety. It will usually be carried out in three phases:

- Phase 1: Ideas and possible alternatives to solve traffic problems; selection of the most promising alternatives
- Phase 2: Preparing the technical projects for the alternatives chosen to prove the technical feasibility
- Phase 3: Evaluation and comparison of the alternatives for assessing their feasibility

The comparison of the alternatives to be carried out in phase 3 can be divided in the following four steps:

- Goal/indicator system: The goal/indicator system has a hierarchical structure: main goals, partial goals, sub-goals and indicators. It has to cover all the relevant effects of the alternatives that are to be evaluated later.
- Quantity framework: It comprises the measurement of the effects of the project alternatives in different dimensions (time, costs etc.) according to the fixed indicators of the sub-goals.
- Evaluation framework: The evaluation framework transfers the quantity framework into uniform and comparable units. The Cost-Benefit-Analysis converts the quantity units into money units, the Multi-Criteria-Analysis into utility scales, other methods choose for example energy consumption as a common denominator for the evaluation. The evaluation framework enables the value synthesis and thereby the method specific comparison of the alternatives.

Socio-Economic Effects of the New trans-Alpine Rail Link

Jenni und Gottardi AG, Prognos AG (1998)
Sozio-ökonomische Effekte der NEAT. Kilchberg/Zürich.

Contact: Dr. Giovanni Gottardi, Jenni und Gottardi AG, http://www.jennigottardi.ch
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Details: Available from: Bundesamt für Verkehr, Abteilung Infrastruktur, Amthausgasse 18, CH-3003 Bern.

The aim of this project was to analyse the socio-economic effects of the NARL in Switzerland. The effects of measures taken in the field of transport policy can be divided into the following impact categories:

- Impacts on the real consumption of resources (less wear and tear with respect to vehicles and streets, time gain for rail users, less air and noise pollution, less accidents etc.
- Impacts on prosperity, for example gains induced by increasing demand for transport services combined with reduced costs in terms of time and money.

- Impacts on employment related to the measure taken.
- Impacts on intangible goods as for example the changing of landscapes due to a certain infrastructure project.

For each of these impact categories, a set of goals, sub-goals and indicators have been derived and elaborated for the year 2020. The results suggest that negative impacts in the field of energy, environment and human capital are overcompensated by positive effects in terms of time gain as well as less noise and air pollution.

Costs and Benefits of the New trans-Alpine Rail Link

ECOPLAN (1997)
Wirtschaftlichkeitsstudie NEAT. Bern.

Contact: André Müller, ECOPLAN, http://www.ecoplan.ch,
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Details: Available from: Swiss Federal Transport Office, http://www.bav.admin.ch or ECOPLAN, http://www.ecoplan.ch

In 1992, the Swiss population voted in favour of two New trans-Alpine Rail Link (NARL). Apart from geological problems, discussions about the profitability and the finance structure of the project had somewhat delayed the final parliamentary decisions.

In this context, ECOPLAN was commissioned by the Swiss Federal Transport Office to carry out an independent review of costs, benefits and paybacks of the planned rail link.

The method use in the framework of this project is based on a distinct profitability focus, whereas other economic aspects (time gain, environmental impacts, other economic impacts) have not been taken into consideration. Furthermore, to enable sensible comparability of costs and revenues over the analysed period until 2006, the calculations have been carried out based on the net present value concept.

The study shows, that in most cases the NARL will not be profitable from a business perspective. If one of the two NARL routes was given up, profitability could be markedly increased, without taking the risk of bottlenecks in the next years. Without higher prices for road freight transport the NARL does not make much sense: Additional capacities will not be used and correspondingly the profitability will be very bad.

Other Research Activities and Publications in Switzerland

Jenni und Gottardi AG (1996)
Systematische Wirkungsanalysen umweltbezogener verkehrspolitischer Massnahmen. Hauptstudie. Forschungsauftrag 1/94 auf Antrag der Vereinigung Schweizerischer Strassenfachleute (VSS). Zürich.

INFRAS (1998)
Kosten-Wirksamkeit von Umweltschutzmassnahmen im Verkehr, Forschungsauftrag 41/96 auf Antrag der Vereinigung Schweizerischer Verkehrsingenieure (SVI), Zürich.

Synergo (1991)
Überlegungen zur Zweckmässigkeitsprüfung von Verkehrsinvestitionen. Auftrag GVF Nr. 189. Zürich.

BUWAL Bundesamt für Umwelt, Wald und Landschaft
Kosten-Wirksamkeit von Lawinenschutz-Massnahmen an Verkehrsachsen. Bern.

INFRAS (1995)
Neue Eisenbahn-Alpentransversale durch die Schweiz: Zweckmässigkeitsprüfung. Zürich.

Güller und Reinhard und Arend (1991)
Überlegungen zur Zweckmässigkeitsprüfung von Verkehrsinvestitionen. Zürich.

GVF Dienst für Gesamtverkehrsfragen (1997)
Umweltindikatoren im Verkehr, GVF-Bericht 1/97. Bern.

ECMT European Conference of Ministers of Transport (2000)
Seminar on Evaluation Tools for Infrastructure Investments and Urban Sprawl: Is there a link? Country experiences for France, Austria, Poland, Switzerland, United States and the Netherlands. For Switzerland, contact Peter Güller, Synergo, Fraumünsterstrasse 23, CH-8022 Zürich, http://www.synergo.ch, Phone: +41 1 211 40 12; Fax: +41 1 212 39 07; Email: admin@synergo.ch.

3.1.8 Liechtenstein

Research activities are carried out in very close co-operation with Switzerland. This means that projects are not directly initiated and financed by Liechtenstein alone. Liechtenstein contributes to the costs of research projects either directly on the level of specific projects or by bearing its part of the general budget (according to the number of students from Liechtenstein).

3.2 Models

3.2.1 European Union

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THINK-UP Thematic Network to Understand Mobility Prediction

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Details: Reports are available on: http://www.netr.fr/think-up/uk/reports

THINK-UP is a Thematic Network project of the European Commission's 5th Framework Programme for Research and Development. It covers task 2.1.1/4 "Understanding and predicting mobility trends". THINK-UP is working in close relation with the EXPEDITE research project.

The aim of the research task covered by THINK-UP and EXPEDITE is to:

- Develop transport demand forecasts for the years 2005, 2010, 2015, 2020
- Determine core and competitive markets for each mode
- Define policy measures to strengthen competitiveness and efficient in inducing modal shift

The Thematic Network is intended to:

- Consolidate existing methodologies and results on transport forecasts and scenarios and identify research needs. Attention will be given to understanding transport patterns & the relativity of modes.
- Membership will be wide.

THINK-UP aims to draw together results on transport demand forecasting and scenario building and to discuss and compare the methodologies used, the underlying hypotheses and the results obtained. It is organised through a network of transport experts from many different sectors: policy makers, service providers, users and researchers. The project results will include a classification of policy objectives and variables, validate segmentation of passenger and freight transport markets and review European model-

ling results as regards model specification. THINK-UP is a 30-month lasting project including 12 workshops and 4 seminars. This first seminar (25-26 September 2000) was a kick-off for all experts in Europe and had the objective to provide an overview of available national and international models.

STEMM Strategic European multi-modal modelling

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Details: The following STEMM reports are available from http://www.ecoplan.ch: Barriers and Policy Instruments for Improved Intermodality (Full report and summary); Transalpine Freight Transport Case Study (Full report and summary)

The STEMM project was answering to the Tasks 1.3.20/1.3.21 of the 4th Framework Programme of the European Commission. The project was running for 28 months starting from March 1996.

The main objectives of the STEMM project were defined as follows:

- To identify and quantify the factors affecting modal split and route choice for passengers and freight, particularly where intermodal chains are available.
- To develop methodology for modelling intermodal chains for passenger and freight transport.
- To apply the developed methodologies to models representing mode and route choice for European networks and particular case studies.
- To examine barriers to intermodality arising from institutional and regulatory measures.
- To utilise these models to examine and test policy instruments for increasing the use of intermodal methods of transport.
- To prepare contributions to seminars at which results obtained from investigations of different types of policy instrument will be considered.

There have been three principal aspects studied within STEMM, namely:

- Passenger Transport
- Freight Transport
- Assessment of Political and Social Acceptance of Transport Measures

Passenger modelling development has been concerned with five principal topics in working towards a multi-country model describing multimodal passenger transport:

- Development of a representation of multimodal networks;
- Review of existing model forms; selection of a model with:
  (a) asymmetry of mode choice response;
  (b) utilisation of heteroskedasticity in generalised form generation-distribution models;
- Enrichment of selected model forms with:
  the addition of captivity to an asymmetric choice response from (a);
  the addition of spatial autocorrelation to (b);
- Implementation of the necessary algorithms;

- Estimation of models in a multi-country application, and testing significance of enrichments.

The freight model is based on the multi-modal modelling technique developed within the STEMM project on the bases of the market share model (MSM) previously developed by MDST. Freight traffic from the OD matrix is assumed to face a wide choice of mode/route combinations. For each mode/route alternative the generalised cost is calculated by determining the financial cost and adding on various quality of service penalties. Only alternatives with generalised costs within a certain percentage of the lowest generalised cost are further considered. If two or more alternatives all share the same least generalised cost, then the traffic will be equally split between them. Where there are one or more alternatives with generalised costs higher than the least cost alternative, penalties are applied to these alternatives, dependent on their similarities.

The MDST model has been applied to assess policy effects on trans-Alpine and cross-Channel freight transport, while the STAN model has been implemented for Nordic case studies of Scan-Link Corridor and Nordic/North Sea freight movements.

The case study 'Trans-Alpine Freight Transport. Effects of Policy Instruments' considers four policy scenarios, summarised as:

- MIN: Business as usual in transport policy, i.e. some measures to support intermodal transport and to promote rail revitalisation, only very limited additional policy measures in road freight transport
- MIX: Combination of policy measures in the road and rail sector, additional measures and some tightening up of existing instruments
- PRO RAIL: Strongly pro-rail oriented strategy, limited action in the road transport sector
- ANTI ROAD: Strongly anti-road oriented strategy

From the outputs of the STEMM Passenger Model tested in the trans-Alpine case study the following conclusions can be drawn:

- The improvement of airport access does not necessarily lead to the expected result of an increased use of intermodal chains with an air component.
- Charging road and air with emissions-dependent costs provokes reactions which are - in terms of changes of modal split - stronger than in the ATI-scenario.
- Regardless of whether there are strong reactions to the measures taken in the IEC-scenario, internalisation of external effects of traffic may prevail on industry to speed up development of vehicles and aeroplanes which are low on emissions.

The output of the STEMM Passenger Model clearly indicates that the best way towards sustainable transport is to support improved infrastructure supply by economic incentives.

Both applications of the freight model gave very accurate results once cost functions had been optimised. Model runs were carried out in conjunction with the case study teams who reviewed results and revised the settings. This iterative process was continued until the case study teams had sufficient material to carry out their part of the project. The results produced by the model at its current state of development are

- Reliable, intuitively sensible and consistent with other studies.
- Commercially plausible.

The model has both political and commercial applications. On the political side it can allow various instruments to be tested, as described in the case studies. Commercial applications would include such items as:

- Demand forecasts for operators investing in new ferries, intermodal services, and terminals.
- Demand analysis - Which existing traffic flows can be diverted easily?
- Pricing on new routes.
- Location of intermodal terminals.
- Impact of regulatory measures.

STREAMS Strategic Transport Research for European Member States

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Details: http://www.cordis.lu/transport/src/streams.htm

The STREAMS project is elaborated for the European Commission (DG VII) within the 4th Framework Programme. The project has started in May 1996 and had duration of 30 months. The project provides a strategic level analysis of how European transport systems will cope with possible future levels of demand.

The STREAMS project had three main objectives:

- to develop a new multi-modal, network-based transport model of the European Union;
- to produce base reference forecasts of transport in the EU in 2020;
- to develop new software to streamline model running and results presentation

The main characteristics of the STREAMS model can be summarised as follows:

- is multi-modal, the model base year is 1994 and the model forecasts to 2020, working at the level of a typical day;
- has comprehensive ‘real’ networks for all modes and inter-modal connections;
- has independent passenger and freight model components, each highly segmented for forecasting purposes;
- include a special treatment of local trips;
- incorporate the STREAMS software development programme designed to make models easier to use.

The STREAMS model comprises 232 zones which correspond to NUTS2 or below for EU15 countries, together with a representation of the rest of the world as external zone. The STREAMS model was calibrated at the base year 1994 and validated against observed data of national and international traffic by country and purpose of the trips. Observed data was drawn from EUROSTAT statistics plus other national sources.

The freight model consider 10 transport modes: short distance and long distance trucks, bulk rail, container rail shuttle, bulk inland waterways, container inland waterway, bulk shipping, container shipping,

air freight and pipelines. Within the freight model 10 different freight categories are considered: 6 bulk or general cargo and 4 unitised, based on the NSTR classification. A Regional Economic model is used to model freight flows on the basis of the Input-Output (IO) methodology. The trade volumes are generated in monetary units and fed into the STREAMS freight model where are converted in freight flows expressed in tonnes, split among the transport modes and assigned to the networks. The results are checked with TREX flows, but this method does not consider the intercontinental flows and there was difficult to get regional input/output information, thus analogy method was used.

The passenger model considers 6 transport modes: car, coach/bus, slow mode (only for short trips under 40 km), conventional rail, high speed rail, air (only for trips over 40km), and 9 trip purposes. 20 population groups are defined, each of the group having a trip rate for each of the trip purposes.

The model is validated for the base year 1994. The calibration process focus on the network issues, the passenger model and the freight model. A reference scenario consisting of demand and supply related assumption is developed for year 2020. Both future demand and traffic related flows are the outputs of the model application for year 2020.

SCENES Modelling and Methodology for analysing the interrelationship between external developments and European transport

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Details: http://www.cordis.lu/transport/src/scenes10.htm

SCENES project is developed under the 4th Framework Programme of the European Commission, and is answering to Tasks 1.1.2.10/1.1.2.11/1.1.2.12. The project has started in January 1998 for a period of 28 months.

The objectives of the SCENES project are threefold:

- to produce transport demand scenarios for the EU for 2020 and beyond. These scenarios are made up of external, socio-economic scenarios, and sets of policy scenarios.;
- to develop detailed forecasts of factors which will affect transport demand into the future. These forecasts are used to inform the development of the scenarios. A databank of variables, covering EU countries and a range of countries in Eastern Europe, will be produced;
- to extend (to Eastern Europe) and enhance (with new data) a strategic transport model of the EU and carry out model runs based on the scenarios. This model will be linked to an 'appended' module on freight, to demonstrate how models working at different levels of aggregation can be connected in a consistent way.

The SCENES project builds closely to the work carried out in the STREAMS and SCENARIO consortia. The STREAMS model can be seen as a successful prototype for the more extensive model developed within SCENES. This new model is broader in terms of geographical coverage, and more detailed in its treatment of the EU countries. The model is extended to cover countries in Central and Eastern Europe (CEE) and includes an 'appended module', which incorporates aspects of freight logistics indirectly within the modelling framework.

The work of re-specifying the STREAMS model for SCENES is concentrated in four main areas:

- expansion and changes to the multi-modal networks;
- development of passenger demand model and passenger transport supply specification;
- development of the Regional Economic Model (REM) for freight demand;
- the development and assimilation of the freight logistics 'Appended Module'.

FORECAST 2020 Transport Forecasting Goods and Passenger for the year 2020

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TNO, NEA, IWW and Mkmetric have combined their expertise in transport system analysis and forecasting to undertake the study for passenger and freight transport forecasts for Europe in 2020. This expertise concerns:

- long-standing overall experience in transport forecasting at the European level, and
- a set of databases and models which have been tested extensively for purposes very similar to the one in this study.

The combined state-of-art expertise of the four organisations allows to concentrate on those issues which are typical to this project, and which, if not taken into account in a proper way, can prove to become veritable barriers to provide the required forecasts.

These issues concern:

- The data problem that European transport research is faced with. Both in passengers and in freight transport, the consortium has formulated a forecasting methodology that makes maximum use of all relevant data in a cost-efficient way.
- The focus on transport chain analysis and traffic assignment in multimodal networks, the consortium is experienced in both the specification of complex system models and also in applications at a European scale.
- The requirements of scenario-based forecasts for both passenger and freight transport. The consortium has covered scenario reconnaissance and transport forecasting studies at the European level, dealing among others with specific socio-economic integration issues.
- A careful balance between passenger and freight transport for Europe-wide transport flows. The above mentioned circumstances and requirements differ for these segments of the transport system; however, an integrated treatment is required when it comes to common issues such as socio-economic development and use of infrastructure.

For this study the need to collect statistical data is limited to a minimum and a methodology is provided to produce reliable forecasts for Europe. The strength of the study lies in:

- the availability of multiple-source databases for passengers and freight in Europe;
- software tailor-made to the available data for estimation, forecasting and GIS-processing;
- an integrated approach towards transport database design and chain analysis; which allows to propose an intuitive and dynamic method for scenario-building and forecasting.

The results of the 2020 Forecasting study are represented by forecasted transport demand and traffic flows per transport mode, for horizons 2000, 2010 and 2020 per scenario: Reference, Sustainable Policy and Rapid Integration.

TEN PAN Traffic Forecast on the Ten Pan-European Transport Corridors of Helsinki up to the year 2015

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Details: Phare Transport Programme Project B5-97-052

The project is carried out on behalf of the European Commission within the framework of the Phare programme. The final report is published in August 1999.

The main objective of this multi-country Phare project is to achieve a common basis in terms of databases and forecast methods for the 13 Phare countries and to apply this method to the multi modal network in the Phare countries, using the TINA network as a basis. The consultants have added to this the objective to link this common basis with databases and methods of studies executed on behalf of DGVII of the Commission, including a common basis of splitting up countries into regions comparable with the NUTS-2 level. Another additional objective relates to the dissemination of the results: the databases, the methods and the forecasts.

The following main steps are distinguished in the project:

- The construction of the base year database (freight and passenger OD's, networks);
- The forecasting process (definition of scenarios, method of OD's forecast, method of traffic flows forecast);
- The forecasts (results of the forecasting process as OD volumes and traffic volumes on the network).

The base year database for passenger and freight contains the dimensions mode, region of origin, region of destination, type of goods (freight), and purpose of trip (passenger). Road and rail networks are also developed.

Based on the base year databases forecasts were made based on scenario's being build using following dimensions:

- economic growth (low, moderate, high);
- infrastructure development (existing infrastructure, gradual development, full TINA network);
- speed of harmonisation transport markets.

The moderate economic scenario for the years 2000-2015 is similar to the development in the TINA moderate scenario in its interim report. However the recent developments and forecasts up to the year 2000 have been updated due to the latest available sources, resulting in a slower development in the period between the base year and 2000.

The moderate economic scenario has been modelled in several combinations with infrastructure development and harmonisation levels of the transport market

- The existing network in combination with a relative slow integration in the transport market (Scenario B);
- A partly completed network due to financing possibilities (as seen by the consultant) in combination with moderate integration (Scenario C).

The complete TINA-network updated to western standards and relatively high integration of the transport markets (Scenario D).

For sensitivity analyses in freight transport a variant has been tested to scenario B containing the present modal split as in the basis year (per type of goods per relation), so showing only the effect of economic development (scenario B1).

In relation to scenario D a variant containing for freight transport western European modal-split functions has been elaborated as sensitivity analyses (scenario D1).

The low economic scenario has been elaborated in combination with the existing infrastructure and a relatively low degree of integration of the transport market (scenario A). The high economic scenario has been combined with the completed infrastructure development and a high degree of market integration (scenario E).

The consultants advice to use the forecasts of scenario B as the reference scenario for developing infrastructure plans as part of the realisation of the network as described in the TINA report. For the estimations of variances to the full completed network in the further future scenario D can be used as being the reference for the completed infrastructure.

The forecasting techniques used contain growth models, partly based on developments of transport times and costs and partly based on the effect of harmonisation of the transports markets within Europe. Before applying the assignment phase the tons of freight transport and the number of passengers are translated into number of vehicles (road) and trains (rail).

During a seminar in spring 1999 the database, the scenarios as well as the first results have been evaluated, again under participation of all institutes involved.

Databases, for base year and forecasting years, networks, tools for applying variants to the scenario's and calculating sensibilities here and presentation tools have been put into a toolbox by country, made available to the participating institutes and to the Phare and TINA secretariat.

EUFRANET European Freight Railway Network

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Details: http://www.cordis.lu/transport/src/eufranet.htm

EUFRANET is a project funded by the European Commission under the transport RTD programme of the 4th Framework Programme. It aims to identify and evaluate a Trans-European rail network mainly dedicated to freight transportation.

The goals of the EUFRANET project are to contribute efficiently to the economic and social growth of Europe through the improvement of rail transport. To achieve these goals EUFRANET was focused on the following three aspects:

- Identification of solutions to employ the system in a more optimal way. Special attention is paid to the problems of traversing saturated zones, to the development of new routing systems which could reduce the utilisation of terminals during the peak periods and to improving efficiency which is at present limited by train capacity with a view to achieving optimal costs.
- Elimination of bottlenecks that limit the transport capacity. Here special attention is paid to the mixture of various types of traffic that causes these conflicts, in particular with regard to dense urban areas and especially in the peak period of time, and to the limitations resulting from a temporary concentration of passenger trains departing from large agglomerations in the evenings.
- Development of a strategy at European level.

The model system is based on NEAC database in 1992 and EUFRANET shipper's Survey 1997. Forecasts are made until 2020. The EUFRANET project considers the freight transport domain. The transport modes considered in the project are rail, road, combined transport and waterway.

The modelling process is based on the classical four-step technique, with inclusion of a dynamic equilibrium between demand and supply model. The base matrices (OD flows between NUTS2 areas) are based on the NEAC transport information system and on the modelled data. The modal choice model is based on the EUFRANET shipper's Survey 1997.

The results of the project are expressed in OD-flows by mode and traffic assigned flows on the rail network. From the methodological point of view a new modelling approach has been developed giving first European freight projection for transport potential and for modal split at a regional level with a distinction for rail between bulk train, conventional trains and inter-modal traffic, per type of product.

The trend projections for rail shows that without new strategies, rail's modal share will drop from 14% today to less than 9% at the horizon of 2020. The figures differ from one country to the other, but the decrease is general. The inclusion of EUFRANET strategies (introduction of different rail operating systems, of the quality factors, of the rail strategies with time savings of 20 to 30%) could reverse rail decreasing trend, stabilise the rail modal share and even increase it back to 18% or 20% if more stringent conditions are implemented.

ATOM Improving European access to transport models

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Details: ATOM is funded by the Transport Directorate of the European Commission and is part of the Fifth Framework Programme of Research into Sustainable Mobility and Intermodality
http://fpiv.meap.co.uk/fpiv/ATOM.htm

The project will begin by examining the Commission's requirements for transport models at the European and other levels. It will also link to another project (SPOTLIGHTS) reviewing the current availability of transport models in Member States. Account will be taken of the relationship between model capabilities, the institutional structure of the Commission and the policy making process.

The first phase of the ATOM project will result in an initial definition of options for accessing transport models. These will then be short-listed according to a set of assessment criteria, including cost, ease of use and conformity with EC policy objectives. The final stage of the project will involve specifying how the preferred option or options will be implemented and prototypes or demonstration examples will be set up.

PRIMOLA Interregional Project for Sustainable Transalpine Freight Mobility

Guglielminetti Paolo, Buri Jean-Daniel, Leyvraz Jean-Pierre, Diana Marco (2001)
Projet interrégional pour une mobilité durable des marchandises à travers les Alpes - Rapport de synthèse (Projetto interregionale per una mobilità durevole delle merci attraverso le Alpi - Rapporto di synthesi), ITEP/EPFL & Politecnico di Torino, Lausanne & Torino.

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PRIMOLA stands for PRojet Interrégional pour une MObilité durable des marchandises à travers Les Alpes (that is "Interregional Project for Sustainable Transalpine Freight Mobility"). The project has been carried out between 1999 and 2001 and has been supported by the Interreg II Italy - Switzerland project founds, aiming to promote trans-border collaboration between those two countries.

The project results highlight main basic aspects:

- The wealth and the density of trans-Alpine Franco-Swiss-Italian rail networks that link North Sea's and Mediterranean ports, as well as their diversity and heterogeneity and even their dilapidation - hence the potential to develop and to modernise them.
- The structure, characteristics, and modal split of intra-regional and interregional freight transport demand, and its possible development in the medium term.
- The complementary nature between existing and projected trans-Alpine rail links; the benefits resulting out of major network enhancements; and the necessity to coordinate the modernisation of all of the existing corridors in order to provide a sure and worthy alternative to road transport. Such an improved balance between rail and road freight traffic is paramount for a more sustainable development of the Alpine regions.

Main results of PRIMOLA are:

- To estimate how the evolution of modal split is affected by the relative competitiveness between modes, in one hand, and the transformation of the freight demand structure, on the other hand.
- A better understanding of the shippers' characteristics and their mode choice criteria, thanks to an extensive survey that has been conducted in Piedmont.
- Build up of a database on the characteristics of lines and nodes of the rail network in the North-West Alpine region, and on the traffic loads.
- Comparative analysis of trans-Alpine corridors, especially regarding freight traffic.
- In-depth analysis of cross-border stations, especially regarding trains' handling and operations.
- Development of a new operational planning model for the rail freight transport, based on level of service optimisation.
- Assessment, using this model, of the new infrastructures projected for the year 2007, especially the new Lötschberg basis tunnel and the new high-speed Turin - Milan line.

Main conclusions of PRIMOLA state that:

- Competition between modes is the main cause for the reduction through the years of the rail modal share. To better balance modal split, it is thus necessary to upgrade the railway transport supply.
- A policy for Piedmont aiming to provide incentives for companies to localise near transport nodes would allow for more optimised logistics services and would generate sufficient freight volumes to sustain profitable rail and combined transport.
- To promote rail transport in the medium term, action on infrastructure should aim
  - To eliminate technical disparities between lines connecting to the same cross-border station, in order to create homogeneous rail corridors;
  - To reduce red-tape induced delays in crossing borders thanks to better information and more efficient coordination among rail operators;
  - To increase capacity of the combined transport logistical platforms in areas where there is a high potential for such a transport.
- Within an optimised rail transport supply
  - The Simplon corridor should ensure 18% of the overall trans-Alpine freight traffic (through the Ventimiglia, Mont-Cenis, Simplon, and Gotthard corridors), up from its 12% share in 1999; with the new Lötschberg basis tunnel and projected enhancements on the access lines, this share could raise up to 22%;
  - Start of operation of the new Turin-Milan high-speed line would induce significant traffic rerouting in this corridor, regarding traffic from or to France, traffic from or to Simplon, and traffic between Turin and Milan.

3.2.2 Austria

Author of this section: ICCR

The most up-to date family of models currently used on a national level in Austria was produced in connection with the Austrian Federal Infrastructure Plan. There are two separate models for freight and passengers. Both models were calibrated by using large scale user surveys.

Passenger Transport Model for the Austrian Transport Infrastructure Plan

Bundesministerium für Verkehr, Innovation und Technologie – BMVIT (1996)
Modellrechnung Personenverkehr, Bundesverkehrswegeplan (Arbeitspacket R-1), Wien, BMVIT.

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Details: Available from http://bvwp.bmv.gv.at/Erstellung/r_1.html

The aim of this work package for the preparation of the Austrian Federal Transport Infrastructure Plan was to model passenger transport on road and railway in Austria. The survey about the transport behaviour was undertaken with a nation-wide household panel with a sample of 14 000.

A direct calculation concerning matrices of transport relations was not possible with data already gathered, therefore, a specifically developed transport model was important to establish.

Overall, the scope of transport measures at a strategic level should be described. Every case studies contains a number of measures which all comprise the same direction of transport policy: Through more diversified offers of public transport as well as an increase in petrol prices for individual transport there should be a decrease in demand for individual transport and an increase in public transport.

Freight Transport Model for the Austrian Transport Infrastructure Plan

Bundesministerium für Verkehr, Innovation und Technologie – BMVIT (1998)
Modellrechnung Güterverkehr, Bundesverkehrswegeplan (Arbeitspacket R-2), Wien, BMVIT.

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Details: Available from http://bvwp.bmv.gv.at/Erstellung/r_2.html

The aim of this work package was to model the freight transport on road and railway in Austria. The survey was undertaken with a nation-wide household panel with a sample of 14 000.

This work package should make sure that all current transport demand for freight transport should be described in a model whereby all available data should be included comprehensively in the model.

Furthermore, it was the aim to estimate the impacts of transport policy and infrastructure measures on the demand for freight transport. This task was undertaken with case studies which investigates different transport policy frameworks and different strategies for infrastructure development. As an outcome, the aim was to calculate the probable development of transport demand for all those case studies. The basis for undertaking this was a prediction of all structural data for freight transport (e.g. the development of the different industrial sectors) as well as the spatial dispersion.

Brenner Base tunnel – Multi-Modal Multi-Commodity Forecast

Prognos (2001)
Brenner Basetunnel – Multi-Modal Mutti-Commodity Forecast, Basle, Prognos.

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Details: Available from www.netr.fr/think-up

In November 2000 the Brenner Base Tunnel European Economic Society in Innsbruck commissioned a study on the updating of the Trans Alpine Traffic Study of the European Commission from 1998 with a focus on the development of traffic at the Brenner. The objectives of this study were to actualise time horizons from the base year 1992 to 1999 and to extend the forecast to 2015 with updating all socio-economic base data. The infrastructure is completed under the assumption that all planned tunnels will be in operation. This means the base tunnels Mt. Cenis, Lötschberg/Simplon, Gotthard/Ceneris, Brenner and Semmering are included.

In contrast to the Trans Alpine Study this study enrols three main scenarios and one worst case traffic scenario. For the main modes road and rail passenger air demand for trans-Alpine relations in 2015 is included to calculate a shift from air to rail. For limitation of potential variations three major scenarios: trend-scenario, consensus-scenario and do-nothing-scenario were established. Additional a specific scenario based on the do-nothing-scenario without Brenner base tunnel and a closed NEAT-Gotthard base tunnel was carried out.

The study results in forecasts with increases at Brenner of about 70 % in road freight traffic and in rail freight traffic 3 times more (26.5 Mio. t) than in 1999. Furthermore it is shown that it is not sufficient to establish only new railway infrastructure without additional measures for passenger and freight rail transport. Even Common Transport Policies with highway tolls have only slight effects (10 %) on a shift of freight volumes at Brenner. The effects of road tolls (LSVA) in Switzerland are not strong enough to compensate the effects of the suspended 28 tons limit for trucks.

3.2.3 France

Author of this section: NESTEAR

Many types of models have been used for Alpine crossing studies in France for passengers and freight.

For passengers, there is a "classical" price-time model that has been used for several HST projects in France, for crossing the Channel and for the Paris-Brussels-Cologne-Amsterdam project. This model has proven to give good results in particular for competition between air and HST.

However, the competition conditions become more difficult to model. HST is also in competition with motorways, particularly in the Lyon-Turin project since interregional links on shorter distances, between Rhone-Alps and Northern Italy are also very important on that scheme: regional concerns are growing in large international project and this is also part of the democratisation of a process which goes with major projects.

Furthermore for long distance competition, the price indicators are more and more difficult to introduce in the models: yield management implies prices differentiated according to time and type of customers: time of the day, day of the week, week of the year, and as far as type of customer, young and older passengers as well as specific group tariff.

Finally in the North-South long distance trips, it is to be kept in mind that most trip purpose are leisure trip which also evolve very quickly in terms of type of destination (cultural trips, urban visits) and frequency (shorter trips and more frequent).

In order to take into account all these new elements two different directions have been taken in France for passenger modelling:

- introducing more details in the modelling as it is done for example on MATISSE model which has been used for evaluation of the HST European network: in this European wide study done with Intraplan, the "missing links", and among them two main trans-Alpine corridors have been chosen for specific investigation in 94-95
- stressing research on tourism, for more qualitative, parallel analysis, on the choice of destination an choice of mode.

Concerning freight many types of models have also been used:

- multimodal models for major type of products, linking economic trade with transport
- some networks modelling using utility function and desegregate modelling.

Recently focus has been put on the choice of alternative routes to cross the Alps in order to show what will be the consequences of the removal of the 28 t ban in Switzerland, combined with different assumptions of road charging. These studies have been conducted by SES, based on a survey conducted by MVA. The result is that a very significant number of trucks can change of route and shift back to Switzerland, especially if the restrictions are removed, and in particular night bans.

However, few European network models have been utilised in France and this should be done in the year to come, using the results of European modelling.

3.2.4 Germany

Author of this section: IWW

The Federal Investment Plan

The assessment of projects proposed for the Federal Investment Plan (BVWP) entails the necessity of a very detailed, nation-wide transport model, which contains all networks (road, rail, inland navigation, air) and all transport markets (passenger and freight). The basis for the modelling work is formed by matrices of transport demand, which are on a county level (between Nuts-3 and Nuts-4). For passenger transport they are worked out by INFRAPLAN, while freight matrices are developed by Kessel + Partner (Freiburg). The network assignment of passenger and freight traffic is carried out by the company SSP (Steierwald-Schoenharting + Partner) for several years from 2000 to 2015. The networks used are extremely detailed, as they include motorways as well as district- and county roads and the entire rail and inland waterway networks. As the different modelling steps are carried out sequentially, no feedback from network capacities to traffic demand or modal shift is possible within this "virtual" investment framework.

The general procedure of the Federal Investment Plan is described in the Transport Report 2000 (Verkehrsbericht 2000) of the Federal Ministry for Transport, Building and Housing.

The IWW VACLAV Model

VACLAV is a multi-modal network model, which has been designed to analyse inter-urban passenger traffic patterns in Europe. It is based on the classical four-step approach: Demand modelling, destination choice, modal split and network assignment. On the national level, an extended version has been applied to analyse the route shift effects from the motorways to the secondary network caused by the introduction of the HGV motorway toll in 2003 in Germany.

For specific trans-Alpine traffic forecasts the model has been applied in the EU research projects PETS (Pricing European Transport Systems) and STEMM (Strategic Multi Modal Modelling). Further recent applications in the field of Trans-European network planning are the Forecasts-2020-project, the analysis of the Helsinki Corridors and the Magistrale for Europe (still running).

The IWW ESCOT-Model

ESCOT is a system-dynamics model for Germany, which is capable to forecast the long-term impacts of regulatory measures, policies and socio-demographic and economic developments on transport and its effect on social welfare and the environment. It was created on demand of the Federal Environment

Agency in order to provide a German input to the OECD activity "Environmentally Sustainable Transport (EST).

The TREMOD Model

On demand of the Federal Environment Agency the company IFEU (Heidelberg) has developed a transport model, which estimates total mileage driven by network type, traffic condition and vehicle category. The latter is highly differentiated by weight classes and emission factors and thus the model permits to calculate total emissions, time losses and other effects of transport. The transport demand is determined by the registered vehicle fleet, border crossings, fuel sell statistics and average fuel consumption rates per vehicle type and traffic condition.

The DIW Method

The German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung - DIW) annually publishes statistics on vehicle kilometres driven by vehicle category on different network types. These figures are calculated by comparing fuel sells, fuel consumption reports and traffic counts. The figures do not differentiate by emission standards or traffic conditions and thus do not allow to derive figures of pollutants emitted or time lost in congestion.

3.2.5 Italy

Author of this section: DITS

New railway line for the south side of the Gottardo tunnel – Feasibility study / Final Report

See section 3.1.5 for a complete description of this document

Analysis on the effects on traffic flows due to the closedown of the Monte Bianco Tunnel

Società Italiana per il traforo del Monte Bianco
Analisi sugli effetti sui flussi di traffico dovuti alla chiusura del Monte Bianco (1999).

Contact: Mr. Michele Tropiano, Società Italiana per il traforo del Monte Bianco
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This study was carried out with the aim of evaluating the short-time effects produced on traffic flows as a consequence of the closedown of the Monte Bianco Tunnel after the accident of March 1999. The scientific co-ordinator of the research was Anna Gervasoni, Director of the Transport Management Research Centre, University "C. Cattaneo", Castellanza.

The study was divided into the following phases:

- general framework of the traffic problems related to closedown of the Monte Bianco Tunnel;

- analysis of the phenomena of traffic loss connected to the renunciation of passenger and/or freight transfers due to the unavailability of the Tunnel;
- analysis of the phenomena of traffic diversion, both freight and passenger

An assignment model was used in order to evaluate traffic flows within the new scenarios; O/D matrices were obtained by data referred to year 1992 and these figures to time horizons corresponding to years 1999 and 2000.

3.2.6 Slovenia

Author of this section: MARIBOR

Transport Master Plan Study for the Republic of Slovenia (Underlying model)

Prognos AG and Institute of Traffic and Transport, Slovenia

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Details: National PHARE programme
Available from: Ministry of Transportation of Republic of Slovenia

The modelling of the Slovenian transport system requires a large and detailed database on the transport sector as well as socio-demographic and economic data. Parts of the required input were not available or not adequate for the model. Thus, assumptions and data transformations had to obtain a proper database for the model.

For the supply side of the Slovenian transport sector, a comparatively good database was available. From a computer based geographical information system (GIS) the complete Slovenian road and rail network with all relevant attributes, like geographical co-ordinates, length of link section, type of link etc., was available. The network data relevant for inter-zone traffic was transferred to POLYDROM and prepared for a traffic simulation of motorways, trunk roads and parts of regional road network was included.

The data on the demand side of the Slovenian transport system is based on a zone level of 62 zones in Slovenia and 16 foreign zones. The zoning is based on the statistical availability of large parts of the data. The zoning within Slovenia is related to the boundaries of municipalities in 1993. The geographical data base and coding was obtained from the Ministry of Environment - Geographic Information Centre.

The estimation of the passengers transport demand in the year 1993 is based on the mobility of the population of the Slovenian zones. The zone mobility was derived from the population, the employment and motorisation. As there were no studies on the specific mobility in Slovenia available, it was derived from statistical data of Western European countries. It was assumed that motorised trips are mainly determined by the availability of private cars and the demand for public transport by the number of inhabitants that have no private car available. The distribution of the traffic between the Slovenian zones was generated by a gravitation model approach, i.e. trips between zones increase proportional to the population of the zones and decrease with the travel time between the zones. As an additional source for inter-zone rela-

tions, the census of 1991 was used. Taking into account the employment of 1993 the share of trips to work between the zones was derived from this database.

The structure of the trips between Slovenian zones and external zones was deduced from a border crossing survey study carried out for the Directorate of the Republic of Slovenia for Roads 1994. The study used a comparable zone structure within Slovenia and covered all border crossings of Slovenia. The 1994 data was adjusted to the base year 1993. Based on this study the passenger trips between Slovenian zones and foreign countries as well as the transit trips were investigated.

The demand for freight transport was estimated based on the zone production and consumption and data on import, export and transit freight transport for road and rail. From Statistical Office of Slovenia data on total production and consumption for each zone was available. Import/Export volumes from the zones to other countries were also available. With these data, total production and consumption of the zones were split in a part of freight that is used inside the zone, a part that is transported from/to other zones within Slovenia and an import/export part of freight.

The structure of the trade between the Slovenian zones was not available. Thus similar to the passengers transport, a gravitation approach was used. In the case of freight transport, employments per zone were used as the "generating force". Such an approach is acceptable as a starting point but surely not satisfying. If a detailed survey is not available, a detailed analysis of the national input/output structure on the zone level may be undertaken this was not envisaged under the study program.

The freight transport between foreign countries and Slovenian zones as well as the transit traffic were again derived by the mentioned survey of the Slovenian border crossings.

The split between rail and road transport is based on official statistical sources. From these sources, the share of rail and road freight transport on the total amount of transported freight of the zone was derived. The origin-/destination matrices for road and rail transport of freight were established in average lifted tons per day.

The estimation methods show that there exist serious gaps in the available data. In our view the most import gap is the lack of information on the structure the interurban domestic traffic. The border crossing survey was a very valuable source. It is highly recommended to do such surveys in regular intervals at least on the main road and railway links. Also more information on the specific mobility behaviour of Slovenian inhabitants, e.g. through a household survey, would be helpful.

For the freight transport sector, more information on the structure of the freight flows should be available. An analysis of zone input/output structure can be a starting point that should be extended by a survey.

3.2.7 Switzerland

Author of this section: ECOPLAN

Overview

Transport models in the field of passenger and freight transport can be split up in two categories, one of them comprising modelling attempts for specific projects. A second category encloses strategic models seeking to portray developments that are more general and scenarios in the field of freight and passenger transport.

Several efforts to model rail and road transport for both the passenger and the freight sector, have been undertaken in recent years and/or are still on their way. In the framework of the European Research Projects STEMM and PETS (4th Framework Programme), detailed models have been established for passenger as well as for freight transport. Among others, the models have been used to estimate future trans-Alpine transport volumes. As these projects are situated at the European level, they are introduced in the respective section of the present paper.

As of today, there is no differentiated model meeting high standards of sensitivity with respect to policy actions available for Switzerland. However, in the DETEC, a corresponding model is being established, covering road, rail as well as combined transport in Switzerland. A closer insight is given in the report presented below, but more specific information concerning the model and corresponding applications is not yet available.

In the context of the New trans-Alpine Rail Link (NARL), several partial models have been developed in Switzerland. Other attempts have been made with respect to the implementation of the Mileage-related Heavy Vehicle Tax in Switzerland as well as running parallel to the Bilateral Agreement on Land Transport (BALT) on road and rail goods traffic between Switzerland and the EU.

Inland freight transport: An intermodal model for Switzerland

GVF Dienst für Gesamtverkehrsfragen (2000)
Intermodales Modell für den schweizerischen Binnengüterverkehr (GVM-CH). Methodenbericht. GVF-Bericht 2/2000. Bern.

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Details: Available from: Eidgenössische Drucksachen- und Materialzentrale (EDMZ), CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.534.d

In addition to carefully targeted changes to traffic infrastructure, the guarantee of sustainable mobility also requires intelligent traffic system management. A Swiss freight model had been worked out in the 1970s, within the context of the SICT, as a traditional, sequential, 4-step model. Classic 4-step models are mainly based on modelling potential (generation / attraction of transport flows), distribution, modal split and 'levels of service'. The first three steps can be understood as demand function putting into figures how many trips or tons are generated within the transport system and which modes of transport are used. The fourth step can be regarded to a certain extent as the supply function, providing the corresponding levels of service in terms of bottlenecks, time as well as costs.

This study aims at modelling Swiss domestic Swiss freight transport using another approach. Based on the economic principle of the market equilibrium, demand functions for the Swiss inland road and rail freight transport are mathematically estimated. Theses estimates rely on transport as well as socio-economic data collected by the Swiss administration. With the method chosen for the first time here, a significant component in the revamping of a comprehensive transport model has been worked out, in line with requirements and sensitive to measures.

The elaboration of a bimodal freight transport model for internal transport in Switzerland as well as the affected assumptions are explained. The model is then used to estimate the effects on traffic levels on the roads and railways in Switzerland as a result of the comprehensive introduction of a mileage-related heavy vehicle tax and the raising of the weight limit to 40 tonnes for domestic heavy goods road traffic.

The new transport model for internal freight transport in Switzerland shows that plausible results can be derived and specific questions answered by directly estimating demand functions using appropriate basic transport and socio-economic data. Among others, it was possible to plausibly model the effects of politi-

cal and fiscal measures and their effects on the modal split nationally, at least at an aggregated level for domestic freight transport.

There is need for action, particularly in the case of the improvement of the geographically disaggregated and the relation-specific suitability for prognosis of the model and in the integration of geographically different, transport-relevant economic variables and behaviour parameters (market price, quality, logistics concepts), which were initially gathered for a small spot sample. At the same time, the domestic goods transport model should be extended to a European model for Swiss domestic, import, export and transit traffic.

System dynamics for transport (MODUM)

Keller Mario, Mauch Corinne, Heeb Johannes und Huber Felix (2000)
Modell Umwelt – Mobilität (MODUM). Ein systemdynamischer Ansatz für die Schweiz. NFP41-C2. Bern.

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Details: National Research Programme 41 Transport and Environment, Interactions Switzerland/Europe, http://www.nfp41.ch, Report C2.
Available from: EDMZ, CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.685.d

MODUM seeks to illustrate the impact of transport system interventions, showing the medium and long-term effects, as well as the results of self-enforcing and self-regulating processes.

A so-called Actor Platform - including representatives from transport associations, the administration, and transport providers - developed so-called ‘mental models’ that were subsequently implemented in a system dynamic model (Stella software).

Three scenarios were designed to illustrate the situation for passenger transport: ‘BAU’ (Business As Usual), ‘Free-flowing Traffic’, and ‘Demand Management’. The latter shows the most favourable effects with regard to environmental and economic indicators. A separate model was designed for analysing the goods traffic situation.

A special problem originates from the requirement to combine qualitative and technical-quantitative models together. The results have shown that, given the requirement, it is difficult to bring together "hard" prognosis intentions with "soft" inputs for application as a "Learning Tool". However, the model may contribute to the development of strategies by the group involved.

Transalpine Rail Network: A Capacity Assessment Model (CAPRES)

Lucchini Luigi, Curchod A. and Rivier Robert (2000)
Transalpine Rail Network: A Capacity Assessment Model (CAPRES). Lausanne.

Contact: Robert Rivier, Institute of Transportation and Planning (ITEP), Swiss Federal Institute of Technology (EPFL), http://www.epfl.ch, CH-1015 Lausanne; Phone: +41 21 693 24 79; Fax: +41 21 693 50 60; Email: robert.rivier@epfl.ch

Details: Available from: Institute of Transportation and Planning (ITEP), Swiss Federal Institute of Technology (EPFL)

The CAPRES model (Railway Network Capacity Assessment System) has been built to evaluate the capacity of a rail network. To achieve this purpose, CAPRES helps planners to design timetables at the network level and to saturate them, making possible through the process to evaluate the capacity of the network. The model has been developed by ITEP-EPFL in partnership with the SBB/CFF.

During the timetable saturation process, CAPRES takes into account infrastructure, rolling stock and operations characteristics. It proceeds according to user-defined strategies involving train succession rules and priorities allocation, particularly concerning the use of available capacity for the various train categories. The construction of the saturated timetable is carried out through a set of events (train departures and arrivals), which are subject to a number of constraints, such as running and stop times, connections, headway etc. The problem is solved by an optimised branch-and-bound algorithm. Major station's operations are modelled by a specific track assignment algorithm with constraints between events.

CAPRES has been used to analyse implementation alternatives for the North-South railway crossing through the Swiss Alps. Those applications have clearly shown the effect of integrating high-performance lines with the existing network. It has been possible to verify the feasibility of planned timetables, to pinpoint bottlenecks, and to assess effects on capacity of various infrastructure and service alternatives. As a result, the various scenarios for the development of services in the North-South rail corridor have been evaluated for the next 20 years. CAPRES methodology and results have been certified by the Swiss government and by the major Swiss railway companies.

Transalpine Freight Transport System: 2005 – 2020 Scenarios

Dalla Palma R., Chevroulet T., de Tiliere G. et. al. (2000)
Transalpine Freight Transport System: 2005 – 2020 Scenarios. Lausanne.

Contact: R. Dalla Palma, Institute of Transportation and Planning (ITEP), Swiss Federal Institute of Technology (EPFL), http://www.epfl.ch, CH-1015 Lausanne; Phone: +41 21 693 24 76; Fax: +41 21 693 50 60; Email: renato.dallapalma@epfl.ch

Details: Available from: Institute of Transportation and Planning (ITEP), Swiss Federal Institute of Technology (EPFL)

In the framework of the EU research project SCENES, a trans-Alpine freight case study has been carried out. A transport model has been developed in order to estimate how freight traffic will be allocated amongst all Alpine paths, depending on EU countries' national transport policies.

The model has been designed as a set of interdependent modules and is fully compatible with standard spreadsheets. This guarantees for further integration of air pollution and other sustainability issues, and this again shall allow to forecast the effect of new policies or to estimate the impacts of trends.

First, a simplified projection scenario has been elaborated which was intended to serve as a 'landmark' to compare other more sophisticated scenarios. An interactive module has then been added to make the model respond to changes in infrastructure capacity, transport regulation (weight, night driving, border crossing time) and transport costs (fuel, taxes, wages) as well as improvements in the logistics chain (load, time savings).

The first results – based on three scenarios – show how road and rail infrastructure will be used along the Alps between now and 2020, depending upon transport policies and economic development in EU Member states and in Switzerland.

The Effects of the Bilateral Agreement on Land Transport on Road and Rail Goods Transport in Switzerland

ECOPLAN (1999)
Die verkehrlichen Auswirkungen des bilateralen Landverkehrsabkommens zwischen der Schweiz und der Europäischen Union auf den Strassen- und Schienengüterverkehr. GVF-Bericht 2/99. Bern.

Contact: Dr. Heini Sommer, ECOPLAN Economic and Environmental Studies, http://www.ecoplan.ch, P.O. Box, CH-6460 Altdorf; Phone: +41 41 870 90 60; Fax: +41 41 872 10 63; Email: sommer@ecoplan.ch

Details: Report for the Federal Department of the Environment, Transport, Energy and Communications, available from: http://www.admin.ch/gvf/funktionen/aktuell_g.html (report 2/99) or http://www.ecoplan.ch/Projekte/SVA4engl.html; or from Eidgenössische Drucksachen- und Materialzentrale (EDMZ), CH-3003 Bern, http://www.admin.ch/edmz, Order Number 801.558.d

The study examines the effects of the Bilateral Agreement on Land Transport (BALT) on road and rail goods traffic in Switzerland. Based on a sophisticated Excel-Application, the effects of the higher weight limit as well as the impacts of the simultaneously introduced MRHVT are modelled, taking into consideration that:

- the structure of the fleet of heavy vehicles in Switzerland will change;
- less empty rides will occur and
- the cost structure of road freight transport will change.

In the inland and import/export traffic, the increase of the weight limit along with the simultaneous introduction of the Mileage-related Heavy Vehicle Tax (MRHVT) affects productivity, so that the road performance here is lower than under the basic scenario (28-ton limit without MRHVT). In the transit traffic, the BALT causes above all a redistribution of former detour traffic over France and Austria into Switzerland. If the potential rail capacities are fully realized, the number of trans-Alpine road goods transport passages can be drastically reduced with the opening of the first NARL tunnel.

More Combined Transport with Fewer Terminals

Ruesch Martin, Paras Milan und Kettner Simon (2000)
Standort- und Transportkonzepte für den kombinierten Ladungsverkehr. Verlagerungspotentiale und Umsetzungsstrategie für den Import/Export. Und Binnenverkehr. NFP41-B2. Bern.

Contact: Martin Ruesch, RAPP AG, http://www.rapp.ch, Oerlikonstrasse 38, CH-8057 Zürich; Phone: +41 1 312 36 56; Fax: +41 1 312 32 13; Email: martin.ruesch@rapp.ch

Details: National Research Programme 41 Transport and Environment, Interactions Switzerland/Europe, http://www.nfp41.ch, Report B2.
Available from: EDMZ, CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.681.d

With an optimised concept for terminals, combined goods traffic (containers by rail, final distribution by road) could shift about 1 million additional tonnes of goods (25 per cent) from road to rail, and so reduce the overall road freight volume by 2 per cent. On the other hand, if other countries were to introduce heavy vehicle fees at a similar level to that in Switzerland, the combined goods traffic could increase its market share by a factor of between four and ten, and consequently reduce overall road freight volumes by 15 to 40 per cent. These results, for inland and import/export traffic (i.e. excluding transit traffic), were estimated using a newly designed goods traffic model.

This showed that, out of four variants, a liner train concept with only 10 terminals instead of the existing 18 would be the best solution. However, the framework conditions at home and abroad (heavy vehicle fees, railway performance capacity) have a much stronger impact than transport concepts.

Import/export traffic offers the greatest potential for shift, and these routes should therefore have a priority for improvement. In addition, the authors recommend a national strategic plan for the improved coordination of terminal and transport concepts.

Other Research Activities and Publications in Switzerland

GTM Groupe Transport et Mobilité (1997)
The International Impacts of a New Road Taxation Scheme in Switzerland. In: Beuthe and Nijkamp (1999), New Contributions to Transportation Analysis in Europe. 97-118. Mons.

GTM Groupe Transport et Mobilité (1998)
On the Crossing of the Alpine Chain and the Swiss Regulation of Trucking. Prepared for the Research Action COST 328. In: Reggiani A. (1998), Accessibility, Trade and Locational Behaviour. 313-331. Mons.

GTM Groupe Transport et Mobilité (1998)
Impacts on Modal Choice of New Generation Terminals: Performance Analysis of a Hub-and-Spoke Network. Paper presented at the European Regional Science Association annual meeting in Vienna. Mons.

GVF Dienst für Gesamtverkehrsfragen (1999)
Auswirkungen der leistungsabhängigen Schwerverkehrsabgabe (LSVA) auf die Wald- und Holzwirtschaft, GVF-Auftrag Nr. 349. Bern.
Available from: Eidgenössische Drucksachen- und Materialzentrale, http://www.admin.ch/edmz, Order Number 801.575.d.

ECOPLAN (2000)
Auswirkungen einer emissionsdifferenzierten LSVA auf die Nachrüstung von schweren Nutzfahrzeugen mit Partikelfiltern. Bern.
Contact: Dr. Heini Sommer, ECOPLAN, http://www.ecoplan.ch, Phone: +41 41 870 90 60; Email: sommer@ecoplan.ch.

Gruber Ricardo, Zbinden René und Schmid Willy A. (2000)
Räumliche Effekte von Swissmetro. Modellsimulation der Auswirkungen von Verkehrsinfrastrukturänderungen. Teil ORL-ETHZ von Projekt F5. NFP41-F5B. Bern.
Contact: Prof Willy A. Schmid, ETHZ-ORL, http://www.orl.arch.ethz.ch, Phone: +41 1 633 29 82; Email: schmid@orl.arch.ethz.ch.

Ingenieur- und Planungsbüro Paul Widmer (2000)
Aktivitäten-orientierte Personenverkehrsmodelle, Vorstudie. SVI-Forschungsauftrag Nr. 46/99. Zürich.
Contact: Prof. Dr. Kay W. Axhausen, Email: axhausen@ivt.baum.ethz.ch, Available from: http://www.ivt.baum.ethz.ch.

3.3 Data and statistics

3.3.1 European Union

Author of this section: NEA

Overview of European state of the art

Due to European integration, many changes in economy and transport have taken place. However, the European statistical tools to monitor these processes and to provide a solid ground for new policies have remained more or less unaltered over the past decades. They are not able to detect or forecast new problems and new developments. In particular, there is a lack of data on international transport flows, the impacts of border crossing projects, new transport technologies, logistic services, transport chains and environmental impacts of transport. To make bad things worse, data availability is decreasing due to the abandoning of border control and customs documents, deregulation without enforcement of data reporting and general budget restrictions. The gap between ambitious policy goals and the availability of data is widening. It is obvious that a better statistical tool needs to be developed at the European level, a European Transport policy Information System (ETIS) should be developed.

A lot of research has been carried out to determine what should be exactly included in such an ETIS system. In the INFOSTAT project it has been decided what concepts should be included in an ETIS system. A wide range of concepts have been defined, including both basic statistical concepts and new statistical concepts. In addition, existing data has been analysed to determine the extent to which they might fulfil the conceptual requirement and gaps have been identified from the confrontation between the concepts and the existing data. In the MESUDEMO project, the specific fields of investigation are the goods transport demand indicators of ETIS (a selection of the indicators determined in the INFOSTAT project). A review method has been carried out to identify the level of compatibility between the actual proposed indicators and the structure of data available from different sources. One of the activities in the CONCERTO project was focussing on a selection of research projects judged by their relevance to the definition, design and implementation of the future ETIS. Workshops have been organised where topics related to an ETIS system have been presented. At one of these workshops, it was decided that a pilot study was necessary with building up an ETIS system in order to evaluate the need and feasibility of such a system on a European level. The idea behind was to gain a better insight into the problems involved in the development of the European Transport policy Information System, and the Trans-Alpine case (the ATIS project) was considered a good example of testing the feasibility of such a system on a European scale. Apart from the fact that an ETIS system would be implemented in reality for the first time, it is also unique that within the ATIS project the relevance and availability of variables and indicators has been discussed with experts, governments and statistical offices instead of only with researchers.

Among the new statistical concepts that have been determined is the transport chain concept. The NEAC system is an example of a system that includes transport chain databases. Much data needed for the (new) statistical concepts are very difficult to get. In the MYSTIC project a shippers survey has been carried out to retrieve as much information as possible from the descriptions of shipments.

Basic transport data on a European scale is included in the TREX and TRAINS databases from Eurostat. However, since the introduction of the INTRASTAT system changes have appeared in the quality of

these databases. A new road directive has been introduced for the construction of good quality road statistics, but it will take a few years before all member countries will produce all variables by the requested detail.

Recently ECMT has carried out a study where problems concerning data and forecasts on European level and national level for a number of specific areas have been analysed. One of these specific areas is the Alpine region.

INFOSTAT Information systems and statistics, strategic transport planning in Europe

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Details: INFOSTAT, final report for publication, contract no. ST-96-AM.101; Project funded by the European Commission under the transport RTD; Programme of the 4th framework programme.

The INFOSTAT study is to prepare the framework of statistics of a European Transport policy Information System (ETIS) that is necessary for an understanding of changes in mobility, logistic patterns and of the effects of policy tools on a European level. The study consisted of three tasks. In the first task a common system of basic principles, definitions and data standards for an ETIS system have been developed. In the second task, it is summarised to which degree available data are appropriate. The third task drafts a scheme for immediate actions to eliminate information gaps.

It was clear that old statistical concepts are not sufficient to support the achievement of European transport policy objectives. New approaches to traditional concepts and the creation of new statistical concepts were needed. For this reason, workshops have been organised bringing together decision-makers, statisticians, transport industry, and have been used as a source of fresh and innovative ideas. The outcome of their discussions has been a definition of new concepts and indicators that constitute the statistical framework of the future ETIS system. The basic statistical concepts analysed are:

- the spatial concept
- concepts in the field of passenger transport
- concepts in the field of goods transport
- transport and traffic flows
- transport networks
- economy, society and spatial organisation
- environmental, safety and public health impact of transport

The new statistical concepts analysed are:

- the transport chain concept
- the concept of intermodality
- the concept of logistic families
- the concept of quality of transport
- advanced accessibility concepts
- concepts of infrastructural and environmental bottlenecks
- the corridor concept

The ETIS list of transport-related variables and indicators has been used as a starting point to evaluate existing data according to what extent these data meet the requirements of ETIS. The ETIS list contains a large number of indicators and variables, categorised as follows:

- Spatial and land-use characteristics of the planning area
- Population, economy and society characteristics
- Transport demand indicators
- Transport network characteristics
- Transport services indicators
- Transport impact indicators

For each indicator a description is given of the variable label (e.g. description), the unit of measurement (e.g. tons/year), the observational unit (e.g. zone, OD pair) and the priority level (fundamental or desirable).

Based on this list the availability and relevance of existing European databases for ETIS has been analysed. From a broad general overview of the current data situation in transport and an in-depth investigation of six European countries it appears, that satisfactory data sources are available for indicators from the following fields: demographic and economic determinants of transport, goods transport demand (global indicators), transport network and transport impacts (accidents, environmental impacts). In many cases, however, the indicators can only be given at country level without further spatial detail. The most significant gaps and harmonisation needs have been identified in the following areas: social determinants of transport, origin-destination flows in passenger and goods transport, intermodal transport demand, combined transport infrastructure, transport services characteristics, economic and land-use impacts of transport. Even in countries with advanced transport statistical systems, indicators based on new concepts (e.g. transport chain) are normally not available. Proposals on appropriate organisational and institutional solutions for ETIS have been derived from an investigation of recent trends in official and non-official statistics and information technology as well as from a review of ongoing international database projects.

From this analyses it follows that for a number of core elements of the ETIS catalogue of transport no appropriate data sources exist today (data gaps). Therefore, it cannot be expected that ETIS can be fed directly from existing databases. Additional efforts are necessary in at least three different fields: (1) harmonisation and optimisation procedures for building ETIS indicators on the basis of existing data, (2) coordination of ETIS standards and Statistical Directives at the EU level, and (3) initiate in the long term complementary data collection or changes in data collection. In addition, a computer-based document has been developed of the sources and necessary modifications (if any) of existing data that have been identified as suitable for ETIS.

Based on the identified data gaps, schemes for certain immediate actions of data collection have been developed in order to fill the most important gaps in statistics between the required concepts needed and the current information sources. The attention is concentrated on four areas of investigation:

- Passenger flow data (long distance OD matrix)
- Goods flow data (OD data, relation between economy and transport)
- Infrastructure (major infrastructure projects like the Channel Tunnel)
- Data on intermodal transport

Finally, a pilot study has been carried out to show a method of combining transport and to fill data gaps. A transport chain database has been constructed based on trade statistics, transhipment statistics and transport statistics. It has been shown that two transhipment locations are at least necessary for transport in relation with countries that have a sea barrier with the European continent. Norway and Finland have been chosen as test cases.

MESUDEMO Methodology for establishing general databases on transport flows and transport infrastructure networks

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Details: MESUDEMO, Deliverable 2, contract no. ST-97-SC.1186; Project funded by the European Commission under the transport RTD; Programme of the 4th framework programme.

In the INFOSTAT project, ideas are developed to establish a European Transport policy and planning Information System (ETIS). As a part of the project, indicators are defined. The specific fields of investigation in MESUDEMO are the goods transport demand indicators of ETIS. These indicators are needed to describe the volume and structure of transport generated by the different mobility actors. The traditional statistical data on European goods transport flows are most restricted to a unimodal registration at an annual basis of tonne and/or tonne-kilometre broken down by commodity group and country of origin and destination. The lack of more detailed origin-destination information is seen as one of the major shortcomings of the existing transport statistics. In total 7 indicators from the INFOSTAT project are reviewed in the MESUDEMO project:

- Total annual interzonal goods transport flow by commodity group, mode (or combination of modes) and type of transport chain
- Average distance between origin and destination of transport unit by mode
- Average distance between origin and destination of the good
- Loading factor (ratio between volume and capacity) per type of transport unit by mode
- Annual total number of tons transported broken down by: size of shipment (weight), value of shipment (in Euro), trip distance (in km), containerisation (yes or no) and type of transport unit
- Average number of days of use of the transport unit
- Use of EDI, tracking and tracing of shipment

In the report, an example is given of a possible structure of a consistent database with aggregated linked data on four levels: transport level, trips level, shipment level and transport chain level.

A synthesis of the existing sources and systems is carried out which could be useful in defining the final structure of the freight transport indicators to be considered in ETIS. The review method tries to identify the level of compatibility between the actual proposed indicators and the structure of data available from different sources. The following sources were examined:

- Eurostat
- UN-ECE
- ECMT
- UIC
- National statistical organisations

The data provided by the above mentioned organisations were very heterogeneous. In addition, many national statistical organisations could not provide data.

Finally, the pilot "Transitie" has been carried out. After the disappearance of the European inner borders the quality of import, export and transhipment statistics has deteriorated extensively. Amongst government and businesses, there is a great need for reliable data on international goods flows in relation with the Netherlands. If no action is being undertaken, the quality of the statistics will become worse rather than better. Therefore, an inventory of the statistical problems in the Netherlands and a methodology, based on the indicators selected in the MESUDEMO project, is proposed to overcome the problems.

This pilot has shown that it is possible to construct transport chain information by combining different sources. The creation of a Pan-European consistent transport chain database is considering the difficulties experienced in the Netherlands rather complex. It is not ruled out that similar data problems also exist in other member states. By comparing data from different sources, it is possible to check the quality of the data. A quality check on the transport/trade data is recommended for all countries.

ATIS Transalpine pilot study and demonstrator

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Details: MESUDEMO Deliverable 10, contract no. ST-97-SC.1186; Project funded by the European Commission under the transport RTD; Programme of the 4th framework programme.

The main objective of the study is to demonstrate the need and to test the feasibility of building up a European Transport policy Information System (ETIS) applied to a chosen specific site area that raises sensible political discussions, namely ETIS applied on the Alps (ATIS). This Trans-Alpine pilot study is very relevant for the ALP-NET project because it focuses on the same geographic area and it deals with the same problems (data, modelling and policy questions).

The first step in this study was to determine the relevancy and availability of variables defined by other projects such as INFOSTAT and MESUDEMO (variables regarded as necessary for a Transport Policy Information System) for the trans-Alpine study. Not only researchers (with a theoretical point of view) have determined the relevance of variables but also experts, governments and statistical offices with different backgrounds (with a more practical point of view) from Austria, France, Italy and Switzerland have determined both relevance and availability of variables needed for the decision making process in the situation of the Alpine corridors. This was a unique event because this was the first time that different kinds of experts (not only researchers) from different countries have been asked for their opinion about the relevancy and availability of indicators and variables.

The second step of the study was to demonstrate how to develop a database containing some of the above-mentioned relevant variables and to demonstrate how this data could be used to answer policy questions. It was decided to focus on transport data for the demonstration. The concept behind the database was to contain detailed information on the land born vehicle and goods movements for all relevant Alpine crossings but also to realise a transport chain concept and to provide information on short sea shipping. No existing data source alone could provide this information. By combining different sources, a real added value had to be achieved. The following different sources were used to build the trans-Alpine database: supranational sources (CAFT, NEAC, TRAINS, TREX), transhipment data (from the Netherlands, Belgium and Germany) and national sources (from France, Austria, Switzerland, Germany, Belgium, the Netherlands, UK and Spain). These different kinds of data sources have been compared, harmonised and combined. After this process the ATIS freight database resulted containing freight flows at the regional level disaggregated per origin, destination, transport mode, transhipment location, commod-

ity group and Alpine Crossing. Finally, to show the usefulness of the database, the trans-Alpine demonstrator has been constructed. By using this demonstrator, it is possible to answer policy questions. For example, the demonstrator makes it possible to analyse the structure of transport flows over the Alps, to analyse the pattern of flows between countries, to analyse the effect of closing a tunnel and to analyse the impact of toll increases.

CONCERTO, Concerted action for European information systems

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Details: CONCERTO, final report for publication, contract no. ST-97-CA.2261; Project funded by the European Commission under the transport RTD; Programme of the 4th framework programme.

The project CONCERTO was launched under the information systems domain of the Strategic Transport Research Section of the 4th Framework to assist the Concerted Action Committee on Information Systems (CAC-IS) in exchanging the results of research and promoting of the European Transport policy Information System (ETIS), bringing it into functionality to be useful for the Commission, the Member States and the different user groups.

This project included a large number of activities. One of the activities was focussing on a selection of research projects judged by their relevance to the definition, design and implementation of the future ETIS. Furthermore, it was intended to assess those aspects, to organise them and make available to the member states for facilitation of synergy and complementarities in the work of the projects launched by the EU and national research programmes. For that reason, a detailed specific questionnaire has been developed by the CONCERTO team and distributed to the respective project co-ordinators. The result of this questionnaire gives for each project whether specific concepts are included in the project or not. Among these concepts are a large number of concepts related to data. The questionnaire can be found on the following Internet address: http://concerto.ece.ntua.gr/questionnaires. Moreover, to support the activities on assessment of RTD projects and on consolidation of the project results in the field of ETIS building, a specific transport meta-database containing the definitions on policy issues, transport concepts, indicators (demand, supply, impact), methodologies, data sources, etc, together with the indication of the state of the art, has been developed by CONCERTO. This database can be found on the following Internet address: http://concerto.ece.ntua.gr/metadatabase. In addition, a gap analysis was performed continuously by CONCERTO to identify gaps in data necessary for an ETIS system.

During the project, a number of meetings and workshops have been organised where papers on these topics were presented. In the minutes of these meetings and projects, the papers and presentations are described.

At one of these workshops, it was decided that a pilot study was necessary. The idea behind was to gain a better insight into the problems involved in the development of the European Transport policy Information System, and the Trans-Alpine case was considered a good example of testing the feasibility of such a system on a European scale.

MYSTIC

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Details MYSTIC REPORT WP6 (freight transport), contract no. AV-3630, Project funded by the European Commission under the transport RTD, Programme of the 4th framework programme.

One of the objectives of the freight part of the MYSTIC project is to produce a methodology for estimating origin-destination international transport chain freight matrices. Within this project a large shipper survey has been carried out where shipments have been followed from the first origin to the final destination and along the transport chain as much information as possible has been gathered. The shipper survey has been held in the Netherlands and in France. The survey focussed on the economy of the firms and the transport chains (both from an organisational point of view and from a physical point of view). Another part of the project consisted of a test whether it was possible to collect a reliable origin-destination matrix of the total volume of exchanges between regions (by commodity group and by mode of transport) on international relationships, using a short questionnaire.

The results of the survey were very useful (for example to analyse transport behaviour) and it showed to be a good method to get data that would otherwise not be available. However, if such a survey would be extended to other countries in Europe special attention should be given to the low response rates in the Netherlands, while the response rates in France were very high.

SOFTICE Survey On Freight Transport including a Cost comparison for Europe

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SOFTICE is the acronym of a research project *"Survey on Freight Transport including a Cost Comparison for Europe"* conducted on behalf of the European Commission, in the 4th Research and Development Framework Programme. The project started on January 1st,1998 and ended on September 30th, 1999. The aim of SOFTICE project was to achieve a better understanding of freight transport costs, particularly in relation to certain important questions such as:

- What is the present situation in Europe, which factors affect freight cost structure and demand?
- How might a change in transport policy affect the costs of transport and consequently the relative competitiveness of the industry in the different countries?

More clear goals of SOFTICE were:

- An identification of the main parameters affecting freight cost structure in EU members States plus Switzerland and some CEEC countries and of the factors affecting freight transport demand.
- A collection and comparison of some relevant examples of factors of freight costs by country, checked by a Shippers Panel Survey.
- A map covering various types of industries, illustrating the weight of transport costs as a proportion of their overall production and distribution costs, as well as, the conditions of their preference of each transport mode (or combination of modes).
- Development and validation of a "four stages" methodology for the analysis of the present distortions in Europe and adaptable to different possible policy scenarios.
- Analysis of the consequences of different policies for taxation and internalisation of costs on spatial production organisation.

To develop the above issues, the study has been divided into four work packages for each of them an overview of the work undertaken is presented.

WP 1 – State of the Art and First Cost Analysis

The main parameters affecting freight cost structure in Europe and the factors affecting freight transport demand have been identified as well as the impact of working hours regulation on costs. The resulting weighted list of above factors has been checked through a panel Survey of a Panel of 40 European Shippers.

WP 2 – Methodology

A "four stages" methodology has been developed for the appraisal of costs, suitable for the analysis of the present distortion in Europe and adaptable to different policy scenarios. These "four stages" have addressed the issues of market segmentation, type of logistic chain from origin to destination, quality of service required by shippers, and possibility of internalisation of the external costs.

WP 3 – Medium and Long Term Impact

The consequences of different policies for taxation and internalisation of costs on spatial production organisation have been analysed along three different scenarios: a reference scenario (BAU) dealing with the continuation of liberalisation particularly profitable for road transport; a first alternative scenario (Harmonisation and Liberalisation) dealing with the achievement of political goals (safety, environmental, social) trough CTP actions and a second alternative scenario (TEN Policy) which emphasizes the achievement of a Trans European network for freight transport.

WP 4 – Validation and dissemination of results

The aim of this Work Package has been to validate the methodology developed in Work Package 2 through a Revealed Preference Analysis made upon two European corridors (a North-South trans-Alpine Corridor and an East-West European Corridor). A Stated Preference Analysis has also been made through the Second Shippers Panel Survey to validate the conclusions on harmonisation.

Eurostat data (TREX and TRAINS)

Contact: Eurostat, website: http:/eurostat.eu.int/comm/eurostat

Basic data on a European scale can be found in the TREX and TRAINS databases from Eurostat. The purpose of the TREX (or COMEXT) database is to give insight into the use of the different modes of transport in the Union's external trade and in the trade between its Member States (on a country to country level). It includes a modal split of the external and intra-Community trade for each Member State, broken down by product groups of partner countries. The TRAINS (New Cronos) database contains transport data (instead of trade data in the TREX database). The database describes transport between countries (on a country to country level). The TRAINS database covers three modes of transport: road, rail and inland waterways.

The statistics by mode of transport are collected since 1993 in the framework of the INTRASTAT system. This defines the way of collecting, treating and transmitting of the trade statistics between Member States. As a result of this new system, changes appeared in the availability of customs information.

The main changes introduced in the system of freight transport statistics become evident by considering the modifications in the customs or fiscal documents. Concerning *extra-community trade*, the main change has been to remove the „border" in the Single Administrative Document in practice since 1988, from the national to the community limits. Consequently, the variables „border-crossing mode", as well as „nationality of border-crossing mode", and „mode of appearance at border", do not apply to the same subject before and after January 1993, introducing friction's in the time series of transport per mode. To a lesser extent, continuity has also been affected by switching to a more aggregated nomenclature of mode

of transport concerning rail (for border-crossing and domestic mode) and sea (only for border-crossing mode).

For *intra-community* trade losses in information are more drastic, in so far as the introduction of the INTRASTAT system has led to the disappearance of domestic mode of transport, of the nationality of the border-crossing mode and the mode of appearance at border, as well as of the country of first destination or last origin. In addition, the same modification of mode nomenclature has occurred as in the case of extra-community trade. To a minor extent, the introduction of thresholds for fiscal declaration may also have some consequences on the continuity of estimates of the value of goods transported.

INFREDAT Methodology for collecting intermodal freight transport data

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Details: Project funded by the European Commission under the 4. Framework Programme
http://www.europa.eu.int/comm/transport/extra/infredatia.html
http://www.infredat.ptv.de

The aim of the INFREDAT project was to develop a consistent methodology for collecting intermodal freight transport data at a European level.

The project has provided an overview of data needs and data availability, defined an appropriate data collection methodology, and tested the methodology on some case studies of transport chains.

The data collection methodology describes how to define a complete database structure, and how to develop a model for the estimation of missing data. It also specifies the data requirements - the data records should include all relevant variables to follow consignments along the transport chain from the place of production to the place of consumption. The suggested record structure was tested on freight flows from Poland to the Netherlands. This pilot study showed that by combining data sources it is possible to analyse market shares, container flows and transhipments on different routes along a corridor.

The basic level of data collection was proposed to involve collation of published statistics, supplemented by periodic interviews and counts (which were evaluated to be less cost-effective). INFREDAT concluded that advanced information technologies such as tracking and tracing and Electronic Data Interchange could be used in the future to enhance the available data and/or to replace other more expensive collection methods. However, this is not practical at present.

There are a number of problems with direct data collection from operators. The most critical is the issue of data confidentiality. In addition, there are incompatibilities between information systems and data formats used by different companies, and market actors use a variety of concepts and definitions (rail wagons, lorries, loading units etc.) to count their traffic. INFREDAT concluded that the data collection process needs to be done by a neutral organisation, providing guarantees of confidentiality for specific variables, and offering mutual benefits in terms of data access. Much of the required data already exists, but simply is not available to external bodies for confidentiality reasons.

MEST Methods for European surveys of travel behaviour

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Details: Project funded by the European Commission under the 4. Framework Programme
http://www.europa.eu.int/comm/transport/extra/mestia.html

Data on patterns of travel and levels of demand are an essential input to sound policy decisions in the transport sector. The European Commission and Member States have perceived for some years that such data are not available publicly with adequate levels of quality, consistency and coverage.

MEST aimed to develop a common European survey methodology for long distance trips, based on the recording of travel diaries. In addition, it aimed to provide a methodology for sampling and analysing the diary data that would be more cost efficient and accurate than previous methods.

The project has produced detailed recommendations for:

- the design of a travel survey (such as the minimum journey length to be covered, and the survey duration);
- the protocol and data collection forms for conducting the survey (involving a combination of telephone and postal contacts);
- the co-ordination of survey procedures across Member States;
- weighting and correction methods for data analysis;
- sampling methods for selecting a representative set of respondents to provide the travel diary data.

Trials with a variety of survey methods across four Member States revealed a series of constraints and problems in data collection, such as the unwillingness of households to participate in survey work. This can often be attributed to suspicion and fatigue concerning such unsolicited contacts. The MEST research has indicated how telephone and post can best be used to improve response rates.

TEST Technologies for European surveys of travel behaviour

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Details: Project funded by the European Commission under the 4. Framework Programme
http://www.europa.eu.int/comm/transport/extra/testia.html

Data on patterns of travel and levels of demand are an essential input to sound policy decisions in the transport sector. The European Commission and Member States have perceived for some years that such data are not available publicly with adequate levels of quality, consistency and coverage. Cost-effective data collection is crucial, and new technologies are becoming available that might be exploited for this purpose.

TEST aimed to develop and evaluate innovative ways of using new technologies for collecting, analysing and disseminating travel survey data. The project focused on five areas:

- using hand-held computers during trips as a tool for near real time data collection;
- offering Internet-based forms for the completion of long distance travel surveys;
- using geographical information systems (GIS) to improve the accuracy of recording place names visited during trips;
- using artificial intelligence (AI) processes to correct erroneous data and impute missing data in travel diaries;
- building a web site interface to provide access to stored data.

The project demonstrated the feasibility of the targeted approaches through pilot implementation:

- The computerised portable travel diary gained user acceptance in field tests and provided results consistent with those from more conventional methods.
- The web-based travel diary was also successfully demonstrated in two countries.
- The GIS work showed that semi-automatic support for trip recording could be provided, although more accurate and comprehensive databases of place names are required to support this application.
- An AI-based system was developed for data correction that provides an audit trail for quality assurance.
- The web interface demonstrated the feasibility of supervised remote access to stored analyses of travel diary results. This technology has been adopted by the ongoing Belgian national travel survey.

The user acceptance and access to the first two applications are expected to expand greatly as the generic technologies improve and increase their market presence over the next few years.

DATELINE Long distance passenger survey

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Details: Within the fifth Framework Programme, the European Commission, Directorate-General for Energy and Transport, has started a project on long-distance passenger mobility in co-operation with an international consortium of firms and research organisations; http://www.ncl.ac.uk/dateline/index.html.

Passenger transport statistics at an European level are needed to support the Common Transport Policy - yet, there does not exist a high quality database at the European level. Therefore DATELINE will develop a total survey design for an European travel survey of long-distance mobility which can be implemented in an uniform way in all Member States of the European Union. This survey will be implemented in all Member States. The results will create a valid database, that will produce indicators for long-distance travelling and will allow comparisons between the European countries. This database will also be usable in a national context and within the EUROSTAT statistical programme and could provide answers to planning-related questions and an input for analysis.

The idea of DATELINE is to provide a survey system which can be used in each country on a national level. This will ensure international comparability. On behalf of the European Com-mission we, the DATELINE project group, want to co-operate with the national institutions and organisations that are in charge of planning and monitoring long-distance mobility in every Member State (such as the Ministries of Transport or the Statistical Offices and Institutes).

NEAC NEA transport simulation system for the Community

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Details: The NEAC model 1997-2020; Western Europe description database, Construction and forecasting module, NEAC website: http://www.nea.nl/neac

The NEAC system is an example of a system including inter-regional transport chain data covering both Western and Eastern Europe. Transport chain data is not available from standard statistics and therefore the database has been constructed by combining a large number of statistics. Trade data, transport data and transit data from national, international and supranational sources have been harmonised, processed

and combined to build a consistent transport chain database. The transport chains include transhipment locations in North Western Europe. Such a database is unique because there exist no other data sources including transport chain data on a European level.

The NEAC transport chain database includes the following variables:

- Origin (NUTS II classification)
- Transhipment location (NUTS II classification in North Western Europe)
- Destination (NUTS II classification)
- Mode at origin (road, rail, inland waterways, sea, other)
- Mode at destination (road, rail, inland waterways, sea, other)
- Commodity group (NSTR-1-digit classification)
- Annual weight (in tons)

The NEAC transport chain databases have been successfully used to analyse base situations and forecasts in a large number of projects; among them are the European projects the Traffic Forecast on the Ten Pan-European Transport Corridors of Helsinki project and the Forecasting 2020 project.

The NEAC system proves that it is possible to derive data that does not exist in basic statistics from other data sources.

Road directive (statistical registration of road freight transport)

Contact: European Community

Since May 1998 there is a new road directive for the statistical registration of road freight transport. All member states should produce statistics with variables categorised by the vehicle, the journey and the goods on a specific detail level. In reality part of the member countries are not able to produce these statistics in the right format and at the moment this is still allowed. For example, the place of loading and unloading of goods is given on a country level while this should be given on a region level (according to the NUTS III level, at least for the member countries). In the future all member countries will be obliged to produce the statistics in the right format.

Lack of coherence in forecasting traffic growth – The case of Alpine traffic

Contact: ECMT (European Conference of Ministers of Transport), Council of Ministers, http://www.oecd.org/cem

Details: Report can be downloaded from the following site:
http://www.oecd.org/cem/topics/council/cmpdf/CM0121e.pdf

Recently the ECMT took the initiative to carry out studies relating specifically to trends in transport in a number of areas where the problems posed by international traffic flows are particularly severe. One of these areas was the Alpine region. In the light of the experience which the ECMT has gained with regard to trans-Alpine traffic flows, the paper sets out to review the current situation with regards to two issues: firstly the monitoring of trans-Alpine traffic flows and secondly the forecasting of such flows.

According to this paper there are currently four sources of data on trans-Alpine traffic flows. These sources are briefly described and the deficiencies of each source is described extensively. The mentioned sources of data are:

- Databases managed by international organisations
- Eurostat databases
- ECMT databases
- Specific sources of trans-Alpine data
- Annual data, ALPINFO Bulletin
- Trilateral trans-Alpine transport survey

With regard to traffic forecasts and scenarios the problem is that there are so many different forecasts all with different outcomes. Forecasts vary substantially according not only to the assumptions made with regard to the economic climate, but also, and above all, according to transport policy, the construction of infrastructure and non-engineering costs, notably those arising from Swiss policy in these areas. Three main types of study with regard to future developments are described and examples of these studies are given. The following three main types of studies are distinguished:

- General studies, which may or may not be based on scenarios and which attempt to forecast overall trans-Alpine traffic levels
- Studies focussing more specifically on flows between France and Italy, and related more or less directly to the advisability of building a new rail tunnel through the Alps and a link between Lyon and Turin
- Studies addressing the modal split and route assignment, as well as potential trends linked in particular to policy measures that may be decided by Switzerland

Analysis of the many studies that have attempted either to measure trans-Alpine traffic flows or to predict their future development identifies a three-fold requirement with regard to the collection and processing of data:

- Detailed statistical data collected at regular intervals, which could call for the establishment of an international system for monitoring trans-Alpine traffic flows with an enlarged field of investigation encompassing not only carriers but also freight forwarders as well as the use of new technologies to monitor vehicles and freight.
- Instruments that are transparent with regard to both the processing of data collected and the construction of forecasts in order to correct the methodological opacity that frequently prevails at present.
- Coherent scenarios established on the basis of a coherent reference framework that can dispel the confusion arising from approaches to trans-Alpine traffic issues that are overly slanted towards national perspectives.

In this paper the ATIS project is mentioned as one of the first experiments to set up a European transport information system foreshadowing what might be the European Transport Information System (ETIS). The ALP-NET project is mentioned as one of the possibilities to get a better understanding of the current situation with regard to databases and forecasts.

3.3.2 Austria

Author of this section: ICCR

The availability of data on the Alpine crossings in Austria is excellent compared to most other parts of the country. This is due to many factors, most notably the employed charging systems which allow detailed traffic counts, the data gathered as a result of the use of Ecopoints and the over proportionate number of studies conducted on this politically sensitive topic. The main institution in commissioning the collection of data and its analysis is the Federal Ministry of Transport. The regions Tyrol, Vorarlberg, Salzburg and Upper Austria are also active in this respect. Somewhat surprisingly, the Austrian Federal Statistical Office ("Statistik Austria") does not collect, analyse or publish and data on trans-Alpine transport. Currently their clearly defined mission is limited to the monitoring of the activity of vehicles owned by Austrian companies. Their duties do not include the monitoring of roads on Austrian territory.

Traffic Study Brenner Tunnel

Bundesministerium für öffentliche Wirtschaft und Verkehr (1992)
Verkehrsstudie Brennertunnel, BM für öffentlichen Wirtschaft und Verkehr, Wien (Forschungsarbeiten aus dem Verkehrswesen, Band 37).

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Details: Available from http://www.bmv.gv.at

The report is about the effects of a Brenner Base Tunnel on passenger and freight transport. It is an advanced and detailed report of a study in 1990, including the then new transport policy issues, especially the German transport plan (1992) and the Transit Agreement between Austria and Switzerland with the EC.

The volume of traffic concerning all traffic modes in a reference prediction (without the Brenner Base Tunnel) for 2010 will rise up to 21,5 % (or 24 Mio), that is a total of 150 Mio individual journeys per year. Transit traffic will develop disproportionate with + 35 % (or 47,6 Mio). Rail transport will decrease from 1.6 Mio to 1.3 Mio passengers because of shifting of routes.

In the planned scenario (with the Brenner Base Tunnel plus extension of the north and south access roads) the volume of rail transport will rise up to 3.08 Mio individual journeys. As expected, the measures will be strongest in the transit traffic.

Regarding the predictions, the freight rail traffic in the Alpine transit will rise from 18 Mio tonnes in 1988 up to 44 Mio tonnes in 2010, which is a relative increase of 146 %. In contrast, freight individual traffic will rise only up to 121 %.

Study of the Development of Transalpine Traffic (Goods and Passengers) Horizon 2010

Prognos AG/Regional Consulting (HERRY)/ISIS (1997)
Study of the Development of Transalpine Traffic (Goods and Passengers) Horizon 2010, Brussels, European Commission.

Contact: Norbert Sedlacek, Planungsbüro Max Herry, http://www.herry.at, Argentinierstrasse 21, A-1040 Wien; Phone: +43 1 504 12 58 17; Fax: +43 1 504 35 36; Email: sedlacek@herry.at

Details: Available from: http://www.herry.at

The main objectives of the study were the development of a database and forecasts of trans-Alpine traffic based on macro-economic assumptions for the entire Alpine arc areas. A number of different methodologies were used for the analysis and forecast.

The 'reference' and the 'low/low' scenario put up a range of potential developments of rail and road transport. From the results the conclusion can be drawn that without significant changes the market share of railways will decrease for freight as well as passenger transport. Measures for improvement can include cost reductions and increase of service level by a restructuring of the railway organisations supported by appropriate transport policy measures.

The different 'middle/middle' scenarios show the effects of the new rail base tunnels, i.e. changes of Alpine crossing traffic flows in the case that some of the base tunnels are in operation and some are not. For example, NEAT system in operation / Brenner not versus NEAT system not in operation / Brenner base tunnel in operation, show that at the level of country-to-country relation both cases are very similar with regard to railway modal shares. With regard to the north-south traffic flows and interregional relations on the level of the traffic zones, the cases are very different.

The study was able to show in which way transport demand reacts on different price developments of transport supply; policy regulations; and new infrastructures.

In the case of the reference scenarios, the frequency of congestion on certain road Alpine crossings may increase but no serious bottlenecks will occur in 2010. The capacity of rail Alpine crossings will be sufficient for the forecast volumes. In the case of 'low/low' scenario, and for some crossings in the 'middle/middle' scenarios, bottlenecks on road and rail are expected. Without improvements, the infrastructure will not be able to cope with the expected volumes.

Freight Transport in the Alps: Impacts of Alpine crossing Freight Transport

Romain Molitor (1997)
Güterverkehr in den Alpen: Auswirkungen des alpenquerenden Güterverkehrs, Bundesministerium für Wissenschaft und Verkehr, Wien.

Contact: Romain Molitor, Trafico – Partner für Verkehrsplanung, http://members.magnet.at/trafico.wien/, Fillgradergasse 6/2, A-1060 Wien; Phone: +43 1 586 41 81; Fax: +43 1 586 41 81 10; Email: trafico.wien@magnet.at

Details: Available from: http://members.magnet.at/trafico.wien/

The aim of the report is an analysis of the development of the freight transport crossing the Alps. The possible future impacts of Alpine freight transport is calculated on the basis of scenarios. The base year of the calculations is 1994, the scenario horizon is 2005.

The specific aim is to compare the impacts of freight transport with ecological targets, like the reduction of emissions from transport, to define specific actions based on quantitative data. Based on future scenarios for freight transport, the impacts of selected pollutants (CO2, NOx) are analysed and confronted with international and national reduction targets.

The following assumptions are taken for the Alpine crossing freight transport for 2005:

- Growth rate of Alpine crossing transit traffic: 3.0 % p.a. for relations to Italy, and 5.0 % p.a. for all other relations;
- Growth rate of Alpine crossing international traffic: 2.5 % p.a.
- Growth rate of Alpine crossing cabotage: 1.5 % p.a.

- Modal split: 68 % lorries, 32 % railway
- Average load: 15.1 tonnes

For transport growth it is estimated that the transit agreement will be effective until 2003 and that there will be no maximum total numbers in 2005. Due to the transit agreement, there will be a shift from road to rail. It is assumed, however, that with 2005 there will be a shift back on the road.

Overall, transit traffic shows considerable increase regarding the assumptions made. Even though there will be a considerable increase, NOx emissions will decrease because of technological improvements. However, these technological improvements will not be sufficient to meet the reduction targets. A reduction in CO2 emissions is technologically much more difficult as they are directly related to energy consumption. A substantial reduction of energy consumption is technologically not feasible now.

Suggestions for improvements:

- Transport shift towards ecologically friendly transport modes;
- Transport reduction:
  - better utilisation of vehicles;
  - reduction of distances; and
  - creation of less transport intensive production systems.
- Application of best available technology.

Alpine Transit – Freight Railway instead of Lorry Columns

Molitor, Romain (1996)
Alpentransit – Güterzüge statt Lkw-Kolonnen, Verkehrsclub Österreich, Wien.

Contact: Romain Molitor, Trafico – Partner für Verkehrsplanung, http://members.magnet.at/trafico.wien/, Fillgradergasse 6/2, A-1060 Wien; Phone: +43 1 586 41 81; Fax: +43 1 586 41 81 10; Email: trafico.wien@magnet.at

Details: Report available from VCÖ-Verkehrsclub Österreich, Bräuhausgasse 7-9, A-1050 Wien; http://www.vcoe.at/publikationen

The report comprises the following issues: basics of a sustainable freight transport in Europe, with special emphasis on the Alps; the development of freight transport in Europe and Austria; impact mechanisms of freight transport; technologies and potential for combined transport.

Suggestions for more sustainability in freight transport: Important options identified are the shifting of a substantial part of transit freight transport through Austria to combined transport. Furthermore, price policy measure should lead to the reduction of transport and the application of best available technologies. Another option is the advancement of the Ecopoint system. Moreover, the introduction of a local or regional toll on lorries could have the target to reduce transit traffic.

Conclusions for combined transport:

- Based on the geographical barrier of the Alps with the specific capacity bottlenecks and environmental problems, one should create a European network of combined transport;
- The specific geographical situation of the Alps calls for efficiency and ensures profitability of the most important relations;
- A higher frequency of trains in combined transport increases the competitiveness and the prerequisites for a modern freight transport regarding reliability and “just-in-time” transport;

- If the system of combined transport is successful in the chosen routes, it can be enhanced to a European-wide system.

Transeuropean Networks and Regional Impacts on Austria: Analysis of the extension of high located transport infrastructure with a special emphasis on accessibility

Deußner, Reinhold (1999)
Transeuropäische Netze und regionale Auswirkungen auf Österreich: Analyse des Ausbaus der hochrangigen Verkehrsinfrastruktur unter besonderer Berücksichtigung der Erreichbarkeit, Österreichische Raumordnungskonferenz (ÖROK), Wien.

Contact: Reinhold Deußner, Österreichisches Institut für Raumplanung, http://www.oir.at; Franz-Josefs-Kai 27, A-1010 Wien; Phone: +43 1 53387 47 59; Fax: +43 1 533 87 47 66; Email: deussner@oir.at

Details: Report available from: Österreichische Raumordnungskonferenz (ÖROK), Hohenstaufengasse 3, A-1010 Wien, http://www.oerok.gv.at

The study evaluates a number of infrastructure projects in Austria, the EU and Central and East European Countries (CEEC) that are of relevance for Austria. This includes, on the one hand, the extension of primary traffic infrastructure in Austria and, on the other hand, the extension of such infrastructure in the neighbourhood countries which represent important links to Austria, as well as projects which are in competition to Austrian infrastructure. All those projects have been termed and subsumed as 'key projects' and will be evaluated regarding their impacts.

The following conclusions are drawn in the study: Overall, railway and road projects improve the surrounding areas of centres, the quality of location and, therefore improve the overall quality of location of Austria. In the primary infrastructure network of Austria, there is a demand in the railway sector. For realising a sustainable transport policy, this implies that investment in all primary connections is necessary.

Furthermore, the proposed road projects are also necessary in terms of capacity. They include, foremost, closing gaps in Austria, and the extension of connections to Eastern Europe. The extension of inter-modal interchanges in the individual and freight transport is of special importance. In conurbations, it is necessary to make public transport attractive. In freight transport, interchanges are the prerequisite for an ideal inclusion in traffic networks.

As the financial capacities will be tight, including road users for financing railway extensions will be necessary.

The study also recommends a stronger initiative of Austria for a more environmentally oriented transport policy of the EU, mainly in connection to CEEC. There should also be support for the attempts of the EU for broader financial facilities for the planning and extension of Transeuropean Networks.

Freight Transport in Austria 1991

Herry, Max (1994)
Güterverkehr in Österreich 1991, Österreichische Raumordnungskonferenz (ÖROK), Wien.

Contact: Max Herry, Planungsbüro Max Herry, http://www.herry.at; Argentinierstrasse 21, A-1040 Wien; Phone: +43 1 504 12 58; Fax: +43 1 504 35 36; Email: office@herry.at

Details: Report available from: Österreichische Raumordnungskonferenz (ÖROK), Hohenstaufengasse 3, A-1010 Wien, http://www.oerok.gv.at

The report contains the results of the analysis about "Freight Transport in Austria for the year 1991". The volume of freight transport in Austria for 1991 was 315 Mio. tonnes. This is 40 tonnes per head of the population. The following transport modes were used:

- Road 190 Mio. tonnes (approx. 60 %)
- Railway 64 Mio. tonnes (approx. 20 %)
- Pipelines 54 Mio. tonnes (approx. 17 %)
- Water 7 Mio. tonnes (2 %)
- Air 82,000 tonnes (0.03 %)

Regarding the different traffic modes:

- Cabotage 165 Mio. tonnes (52 %)
- International traffic 76 Mio. tonnes (24 %)
- Transit traffic 74 Mio. tonnes (24 %)

The report argues that the quantity and quality of information about freight transport must be improved. The reason for this is that this information is important for decision in transport policy and measures for infrastructure planning. The following suggestions for improvement are formulated:

- Shorter intervals of research can increase actuality of freight transport data;
- Improve methodological shortcomings;
- The current classification of goods delivered in freight transport should be evaluated if it is suitable;
- Empty transport journeys should also be calculated as not only net-tonnes and their impacts are important for analyses and planning;
- Coverage of transit transport on a regional level;
- Freight transport data should be merged with other important data in a data collection.

Austrian Cross Alpine Freight Transport 1999

Spiegel, Thomas et al. (2001)
Austrian Cross Alpine Freight Transport 1999, Wien, Federal Ministry of Transport, Innovation and Technology (BMVIT).

Contact: Thomas Spiegel, Bundesministerium für Verkehr, Innovation und Technologie,Radetzkystrasse 2, A-1030 Wien; Phone: +43 1 711 62 1104; Fax: +43 1 711 62 1199; E-mail: thomas.spiegel@bmv.gv.at

Details: Available via the BMVIT homepage: http://www.bmvit.gv.at

Especially in mountainous regions like the Alps, the principles of free goods movement get into conflict with the concerns of the resident population and the protection of the environment. Therefore, it is very important to have detailed information on trans-Alpine freight flows. They are necessary to support and monitor political agreements concerning Alpine traffic. They are also the basis for forecasts and ongoing studies on trans-Alpine traffic.

The Austrian, French and Swiss Ministries of Transport have joined their efforts to prepare a survey on the road freight flows and on freight flows on accompanied combined transport and to complement data on rail freight obtained by national railway companies. The survey has been carried out in 1999; five years after the above named countries have made a survey of their own.

The report gives an overview on the method used, the sample and the results of the Austrian part of the survey. It shows the development of Austrian trans-Alpine freight flows between 1994-99. Reports that are more detailed are available on some modes, and the database itself will provide answers on specific questions. Therefore, still in an early stage of the data processing the results of the data collection have been used to support Council decision on the distribution of permits for the Swiss transit.

Alpine Crossing Road Freight Transport 1999 in Austria

Fusseis, Walter and Müllner, Werner (2000)
Alpenquerender Strassengüterverkehr 1999 in Österreich, Wien, Bundesministerium für Verkehr, Innovation und Technologie.

Contact: Thomas Spiegel, Bundesministerium für Verkehr, Innovation und Technologie,Radetzkystrasse 2, A-1030 Wien; Phone: +43 1 711 62 1104; Fax: +43 1 711 62 1199; E-mail: thomas.spiegel@bmv.gv.at

Detail: Study on behalf of the Austrian Ministry for Transport, Innovation and Technology, homepage: http://www.bmvit.gv.at

In Switzerland, every 5 years since 1984, studies are carried out about Alpine crossing freight transport. In 1994, these studies about road and rail freight transport also included Alpine crossings in France and Austria. In 1999, after five years, there was again an evaluation (following consistent methods) of the Alpine crossing freight transport for roads and rail for the whole Alpine region between Ventimiglia and the Wechsel. This study considers the data of the evaluation of the Austrian road freight transport.

In 1999, the crossings of the whole Alpine region (from Ventimiglia in the west, to the Wechsel in the east) were evaluated at 22 transverse sections; 8 of those were rail sections.

In Alpine crossing freight transport, there is some interest in the quantities of goods, the number of long vehicles used and the relationship between departure and destination points for transport policy measures and the planning of new infrastructure. These data was gathered through interviews with the lorry drivers.

The study is a comprehensive data collection about Alpine crossing road freight transport. However, there is no interpretation of the results.

The Austrian Transport Sector

Wirtschaftskammer Österreich (2000)
Österreichs Verkehrswirtschaft, Wien, Wirtschaftskammer Österreich.

Contact: Roderich Regler, Abteilung Verkehrspolitik, Wirtschaftskammer Österreich, Wiedner Hauptstrasse 63, Postfach 191, A-1045 Wien; Phone: +43 1 501 05 4000; Fax: +43 1 501 05 233; Email: roderich.regler@wko.at

Details: Available via: http://wko.at/vp

This study contains recent data about transport issues in Austria. It was published by the Austrian Chamber of Commerce and contains data mostly gathered by Statistics Austria (the national Austrian statistics institute).

Statistics Austria gathered data about freight transport in and through Austria. It has to be noticed that Statistics Austria do not gather data about Alpine transport. However, it is still important to use this data as it can be compared to data gathered for Alpine specific freight transport. Furthermore, data on transit freight transport is important, as only one connection (the A1 from Salzburg to the Hungarian border) is regarded as non-Alpine-crossing. The data from Statistics Austria about transit and cross-border freight transport suggests that more freight is transported on rail than on roads (for both tonnes and tonnes per kilometre).

Furthermore, the study contains data, gathered by the Austrian Railways (ÖBB), about developments in freight transport by rolling road, unaccompanied piggyback and large containers. It also lists the freight transport carried out by the ÖBB in tonnes and tonnes per kilometre.

Data on Freight Transport

Wirtschaftskammer Österreich (2000).

Contact: D. Viktor Navratil-Wagner, Bundessektion Transport, Verkehr, Telekommunikation, Wirtschaftskammer Österreich, Wiedner Hauptstrasse 63, Postfach 170, A-1045 Wien; Phone: +43 1 501 05 3251; Fax: +43 1 501 05 257; Email: viktor.navratil-wagner@wko.at

Details: Data from WKÖ Homepage: http://wko.at/bsv

According to the freight transport statistics of the Federal Office of Statistics of Austria, in the year 2000, 22.3 Mio tonnes of goods were imported and exported on rail in the transactional freight transport between Austria and the EU. This suggests that nearly 49% of the transactional freight transport within the EU was transported on rail (1999: 47%). The demand for rail transports between Austria and the EU Member States increased to 15.75% or 3 Mio tonnes. The imports from the Member States amounted to 11.1 Mio tonnes (+ 17,7%) and the export was about 11.2 Mio tonnes (+13.9%). This is the highest increase since Austria joined the EU in 1995. The most important trade partners for Austria concerning the import and export of goods are Germany and Italy.

The freight transport statistics of the Federal Office of Statistics of Austria also presents data about freight road transport: the transnational freight road transport between Austria and the EU amounts to 23.4 Mio tonnes. This is an increase of about 6.8% compared to 1998. The import from EU Member States amounted to 11.5 Mio tonnes (+4.24%), the export was about 11.9 Mio tonnes (+9.47%). 85.5% of the transnational freight road transport (import and export) was carried out by Austrian freight companies within the EU (1998: 84.7%). In transnational freight road transport, Germany and Italy are also the main trade partner of Austria.

According to a statistic by DG Energy and Transport about freight transport in the EU in 1998, the average amount of freight transport on road in the EU is 73.7% and on rail 14.1%. In Austria, 38.3% of goods are transported on road, 36.9% on rail. The basis for the statistics is tonnes per kilometre.

Evaluation of the trans-Alpine Freight Transport

Bundesministerium für Verkehr, Innovation und Technologie – BMVIT (1994)
Untersuchung des transalpinen Güterverkehrs, Bundesverkehrswegeplan (Arbeitspacket A3-G), Wien, Bundesministerium für Verkehr, Innovation und Technologie.

Contact: Dr. Hans Kriebernegg, IKK ZT-OEG, Mariatrosterstrasse 158, A-8044 Graz; Phone: +43 316 39 11 10 0; Fax: +43 1 316 39 11 10 6; Email: office@ikk.at

Details: Available from www.bvwp.bmv.gv.at/Erstellung/a3_g.html

The Austrian Federal Ministry for Transport commissioned the analysis of the trans-Alpine freight transport for the roads with a survey. This was done in preparation for the Austrian Federal Transport Infrastructure Plan. The aim of the survey was to evaluate the Alpine crossing freight transport through Austria in the year 1994. The survey was undertaken for vehicles with more than 3.5 tonnes of total weight. On every transverse section there was a random sample taken of at least one per mill of the annual traffic.

Matrices of Tourism Transit in Austria

Bundesministerium für Verkehr, Innovation und Technologie – BMVIT (1998)
Matrizen des Urlaubertransits in Österreich, Bundesverkehrswegeplan (Arbeitspacket A3-T2), Wien, Bundesministerium für Verkehr, Innovation und Technologie.

Contact: Reinhold Deußner, Österreichisches Institut für Raumplanung, Franz-Josef-Kai 27; A-1010 Wien; Phone: +43 1 53387 47 59; Fax: +43 1 53387 47 66; Email. deussner@oir.at

Details: Available from http://bvwp.bmv.gv.at/Erstellung/a3_t2.html

The aim of the study was to analyse the traffic flows of tourists in Austria (incoming traffic). The road traffic of tourism was registered in matrices and allocated to the transport network.

Tourism transport shows large seasonal differences. In some parts of the primary road network tourism traffic is one of the main users and, therefore, polluters.

For the quantitative analysis of tourism transit, the following sources had to be used:

- OECD tourism statistics;
- World Travel Organisation;
- National tourism statistics of the most important destination countries (neighbour countries and Croatia).

The following work was undertaking in this work package:

- Documentation of tourism development, which is relevant to the holiday transit traffic, containing the differences between the summer and the winter period.
- Compilation, calculation and description of the amount of holiday transit traffic for different transport modes.
- Compilation of road traffic in the form of matrices.

Transnational Freight Transport in Austria

Arbeiterkammer Wien (2000)
Grenüberschreitender Güterverkehr in Österreich, Wien, Arbeiterkammer Wien.

Contact: Reinhold Deußner, Österreichisches Institut für Raumplanung, Franz-Josefs-Kai 27, A-1010 Wien; Phone: +43 1 533 87 47 59; Fax: +43 1 533 87 47 66; Email: deussner@oir.at

Details: Study on behalf the Trade Union Section in Vienna. Available from http://www.akwien.or.at

The aim of this study is to give an overview of the development of transnational freight transport in Austria, which also includes a comparison between different transport modes. For this reason, data sets of Statistics Austria were collected and the gap of data in freight road transport was bridged with model calculations.

With the democratisation process of the East European countries and Austria joining the EU, the markets for freight transport have changed. The result is an extraordinarily dynamic development of transnational freight transport:

- generally, the transnational traffic has increased strongly;
- there are differences between section (relations) and counties (Bundesländer); and
- transport modes take different development paths.

The study tries to capture those changes. The development of transport loads is described in weight of goods, the most important parameter of the transport economy for the development of transport markets. Furthermore, time series of modal transport loads are analysed from 1984 onwards. The study also includes the data about transport development in the years 1998 and 1999, which were published in 2000.

3.3.3 France

Author of this section: NESTEAR

In France, an important effort on data and statistics has been done first by OEST (Observatoire Economique et Statistique des Transports) until 1992, then by SES (Service Economique et Statistique des Transports), which continued the work of OEST.

However, a difference must be made between passengers and freight.

The situation in passenger statistics is still very poor at European scale is stressed in Cost 305 report almost 15 years ago (1988).

At French borders, border surveys are conducted at regional levels but have a limited scope. Every 5 to 10 years an important survey is conducted at national scale but not on a very regular basis because they are always very costly. “European Maritime Travel Survey” realised across Europe is also used but has poor information relative to transport and cannot be used for choice of routes. Concerning freight situation has deteriorated in 93 with the disappearance of customs statistics but an important effort has been made with the implementation of a “trinational” border survey. Initiated in 93 by France for the analysis of Pyrenees and Alps crossing, the common methodology has been agreed with the Ministries of transport of Switzerland and Austria.

The first survey has been conducted in 93-94 giving a first common database between the three countries. However some harmonisation problems remained, especially with Austria that stepped in the operation a short time after the first agreement between France and Switzerland.

The second survey was finished in 2000 and improvements on harmonisation have been made. The second common database is expected in the months to come.

For freight, it is also important to mention the Alptunnel survey in November 95 and March 96 realised on the western part of the Alps, on six border points.

Finally it is important to recall that SES develops regularly, on a yearly basis, the multimodal SITRAM database giving information on internal and foreign trade with many information related to the type of mobile (trucks and trains in this case), the type of goals, the border points. However, the zoning in the foreign country can only be exploited at level of Nuts 1 (for France on level of nuts 3) because of the size of the sample for trucks utilisation statistics (TRM yearly survey) and because of confidentiality for rail.

3.3.4 Germany

Author of this section: IWW

Overview

The general source for statistic information in Germany is the Federal Statistical Office (Statistisches Bundesamt Wiesbaden). Besides the annually published statistical yearbook (separate editions for Germany and for international figures), a great number of topic series and time series published via the Internet are available. For trans-Alpine transport, topic areas 7 (foreign trade), 8 (transport) and 19 (environment) are of particular interest. At the level of federal states, local statistical offices might supply additional information, especially on developments at the border to Alpine countries (Baden-Württemberg and Bavaria).

Since 1971, the German Federal Ministry for Transport, Building and Housing (BMVBW) publishes the statistical compendium "Verkehr in Zahlen" (Transport in figures) annually in paper form and on CD-Rom. The volume, which is produced by the German Institute for Economic Research (DIW, Berlin) presents time series of aggregated figures of transport infrastructure, transport performance, prices and revenues, accidents, environmental indicators and transport-related socio-economic data. It compiles various statistical sources and is continuously adapted to new developments in transport (e.g. the consideration of vehicle types by emission classes) in order to provide useful background information for traffic planners and decision makers.

Information on past and planned infrastructure projects is provided annually by the Transport Report (Verkehrsbericht) of the BMVBW as well as by supplementary reports on specific investment programs (Anti--Congestion-Programme (Anti-Stau-Programm), the Future Investment Programme (Zukunfts-Investitionsprogramm) or investments funded by the European Fund for Regional Development. Through these sources, the planned development of the transport networks and the resulting investment costs for all modes are available.

Detailed information on traffic volumes is provided by the reports of the Federal Office for Motor Traffic (Kraftfahrt-Bundesamt, Flensburg) and by the Federal Office for Goods Transport (Bundesamt für Güterverkehr, Köln). Their estimates of transport volumes by network type, region, vehicle type and size, distance and goods transported are based on a 0.5% sample of trips in Germany. Other sources of transport volumes are the calculations of the DIW and the results of the TREMOD-Traffic model (IFEU, Heidelberg). Behavioural patterns of shippers in goods transport and individuals in passenger transport are continuously observed by the KONTIV study, which is regularly launched by BMVBW. However, the methodology applied by the KONTIV study is subject to controversial discussions as it was last adjusted in 1989.

The growing concern for environmental questions during the past decades has increased the number of institutions, which are producing and publishing data on the quality of the environment and the development of noise pollution and traffic safety. On the federal level, the probably most important source for recent environmental information is the Federal Environment Agency (UBA) and the Ministry for Environment (BMU). In particular, the Annual Report of the UBA contains detailed information to the general status of the environment as well as background data to special topics. On the level of the federal states (Bundesländer), local environment agencies provide data on local levels of air and noise pollution with varying levels of detail. In the state of Baden-Württemberg, continuous measurements of key pollutants are made and instantly published via the Internet by the UMEG-society. Reports on traffic safety, on accidents with dangerous good and on other research related to road traffic performance are carried out by the Federal Highway Research Institute (Bundesanstalt für Straßenwesen, Bast).

In the subsequent sections, details of the various information sources are provided.

Publications of Governmental Statistical Offices

A publication list of the Federal Statistical Office can be downloaded at:
www.statistik-bund.de/allg/d/veroe/proser1_d.htm
For trans-Alpine traffic, the statistics of the Topic Area 7 (International Trade) and 8 (Transport) are of particular relevance. Subsequently, the address of the Federal Statistical Office, as well as of the statistical Offices of the states of Baden-Württemberg and Bavaria are given.

Statistisches Bundesamt
Gustav-Stresemann-Ring 11, D-65189 Wiesbaden
Tel: +49 - 611 - 75-1, Fax: +49 - 611 - 724000
Internet: www.statistik-bund.de
Department 5-C (Transport), Hans-Joachim Stede, email: gruppe-vc@statistik-bund.de
Department 8-B (Environment), Heinrich Spiess, email: gruppe-viiib@statistik-bund.de

Bayerisches Landesamt für Statistik und Datenverarbeitung
Neuhauser Str. 8, D-80288 Munich
Phone: +49 - 89 - 2119-0, Fax: +49 - 89 - 2119-410
Internet: www.bayern.de/lfstad
Department 3: Agriculture + Environment. Contact: RR Greiner.
Department 4: Economy + Transport. Contact: ORR Groenda.

Statistisches Landesamt Baden-Württemberg:
Böblinger Straße 68, D-70199 Stuttgart
Phone: +49 - 0711 - 641-2833, Fax: +49 - 711 - 641-2793
Internet: www.statistik.baden-wuerttemberg.de
Referat 33 Environmental observation and ecological accounting, direct line: -2418
Referat 43: Trade and Transport, direct line: -2732

Publications of Governmental, Transport-Related Institutions

For trans-Alpine traffic, the following publications of the Federal Ministry of Transport, Building and Housing (BMVBW) are relevant:

- Verkehr in Zahlen: Annually compendium of transport statistics.
- Verkehrsbericht 2000: Presentation of past and future actions of the Ministry in the field of transport, planned political developments and description of the state of transport infrastructure.
- Investitionsprogramm 1999-2002, EFRE-Bundesprogramm, Ortsumgehungsprogramm: Detailed information on future infrastructure projects.

Besides Verkehr in Zahlen, all publications can be downloaded from the Website of the Ministry. The following useful data sources are provided by organisations associated with the Ministry:

- The topic area Mensch und Sicherheit (Human and Safety) of the Bundesanstalt für Straßenwesen (Bast, Highway Research Institute) provides statistics on accidents in passenger and freight transport by various levels of detail. Additionally, the IRTAD-database (International Road Traffic Database) provides information on accidents and accident rates by type of accident, countries and road classes.
- The Kraftfahrt-Bundesamt (KBA, Federal Motor Transport Authority) publishes regularly statistics on transport flows between German districts and foreign countries, on the structure of inland transport and characteristics of the motor vehicle fleet.

- From the Federal Office for Freight Transport (Bundesamt für Güterverkehr) current information on road user charges and the Ecopoint system are available.

Publications of Environment-Related Governmental Institutions

The Bundesumweltministerium provides the following statistics and reports, which can be of relevance for the discussion on a sustainable transport development:

- Interim Report to the Climate Protection Act of the Federal Government (Zwischenbericht zum Klimaschutzprogramm der Bundesregierung) from July 2000.
- Continuation of the 6th Conference of the climate convention (Fortsetzung der 6. Vertragsstaatenkonferenz der Klimarahmenkonvention) from July 2001.
- 1999 report of the FRG on a system for monitoring of the emission of CO2 and other greenhouse gases (Bericht 1999 der Bundesrepublik Deutschland über ein System zur Beobachtung der Emissionen von C02 und anderen Treibhausgasen) from January 2000
- Sustainable Tourism - Deutsche Initiativen für einen nachhaltigen Tourismus. from February 2000

Further, the Federal Environment Office (Umweltbundesamt) provides the following data sources:

- Daten zur Umwelt (Environmental Data Compendium)
- Annual Reports (several years).

3.3.5 Italy

Author of this section: DITS

Analysis on the trans-Alpine freight flows

Alpetunnel GEIE (1996)
Analyse des flux de marchandises transalpins.

Contact: Mr. Cavagnaro
Via Vicenza 5/a, 00185 Roma; Phone: +39 06 44703403; Fax: +39 06 49380716
E-mail: alpe.tunnel@flashnet.it

The object of this study was to define a reliable database concerning the trans-Alpine freight flows for west side of the Alps (from Ventimiglia to Tirano). Both rail and road modes were considered.

The study was committed by Alpetunnel GEIE to a group formed by CETE (France), TMT Pragma (Italy) and DITS (Italy).

After an examination of the present situation, the study contains a data collection where each mode was considered separately. As regards the road, data were collected by direct investigations (the available statistical data were considered not suitable for the purposes of the study). Data on rail traffic were collected from FS (Italian Railways) and from ISTAT (Italian National Institute of Statistics).

The second part of the study presents an intermodal analysis, with a final evaluation of O/D matrices based on 24 origin – destination zones on both sides of the Alps.

The freight transit through the Alps

CONFETRA (2000)
Il transito delle merci attraverso le Alpi.

Contact: Mr. Antonio Giacoma, CONFETRA Vice President and responsible of the Research Area. Address: Via Panama 62, 00198 Roma, Phone: +39 06 8559151, Fax: +39 06 8415576, E-mail: confetra@tin.it

Details: Quaderno CONFETRA (periodical publication). No. 118 (April 2000)
Available from: Centro Studi CONFETRA

This document contains statistical data for the freight flows through the Alps for both rail and road modes, referred to the year 1998. Some forecast values are also presented, mostly derived from a study committed by the former DG VII to a group composed by Prognos (Switzerland), Regional Consulting (Austria) and ISIS (France).

On the basis of the data previously presented this document remarks in its conclusions the low incidence of the rail mode (except for the traffic between Italy and Switzerland), and observes that the road-only mode has limited development potentialities, considering the policies adopted by the European Union and by local governments. In this framework, a strong impulse towards the intermodal solution for the Alpine crossing is considered unavoidable.

Foreign trade statistics. 2000 Yearbook (data for 1997)

ISTAT (2000)
Statistica del commercio con l'estero. Annuario 2000 (dati 1997).

Contact: ISTAT, Foreign Trade Department
Address: Via Cesare Balbo 16, 00184 Roma
Phone: +39 06 46732563

Details: Annual publication
Available from ISTAT, http://www.istat.it. ISBN 88-458-0297-3

This survey is carried out by ISTAT on the basis of the criteria defined by the Council Regulation (EEC) No 1736/75 of 24 June 1975 for the extra-UE countries and on the basis of Council Regulation (EEC) No 3330/91 of 7 November 1991 for the UE countries.

The nomenclature used is based on the NACE/CLIO system for the economical activities, which is composed by 10 macro-branches, 27 branches and 127 groups.

The possibility of sea transportation for a decrease of the freight flows across the Alps - 1998

CIPRA
Le possibilità di trasporto via mare per una diminuzione del trasporto merci attraverso le Alpi.

Contact Mr.Helmuth Moroder,Via Orazio 30900, Bolzano; Phone: +39 0471 283520; Fax: +39 0471 283520; E-mail: helmuth.moroder@libero.it

Details: Acts from a Conference held in Turin on Freight transport across the Alps on 14th – 15th February, 1998, organised by CIPRA

A European geographical characteristic is the sea penetration towards the dry land. This peculiarity could be exploited in order to improve the transport by sea and to lighten the Alpine transport.

Nowadays only the North European harbours like Rotterdam and Hamburg are specialised in international goods transport by container. The consequence of the sea transports centralisation in North European harbours is the increase of transport by the dry land and then across the Alps in the Southern Europe. The measures that should be taken to avoid this situation are:

- To supply Mediterranean harbours with suitable structures for goods transport in order to compete with North European harbours,
- To improve the connection between the railway and the sea transport,
- To promote the Short Sea Shipping.

It is to point out that the transport by the sea and the railway one are more respectful towards the environment then the transport by road or by air.

3.3.6 Slovenia

Author of this section: MARIBOR

National Transport Information System and Statistics Database for Slovenia

WS Atkins, Prometni institut Ljubljana, Traffic Technical Institute

Contact: Marjan Žura, Traffic Technical Institute, Faculty of Civil engineering, Jamova 2, 1000 Ljubljana, Slovenia

Details: PHARE programme
Available from: Ministry of transportation of Republic of Slovenia

The study was carried out jointly by WS Atkins and the Prometni Institute of Ljubljana, with the assistance of the Traffic Technical Institute (TTI) of the Civil Engineering Department in the University of Ljubljana. The recipient is the Ministry of Transport and Communications (MTC).

MTC was developing a national transport policy for Slovenia that aimed to redress the current imbalance in road and rail usage, stimulate regional development and reduce the environmental impacts of transport, particularly of road traffic. It required an appropriate database to assist in monitoring the effects of new transport policies and initiatives, and to assist in the development of forecasting models.

The goals of the project were to specify and develop a national transport database, which could be used to:

- monitor the social, operational, economic and environmental impacts of the various initiatives that would be introduced as part of the MTC's transport policy;
- provide essential transport data to facilitate the calibration and validation of strategic and local transport models;
- provide general EU-compatible transport data for the MTC and other users

The study was planned to be conducted in four consecutive phases as follows:

Phase 1 – Design of the database system to meet the needs of the MTC and other potential users. This phase included a review of existing data sources and determined the need for further data collection and processing;

Phase 2 – Development of the proposed transport database using available data which were identified in Phase 1 and the specification of programs and procedures for the collection and processing of missing data;

Phase 3 – Collection and processing of sample first year survey data to supplement the available data; and incorporation of these additional data into the database;

Phase 4 – Training of MTC staff and other potential users of the database through seminars and workshops

Because no money was initially planned for data collection and processing and no additional money was assigned to the project only first two phases were completed. Additionally front-end application was developed to facilitate use of the database by less frequent and less technical users.

Updating of Transport Infrastructure Costs in Acceding Countries

COWI (TFC) Denmark

Contact: Nataša Fras – Flegar, Ministry of transportation, Transport policy and international relations office, Langusova 4, 1000 Ljubljana, Slovenia, Phone: +386 1 478 82 60, Fax: +386 1 478 81 41, Email: natasa.fras-flegqar@ gov.si

Details: PHARE Multicountry programme
Available from: Ministry of Transportation of Republic of Slovenia

The aim of this project was to provide an update of cost estimates for upgrading transport infrastructure in the 10 accession candidate countries. The detailed data will serve as a basis for cost estimates for infrastructure investment projects in the region and will feed into the TINA process.

The result of project is database of revised unit costs of construction (input into the TINA process).

Freight quantities crossing Slovenia by road (Raziskava o blagovnih tokovih v cestnem prometu)

Contact: Ministry of Transportation

Details: Available from: Marjan Lep, Road and traffic centre, Faculty of civil engineering, Smetanova 17, 2000 Maribor, Slovenia, Phone: +386 2 2294 368, Fax: +386 2 2525 337, Email:lep@uni-mb.si

Objective: Freight quantities crossing Slovenia by road and road traffic volumes assessment.

3.3.7 Switzerland

Author of this section: ECOPLAN

Overview

The most important activities in the field of data and statistics with respect to transport in the Swiss Alpine regions have been and are still carried out by the former Bureau for Transport Studies, now within the Swiss Federal Office for Spatial Development. Data for trans-Alpine freight transport have been collected since the early 1980s and are available for both the road and rail mode. Due to a change in the organisational structure of the former Bureau for Transport Studies, it is not yet sure whether these statistics will be further continued to the same extent.

Detailed surveys with respect to heavy vehicles crossing the Swiss Alps are carried out every 5 years, with the last detailed survey dating from 1999. In the context of the Bilateral Agreement on Land Transport (BALT), Switzerland permanently relies on data and information with respect to the development of trans-Alpine transport. Consequently, heavy vehicles crossing the Swiss Alps are estimated according to the basis of a representative sample on the four main crossing routes in Switzerland ('Verkehrsobservatorium'). This counting and the related projections are carried out once a year.

Furthermore, extensive data material is being collected by the Swiss Federal Roads Office as well as by the Swiss Federal Statistical Office. These data and the corresponding publications do however not particularly focus on the Alpine regions.

Heavy Vehicles and Freight Quantities Crossing the Swiss Alps in 1999

GVF Dienst für Gesamtverkehrsfragen (2000)
Schwere Güterfahrzeuge und Gütermengen durch die Schweizer Alpen 1999. Schweizerisches Verkehrsobservatorium, Alpenquerender Güterverkehr, GVF-Auftrag Nr. 328. Bern.

Contact: Mr. Walter Züst (ARE, Abteilung Verkehrskoordination); Bundeshaus Nord, CH-3003 Bern; Phone: +41 31 322 5829; Fax: +41 31 322 7806; Email: walter.zuest@are.admin.ch

Details: Swiss Transport Observatory on trans-Alpine freight transport.
Available from: Bundesamt für Raumentwicklung, Abteilung Verkehrskoordination, Kochergasse 11, CH-3003 Bern; http://www.admin.ch/gvf,

In 1999, a total of 7% additional heavy vehicles crossed the Swiss Alps as compared to the preceding year. This figure equals the average growth rate since 1990. The same holds with respect to the increase of the total number of foreign heavy vehicles, where the figure of 9% meets the average of the ten last years.

In 1999, a total of 1.1 million heavy vehicles crossed the Gotthard tunnel on the road, which is equivalent to a 6% increase. An even higher increase has been observed at the other crossing routes, where the amount of additional heavy vehicles is as much as 8%.

In this study, the figures with respect to heavy vehicles crossing the Swiss Alps are presented for an overall time period beginning in 1981, the year of the opening of the Gotthard road tunnel.

The data collected in the framework of this study allow for the analysis of the following topics:

- Number of heavy vehicles / freight volumes crossing the Swiss Alps
- Number of heavy vehicles / freight volumes crossing the different routes
- Number of trans-Alpine road freight transport / freight volumes split up into vehicle categories

- Number of trans-Alpine road freight transport freight volumes split up into inland traffic, import/export traffic and transit.

The data described above are collected on a yearly basis with a more detailed collection and analysis in an interval of 5 years. Based on the data collected in the framework of this project, several (popular) publications have been realised. The most important among them are mentioned below:

Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, Dienst für Gesamtverkehrsfragen (1996)
Wege durch die Alpen, GVF-Bericht 1/96, Available from: Eidgenössische Drucksachen- und Materialzentrale (EDMZ), http://www.admin.ch/edmz, Order Number 801.560.d.

Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation, Dienst für Gesamtverkehrsfragen (1996)
Alpenquerender Güterverkehr 1998, Schwere Nutzfahrzeuge und Gütermengen durch die Schweizer Alpen, GVF-Auftrag Nr. 294/2, Available from: Dienst für Gesamtverkehrsfragen, http://www.admin.ch/gvf.

ALPINFO: Rail and Road Freight Transport crossing the Swiss Alps

Bundesamt für Raumentwicklung, Abteilung Verkehrskoordination (various years)
ALPINFO: Alpenquerender Güterverkehr auf Strasse und Schiene. Bern.

Contact: Bundesamt für Raumentwicklung, Abteilung Verkehrskoordination, Kochergasse 11, CH-3003 Bern; http://www.admin.ch/gvf, Phone: +41 31 322 55 55

Details: Available from: Bundesamt für Raumentwicklung, Abteilung Verkehrskoordination, Kochergasse 11, CH-3003 Bern; http://www.admin.ch/gvf,

Every year, figures with respect to rail and road freight transport crossing the Swiss Alps are collected and published. The data are collected for three different 'Arcs of the Alps': A (Mt. Cenis/Fréjus-Brenner); B (Ventimiglia-Tarvisio); C (Ventimiglia-Vienna). The data for France are provided by the Ministère de l'Equipement, des Transport et du Logement in Paris; whereas the data for Austria come from the Bundesministerium für Verkehr, Innovation und Technologie in Vienna.

Other Research Activities and Publications in Switzerland

GVF Dienst für Gesamtverkehrsfragen (1997)
Alpen- und grenzquerender Personenverkehr 1996 (A+GQPV 96). GVF-Auftrag Nr. 279/280. Bern.
Contact: Mr. Walter Züst (ARE, Abteilung Verkehrskoordination); Bundeshaus Nord, CH-3003 Bern; Phone: +41 31 322 5829; Fax: +41 31 322 7806; Email: walter.zuest@are.admin.ch
Available from: Eidgenössische Drucksachen- und Materialzentrale (EDMZ), http://www.admin.ch/edzm, Order number 801.568.d.

BFS Bundesamt für Statistik (various years)
Schweizerische Verkehrsstatistik, Statistische Resultate 11: Verkehr und Nachrichtenwesen, ISBN 3-303-11131-6. Bern.
http://www.statistik.admin.ch.

BFS Bundesamt für Statistik (various years)
Der Öffentliche Verkehr, Statistische Resultate 11: Verkehr und Nachrichtenwesen. Bern.
http://www.statistik.admin.ch.

BFS Bundesamt für Statistik (2001)
Gütertransporte auf der Strasse. Fahrzeugkilometer, Tonnen, Tonnenkilometer: Zeitreihen 1985/93-2000. Daten vor Einführung der LSVA. Neuchâtel.
This publication contains data on road freight transport in Switzerland. Numerous tables show the development of vehicle-kilometres, tons and ton-kilometres from 1985/93 to 2000. This data will be very valuable to compare with future developments after the introduction of the Swiss MRHVT on 1 January 2001.

ARE Federal Office for Spatial Development (2001)
Through the Alps. Transalpine freight traffic by road and rail. Bern
Abstract: Accessible by a large public, this publication describes the development of freight traffic throgh the Alps as well as the transport policy aiming at shifting transport from road to rail.

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GVF Dienst für Gesamtverkehrsfragen (1999)
Grenzquerender Strassengüterverkehr 1998, GVF-Auftrag Nr. 317. Bern.
Available from: Eidgenössische Drucksachen- und Materialzentrale, CH-3003 Bern, http://www.admin.ch/edmz, Order Number 801.576.d
Abstract: The present inquiry of the Bureau for Transport Studies GVF presents information on cross-border goods transports on the road. A total number of 7.6 Mio goods vehicles (i.e. delivery vans and heavy goods vehicles with a maximum weight above 3.5t) crossed the border of Switzerland in 1998. The present study shows the amounts of crossings per passage point, per transport class, per country of registration and per vehicle class. Additional information can be found for foreign heavy goods vehicles i.e. characteristics of the vehicle as well as its loaded good and its origin and destination.

3.4 Geographic Information Systems

3.4.1 European Union

Author of this section: NEA

Overview of European state of the art

A geographic information system is necessary to analyse and visualise the relations between transport infrastructure networks and transport flows. A network is an important part in an ETIS system and is used for geo-referencing and spatial calculations such as shortest path analyses and nearest neighbourhood calculations. It should contain a representation of all the elements needed in ETIS such as roads, railways, rivers, air corridors etc. In addition, relations between socio-economic and demographic information and transport flows can be analysed with a geographic information system. Within the MESUDEMO project, different systems and networks are analysed and compared, amongst them are APUR-GISCO and GEO-SYSTRANS. In addition, other networks have been used for European projects such as the NEA-IWW European networks. Well-known software used to visualise relations between transport infrastructure networks and transport flows are for example MapInfo and ArcInfo.

MESUDEMO, Transport networks

Contact: Jørn Cruickshank, Agder Research Foundation, AF, Serviceboks 415, N-4606 Kristiansand, Norway; Phone: +47 38142227, Fax: +47 38142201, e-mail: jorn.cruickshank@agderforskning.no

Details: MESUDEMO, Workpackages 6 and 7, contract no. ST-97-SC.1186, Project funded by the European Commission under the transport RTD, Programme of the 4th framework programme

In the MESUDEMO project, results from the INFOSTAT project have been taken as a starting point with 32 network node characteristics and 35 network link characteristics. Recommendations are made on the selection of GIS for the various transport modes and compatibility is assured between network and transport flows as is the balance between the European network dimension and the network attributes which necessarily have a local dimension. Important concepts for networks are: corridors, accessibility and transport chains. For the design of the structure of the ETIS-network, the following rules should be included:

- The network should be an inter modal network (air, road, rail and waterways).
- The network should include a zoning system and there is no extra zoning system.
- Calculations and analyses from the system should be comparable and repeatable.
- The analyses within an ETIS will have different spatial dimensions. Therefore, a hierarchical structure of roads, railways, etc. should be included.

Existing networks have been reviewed. Examples of GIS on a European scale are GISCO-APUR and GEOSYSTRANS. In addition, pilots have been carried out to compare different networks.

APUR-GISCO

Contact: Alain Beauregard, APUR, 9 rue Agrippa d'Aubigne 75004, Paris, Phone: +33 142762354, Fax: +33 142762370, e-mail: al_b@apur.worldnet.fr

Details: There is not enough information available to analyse APUR-GISCO. Furthermore, at the moment a study is carried out for the European Commission to evaluate APUR-GISCO.

GISCO is the Geographic Information System of the European Commission. The GISCO database contains geographic information on a wide variety of subjects, from topographic data over administrative regions to data on land and natural resources. For all those subjects, several geographic and attribute data sets are maintained, each of them containing several variables describing the data.

GISCO includes a road network, a rail network, a seaport network and an airport network. In GISCO, only network items describing the segment or node are available. In the extension of the GISCO network made by APUR more information is available such as average daily traffic and accident rate.

GEOSYSTRANS

Contact: M. Chesnais, GEOSYSCOM, University of Caen, France, Phone: +33 231565699, Fax: +33 231565808, e-mail: chesnais@geo.unicaen.fr

Details: GEOSYSTRANS, Deliverable 11, contract no. ST-97-SC.1153; Project funded by the European Commission under the transport RTD Programme of the 4th framework programme.

The philosophy of the work done on networks in GEOSYSTRANS is to provide an homogenised network data information system for the territories considered (extended Europe) in order to allow various kinds of analyses and to be an instrument of modelling related to predetermined choices. For example to be in a position to express differences due to changes in the network. In deliverable 11 a number of applications is given (data and maps also available on CD-ROM). Four different applications are described. The effect of the opening of the bridge of the Oeresund between Denmark and Sweden is analysed. Another application describes changes of the Belgian railways in the last 200 years. A database is dedicated to eleven Central and Eastern European countries related to the intention of these countries to become member of the European Union. Finally, an application is described on European level including regions, cities and networks (highway, national road, secondary road, rail freight and inland waterway).

NEA-IWW

Contact: Jaco van Meijeren, NEA Transport Research and Training, http://www.nea.nl, Sir Winston Churchilllaan 297, P.O. Box 1969, 2280 DZ Rijswijk, The Netherlands; Phone: +31 70 3988 337, Fax: +31 70 3988 411, e-mail: jme@nea.nl

Details: NEA-IWW European networks

Another European network is the European network constructed and developed by IWW and NEA. It contains a road network, a railway network, an inland waterway network and a sea network. These networks have been used in a number of European projects such as the Traffic Forecast on the Ten Pan-European Transport Corridors of Helsinki and Forecasting 2020. Apart from attributes like distance and time, the networks (especially the road network) contain many other attributes.

Software tools (MapInfo, ArcInfo)

Contact: MapInfo website: www.mapinfo.com
ArcInfo website: www.arcinfo.com

Details: Commercial software packages

Commercial software packages like MapInfo and ArcInfo (both are well-known packages used a lot in practice) can be used to visualise relations between transport networks and transport flows.

Contributions from various countries

Thill Jean-Claude (Edit.) (2000)
Geographic Information Systems in Transportation Research. Elsevier Science Ltd. Buffalo, NY.

Contact: Jean-Claude Thill, Department of Geography and National Center for Geog. Info & Analysis, State University of New York at Buffalo, Phone: +1 716 645 2722, Fax: +1 716 645 2329, Email: jcthill@acsu.buffalo.edu

Details: Volume of 22 original papers
Available from: Elsevier Science Ltd., The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK, ISBN: 0-08-043630-7

Computer-based transportation applications and databases have been a fact for several decades. Transportation information, however, has often not been accessible in a user-friendly manner, and integrating data from diverse sources has too often been a challenge in itself. Geographic Information Systems (GIS) have revolutionized spatial planning and decision making by using the spatial dimension of the depicted world as a common thread according to which all information can be referenced. The application of GIS to transportation research (GIS-T) is quickly becoming a mature domain of application of the GIS technology and has gained full recognition among transportation practitioners and academics.

This book fills a void by providing an overview of the state-of-the-art of GIS for transportation, from data management issues, to data manipulation and analysis, including considerations brought to the forefront by real-time and mobile computing. The twenty-two original contributions by internationally acclaimed authors from America, Europe and Asia will be a key reference for practitioners, students and scholars.

3.4.2 Austria

Author of this section: ICCR

A variety of transport related GIS systems are currently in use in Austria. On a national level, the most commonly used system was developed in the late 1990s as part of the Austrian Transport Master Plan (for details see "Preparation of Cartography and Internet Presentation of Results of the Austrian Federal Transport Infrastructure Plan" below). Rather than being a fully operational information system, this software tool represents more of a graphical illustration of the findings of the Austrian Transport Master Plan. Given the current technical possibilities, the status of GIS implementation in the transport sector can be described as rather weak.

GIS in Traffic and Transport

Zagel, Bernhard (2000)
GIS in Verkehr und Transport, Heidelberg, Wichmann.

Contact: Bernhard Zagel, Institut für Geographie und angewandte Informatik, Universität Salzburg, http://www.geo.sbg.ac.at, Hellbrunnerstrasse 34, A-5020 Salzburg; Phone: +43 662 8044 5232; Fax: +43 662 8044 525; Email: bernhard.zagel@sbg.ac.at

Details: Available from http://www.amazon.de, ISBN: 3879073422

The book includes articles as proceedings from a conference about "GIS in Traffic and Transport" which took place in 1999. The conference was attended by 200 experts from the policy fields of traffic and transport. The aim of the conference was to create a communication platform for experts in GIS and transport policy. The contributions to this conference are made available for a larger audience with this book.

During the conference, there was the suggestions and wish to create an Internet based platform which should provide for a discussion forum and an information pool about GIS in traffic and transport. A web-site for this is still under construction and will be found under:

http://www.zgis.at/verkehr

System Analysis and Differentiation (Digitalisation of Traffic Cells and Transport Graphs)

Bundesministerium für Verkehr, Innovation und Technologie - BMVIT (1996)
Systemabgrenzung und –differenzierung (Digitalisierung der Verkehrszellen und –graphen), Bundesverkehrswegeplan (Arbeitspaket A-1), Wien, Bundesministerium für Verkehr, Innovation und Technologie.

Contact: Prof. Dr. Werner Gobiet, Institut für Strassen- und Verkehrswesen, Technische Universität Graz, Rechbauerstraße 12/II, A-8010 Graz; Phone: +43 316 873 6222; Fax: +43 316 833922; Email: werner.gobiet@tugraz.at

Details: Available from http://bvwp.bmv.at/Erstellung/ap_a1.html

Within work package 1 of the Austrian Federal Transport Infrastructure Plan (BVWP), the aim was to digitalise the traffic cells and the transport graphs of the transport routes to create the geometric basis for the entire work programme for the BVWP. The aim was to establish an approved and comprehensive instrument for all transport routes. The following results were aspired:

- Traffic cells in Austria with national, regional, district and local orders as well as water networks;
- Traffic cells in other countries with borders to aggregated entities;
- Road graph Austria with national and regional borders;
- Railway graph Austria with national and regional borders;
- Road graph with other countries with national borders to Austria;
- Railway graph with other countries with national borders to Austria;
- Water networks with other countries with national borders to Austria.

The data is from 1996 is contains graphs for all primary and secondary roads in a layer. For railways there are different layers for the Austrian Railways and private railways.

Outline for an Information System for the Austrian Transport Networks (Federal Transport Information System BUVIS)

Bundesministerium für Verkehr, Innovation und Technologie - BMVIT (1999)
Entwurf eines Informationssystems für die österreichischen Verkehrsnetze (Bundesverkehrsinformationssystem BUVIS), Bundesverkehrswegeplan (Arbeitspacket RO-E), Wien, BMVIT.

Contact: Friedrich Nadler & Gerd Steierwald, Ziviltechniker GmbH für Verkehr, Lindengasse 38, A-1070 Wien; Phone: +43 1 523 02 51; Fax: +43 1 523 02 51 31; Email: office@nast.at

Details: Available from http://bvwp.bmv.gv.at/Erstellung/ro_e.html

The basis of the information system is to create an integrative framework that allows including all transport modes, the creation of a database as well as the systematisation of the description of the contents of the database. For this, there is a need for a model calculation about information on road and rail networks. This information is related to the infrastructure and the transport supply and demand.

For the establishment of the Austrian Federal Transport Infrastructure Plan, the information system should make sure that data can be collected and is easily accessible. For this reason, the data should be available in a database with geographical allocation. This system is called Federal Transport Information System (BUVIS).

Preparation of Cartography and Internet Presentation of Results of the Austrian Federal Transport Infrastructure Plan

Bundesministerium für Verkehr, Innovation und Technologie – BMVIT (1999)
Erstellung einer Kartographie- und Internet-Präsentation zu den Ergebnissen des Bundesverkehrswegeplanes, Bundesverkehrswegeplan (Arbeitspacket R-W), Wien, BMVIT.

Contact: PRISMA – Kollarits und Widmann OEG, Klostergasse 18, A-2340 Mödling; Phone: +43 2236 47975; Fax: +43 2236 47975 90; Email: office@prisma-solutions.at
Manfred Schrenk, Multimediapla.at, Baumgasse 28, A-1030 Wien; Phone: +43 1 892 85 02; Fax: +43 1 893 13 02; Email: schrenk@multimediaplan.at

Details: Available from http://bvwp.bmv.gv.at/Erstellung/r_w.html

This work package contains the results of the prediction and model calculations of the Austrian Federal Transport Infrastructure Plan which are mapped and presented on the Internet. The specific issues of this work package are:

- the adoption of the existing graphical data as well as the results of the Austrian Federal Transport Infrastructure Plan and the preparation of the maps and diagrams as ArcView project;
- the creation of a data base with all relevant data;
- the preparation of an ArcView application which allows the updating of maps, the interactive query and selection of data as well as the preparation of maps and graphs;
- the preparation of data and the ArcView application for the Internet presentation; and
- the installation of the presentation on the homepage of BMVIT.

3.4.3 France

Author of this section: NESTEAR

Road administration and CETE's (CETE are regional technical and scientific centres) have very detailed GIS with route assignment software; efforts of harmonisation of GIS tools are mode for road.

For rail, there are several GIS, more or less detailed; for trans-Alpine section detailed GIS were built in order to study slots allocation in relation with SYSTRA (consulting company) and the EPFL (Ecole Polytechnique Fédérale de Lausanne which develops CAPRES tool for the use of rail networks).

Within European research framework a GIS tool has been used, originally called "Degagement" at INRETS, improved in relation with NEA and IWW (cf. ECIS study for the European Centre of Infrastructure Study realised by NEA, IWW and INRETS. NESTEAR is working on an improvement of this GIS in relation with NEA and IWW using information collected in the EUFRANET project: this GIS, in progress, will be multimodal with in addition the intermodal terminals and ports as defined in the IQ project (Intermodal Quality project of the 4th framework).

3.4.4 Germany

Author of this section: IWW

In Germany, a variety GI-systems are used in research activities, in the field of transport as well as in other areas like spatial planning and environment. On the national level, however, there was until quite recently few coordination of GIS-activities. The result was an inefficient use of geoinformation because of the great variety of data sources. The same geodata has been collected more than one time; existing data sources on the other hand remained unused. The knowledge about the availability of existing data has not been sufficient. Therefore, in 1998, the federal government has introduced the inter-ministerial committee for geoinformation systems (IMAGI) under the direction of the Federal Ministry of the Interior. The main tasks of the IMAGI are

- the development of a concept of an efficient data management of geodata on the federal level,
- the intensification of the coordination between the federal and the state level as regards questions of compatibility, charges and other,
- to push standardization concepts and
- to improve the public relation and the marketing of publicly hold data resources

Besides the work of the IMAGI there are other activities commissioned by the federation and the states that deal with the efficient use of geodata in connection with transport planning purposes and the construction of transport-related databases.

Inter-ministerial committee for geoinformation systems (IMAGI)

Bundesministerium des Inneren (BMI), Interministerieller Ausschuss für Geoinformationswesen (IMAGI).

Contact: Geschäftsstelle des IMAGI beim Bundesamt für Kartographie und Geodäsie, Richard-Strauß-Allee 11, D-60598 Frankfurt am Main; Phone: +49 69 6333 301/313; Fax: +49 69 6333 441; Email: imagi@ifag.de

Details: Available from http://www.imagi.de; http://www.geodatenzentrum.de; http://www.gein.de; http://www.ifag.de/welcome-e.html

In June 1998, the federal cabinet decided to originate a permanent inter-ministerial committee for geoinformation systems (IMAGI). Chairmanship and administration stays with the Federal Ministry of the Interior (BMI). The management has been delegated by the BMI to the Federal Agency for Cartography and Geodesy (BKG), where the main branch of IMAGI has been installed.

In May 2000, the inter-ministerial committee for geoinformation systems decided to develop a meta-information-system for the geo-data of the federation (GeoMIS-Bund). The system will facilitate the data access. According to the conception of an efficient federal geo-data-management, it is planned to establish a broker-system, that will have access to the existing and planned decentral meta-data information systems. The Federal Agency for Cartography and Geodesy has been commissioned with the task of development and installing of this system.

In the frame of the federal GIS-activities, a comprehensive geo-database (Geodatenzentrum des Bundes (GDZ)) has been established in Leipzig, that can be used both by specialists and the public via the Internet (http://www.geodatenzentrum.de), The public access to environmental data will be enhanced by establishing the environment information net Germany (Umweltinformationsnetz Deutschland GEIN). The data can be retrieved via http://www.gein.de.

A progress report 1998-2000, documenting the work of the BKG in general and dealing especially with the issue of GIS can be downloaded from the BKG's website at http://www.ifag.de/welcome-e.html.

GIS in Traffic and Transport

Zagel, Bernhard (2000)
GIS in Verkehr und Transport, Heidelberg, Wichmann.

Contact: Bernhard Zagel, Institut für Geographie und angewandte Informatik, Universität Salzburg, http://www.geo.sbg.ac.at, Hellbrunnerstrasse 34, A-5020 Salzburg; Phone: +43 662 8044 5232; Fax: +43 662 8044 525; Email: bernhard.zagel@sbg.ac.at

Details: Available from http://www.amazon.de, ISBN: 3879073422

The book includes articles as proceedings from a conference about “GIS in Traffic and Transport” which took place in 1999. The conference was attended by 200 experts from the policy fields of traffic and transport. The aim of the conference was to create a communication platform for experts in GIS and transport policy. The contributions to this conference are made available for a larger audience with this book.

During the conference, there was the suggestions and wish to create an Internet based platform that should provide for a discussion forum and an information pool about GIS in traffic and transport. A website for this is still under construction and will be found under: http://www.zgis.at/verkehr

Integration of transport planning and GIS

Ministerium für Schule, Wissenschaft und Forschung des Landes NRW
Innovationsprogramm Forschung NRW, Schwerpunktthema "Mobilität und Verkehr von morgen".

Contact: Dipl.-Geogr. Jörn Möltgen, Institut für Geoinformatik, Robert-Koch-Str. 26-28, D-48149 Münster; Phone: +49 251 83 31961; Email: moltgej@ifgi.uni-muenster.de

Details: Available from http://vugis.uni-muenster.de/

The VUGIS research project is initialised and funded by the Ministry of Education, Science and Research of the State Government of North-Rhine Westphalia in Germany in its research program 'Mobility and Transport for Tomorrow'. The project will be conducted by various partners in close co-operation. The goal of the project is the development of a GIS-based decision-support-system for transport planning purposes. The aimed functionality can be classified in five levels with increasing complexity:

- visualisation and superposing of the necessary and relevant data as regards transport planning
- realisation of GIS-analyses
- production base data for transport planning and modelling
- simulation of environmental impacts of planned measures with environment modelling tools
- provision of heterogeneous thematic data

The federal road information system BISStra

Bundesministerium für Verkehr, Bau- und Wohnungswesen (BMVBW)
BISStra - das Bundesinformationssystem Straße.

Contact: http://www.bmvbw.de

Details: http://www.gis-consult.de/projekte/bisstra.htm

The federal ministry of transport, building and housing (BMVBW) has to accomplish various tasks in the field of road administration, which requires a state-of-the-art geographical information system. Therefore, a road information system with the name "Bundesinformationssystems Straße" (BISStra) is in the process of development. The system will be able to visualise all specific data of the state databases that are relevant for the federal road construction and administration tasks.

OKSTRA® - object catalogue for the road and transport system

Bundesministerium für Verkehr, Bau- und Wohnungswesen (BMVBW)
OKStra - Objektkatalog für das Straßen- und Verkehrssystem.

Contact: http://www.okstra.de

Details: http://www.okstra.de

With the object catalogue for the road and transport system (OKSTRA) there will be for the first time a comprehensive standardization for the entire road and transport system comprising the planning process, the documentation of existing roads and various information dealing with the existing road network. OKSTRA realises interoperability between the IT-environments of road and transport administration offices, engineering consultants and the industry via an object-oriented standardizes data format. On May, 22nd/23rd 2001, the " Forschungsgesellschaft für Straßen- und Verkehrswesen (FGSV)" organized a symposium dealing with a lot of aspects and recent developments in the frame of the OKSTRA project.

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3.4.5 Italy

Author of this section: DITS

Overview

A coordinated strategy on GIS sector is still not active in Italy. Presently an Authority for IT in the Public Administration (AIPA, Autorità per l'informatica nella Pubblica Amministrazione) has the task of promoting, coordinating, planning and controlling the development of information systems within the government central organisations and agencies, through their standardisation, interconnection and integration. Between AIPA’s inter-sectoral projects a specific one related to GIS systems is under development, but it is finalised to give a general framework of the activities carried out by Public Administration, and it is not strictly related to the transport sector. More information (in Italian) is available at the following address:

http://www.aipa.it/attivita[2/progettiintersettoriali[10/sit[3/

New Transportation and Logistics General Plan

Nuovo Piano Generale dei Trasporti e della Logistica (2000).

Contact: Mr.Basoli, Infrastructure and Transportation Department
Piazza della Croce Rossa 1, 00161 Roma Phone: +39 06 44267186,
Fax: +39 06 44267106, E-mail: affari.internazionali@trasportinavigazione.it

Details: Available at the following address:
http://www.trasportinavigazione.it/site.asp?HCod=7&LCod=0&IdDoc=411&Sezione=8

The New Transportation and Logistic General Plan has a short remind on the application of GIS techniques and methodologies on one of its enclosures (Appendice A 12.2 al Capitolo 12). This document gives some definitions related to the GIS techniques and their usefulness in transport planning, design and management.

3.4.6 Slovenia

Author of this section: MARIBOR

Geographic information system of Slovenian railways

Contact: Ljubo Žerak, M.Sc., Institute of Traffic and Transport, Kolodvorska 11, 1000 Ljubljana, Slovenia, phone: +386 1 29 14 626, fax: +386 1 231 92 77, E-mail: ljubo.zerak@prometni-institut.si

Details: KAGIS (GIS-based railway infrastructure database). Available from: Institute of Traffic and Transport, Kolodvorska 11, 1000 Ljubljana, Slovenia

Slovenian road database (Banka cestnih podatkov)

Contact: Ljuba Brank, Road Directorate, Langusova 4, 1000 Ljubljana, Slovenia, phone: +386 1 478 82 19, fax: +386 1 478 81 48

Details: An extensive GIS-based road infrastructure and traffic database. Available from: Road Directorate, Langusova 4, 1000 Ljubljana, Slovenia

Slovenian public transportation database (AVRIS)

Contact: Dr. Marjan Lep, University of Maribor, Faculty of civil engineering, Smetanova ulica 17, 2000 Maribor, Slovenia, phone: +386 2 229 43 68, e-mail: lep@uni-mb.si

Details: Routes and Time-schedule for the buses in/thru Slovenia. Available from: Road and Traffic centre, Faculty of civil engineering, Smetanova ulica 17, 2000 Maribor

A GIS component to support road administration information systems

Contact: Danijel Rebolj, Construction IT Centre, Faculty of Civil Engineering, University of Maribor, http://fg.uni-mb.si/cgi, Smetanova 17, 2000 Maribor, Slovenia; Phone: 00386 2 2294 381; Fax: 00386 2 2524 179, E-mail: cgi@uni-mb.si

Details: Available from Construction IT Centre, Faculty of Civil Engineering, Smetanova ulica 17, 2000 Maribor

The main focus of the project was to upgrade the business information system of the Slovenian road administration, whereby the most used applications user interfaces were extended with a specialized GIS component, which enables a fast and clear (geo)graphical view of the data about the selected part of the road network. The simplicity of using this intelligent digital map makes it possible to effectively and

clearly display the relevant information, which is of highest importance in the process of decision-making.

Integration of computer supported process in road life cycle:
Product modelling has proved to be the most systematic way to integrate information and applications in a life cycle of a building object. Since 1994, the Construction IT Centre has focused its research on the product model of a road. Presently the second version of the model is being developed. It is based on the XML technology and standards in the relevant domain, and will effectively support a range of applications from planning and designing a road, to the analysis of it's impacts on the environment and support of the building stage. So far, complete publications are only available for the first version of the road product model MCT.

3.4.7 Switzerland

Author of this section: ECOPLAN

Overview

In Switzerland, Geographic Information Systems do not have a long tradition in “official” applications. It was only at the beginning of the year 2000 that the Federal Council instructed the coordinating office for geographic information and geographic information systems (KOGIS, http://www.kogis.ch) to elaborate a coordinated strategy.

KOGIS is situated in the Office of Topography of the Federal Department of Defence, Civil Protection and Sports. The mission of this coordinating office is to identify and use synergetic effects in the field of collection, treatment, administration, application and sale of geographic data within the Federal Administration of Switzerland. It is the aim of this organisation to:

- enable a further dissemination of geographic information as well as the corresponding method and tools,
- agree on a common strategy in the field of geographic information and geographic information systems,
- guarantee a coordinated policy with respect to collection, sale and pricing of geographic data,
- to support and encourage close collaboration within GIS projects by offering a platform for exchange and discussion in order to share knowledge, experience and resources,
- to promote the application of tools and standards for modelling and data exchange.

On the one hand, KOGIS is challenged by economic and technical problems of GIS projects. On the other hand, a basis for the building up of national infrastructure for geographic information has to be elaborated.

GIS in the field of spatial planning

Institute for National, Regional and Local Planning (ORL), ETH Zurich (ongoing)
Special Interest Group on Geographical Information Systems. Zürich.

Contact: Dominik Angst, ORL ETH Zurich, http://www.orl.arch.ethz.ch
ETH Hönggerberg, CH-8893 Zurich; Phone: +41 1 633 29 81; Email: angst@orl.arch.ethz.ch

Details: Training courses for beginners and advanced users of GIS Systems.
Available from: ORL ETH Zurich (see addresse above).

The geographical information system ARC/INFO has been used at ORL ETHZ since 1985. The main goals of the special interest group on GIS at the ETHZ are:

- to maintain and continue to develop knowledge on GIS at the ORL ETHZ;
- to ensure and improve the training of new employees and
- to accumulate GIS-knowledge and to provide useful documentation

Training courses for beginners and advanced users are held once every semester. Among others, the newest developments in the field of GIS are presented in the framework of these courses.

GIS in the field of transport planning

Widmer Paul (ongoing)
GIS in der Verkehrsplanung. Forschungsauftrag auf Antrag der Vereinigung Schweizerischer Verkehrsingenieure (SVI). Zürich.

Contact: Paul Widmer, Ingenieur- und Planungsbüro Paul Widmer
Bahnhofplatz 76, CH-8500 Frauenfeld; Phone: +41 52 722 16 84; Fax: +41 52 721 89 22; Email: pwidmer@alum.mit.edu

Details: Research Project of the Vereinigung Schweizerischer Verkehrsingenieure (SVI).
Available from: Vereinigung Schweizerischer Verkehrsingenieure (SVI), PO Box 155, CH-8034 Zürich.

This study has not been published yet.

4. Research on vertical themes (WP3)

4.1 Decision-making processes

Whereas concrete policy decisions and documents were presented in chapter 2.1, this chapter provides information on the decision-making processes in trans-Alpine transport policy. It is less about what decisions were made and more about how these decisions were made. More specifically, we are interested in questions like: How have decisions on trans-Alpine transport been taken in the past and how are they likely to be taken in the future? What kinds of negotiations are taking place and whom do these involve? Who are the stakeholders and what are their positions? Is there mobilisation around specific positions and, if so, how is this played out and how do citizens participate? Finally, yet not least important, what is the influence of the decision-making context and processes on the policy contents? In other words, what role have institutional arrangements on policy change?

4.1.1 European Union

Author of this section: ICCR

Overview

The decision-making context is of particular interest for the Alpine case because

- non-EU-countries (Switzerland, Liechtenstein, Slovenia) are involved
- special agreements on trans-Alpine transport have been concluded (Alpine Convention with its Transport protocol, bilateral transport agreements with Switzerland and Austria)
- several conflicting interests are at stake (shippers, operators, affected population, a sensitive environment etc.).

Trans-Alpine transport was not a focal point of the Common Transport Policy of the period 1995-2000 but is likely to be one in the forthcoming years, not least because of the expiry of the transit agreement between Austria and the EU, and specifically of the Ecopoint system, in 2003. We can therefore expect an intensification of bilateral and multi-lateral activities in the next couple of years.

Finding appropriate regulatory and/or economic measures that deal with the problems faced in the trans-Alpine crossing and which are accepted by all relevant parties to the agreements will not be easy. Solutions must be elaborated by the Commission in consultation with Member countries and other stakeholders, but have then to be approved by the Council of Ministers. With few exceptions, the European Parliament has (until now) no major co-decision power in transport, yet it has to be consulted. The same applies to the Council of Regions and the Economic and Social Committee. There are, in other words, several points at which pressure from various groups, regional governments or Member States can be exerted.

Mention must also be made of the European Court of Justice and of intra-institutional interaction, especially within the Commission. The ECJ already once played a major role in pushing through a common

transport policy agenda following the intervention of the European Parliament. Recently it was called to decide on the dispute between Austria and the European Commission on the implementation of the Eco-point system. Otherwise, the failure of the Commission to come up with a new White Paper on the Common Transport Policy in early 2001 as originally planned is related, amongst others, to disagreement within the Commission about the contents of this paper – in particular from within the general directorates of budget and environment.

The ALP-NET literature review produced a good number of studies dealing with decision-making processes in the countries involved, but little specific information on the trans-Alpine crossing. Several of the studies dealing with the policy contents of transport policy at European and national level (in comparative perspective and/or for the purpose of elaborating future scenarios) have produced as a by-product an insightful analysis of the special nature of policy-making in the European Union and the role and positioning of various actors representing different interests. This analysis is in that interesting for ALP-NET in that it largely also explains the difficulties the EU is facing in the field of trans-Alpine transport. Nevertheless, there would appear to be a need for a more systematic and tailored analysis of the decision-making context surrounding the trans-Alpine crossing.

In Austria there are some interesting studies describing the decision-making process from the perspective of representatives of the citizens' initiatives that are fighting against the official transport policy of their country.

For Switzerland, studies show the influence of federalism and direct democracy on the country's transport policy. Political scientists claim that Swiss transport policy is increasingly determined by the European level and that fully autonomous Swiss solutions are no longer tenable.

Unsurprisingly, in most cases it is difficult to draw a distinction between studies dealing with the analysis of policies and those dealing with the analysis of the actual political or decision-making process. Most of the studies presented in this section carry an element of both.

Overall there are a limited number of studies that have dealt with the specific trans-Alpine transport issue from a political science point of view. It would certainly be interesting to draw conclusions from the political process and to improve future co-operation in this field. For all actors involved, it would be interesting to learn how to deal successfully with complex situations There is often a significant gap between collaboration for the purpose of exchange of information and active co-operation and co-ordination. For the EU it is not easy to deal with "special cases" like the Alps and non-member states. Therefore, as a first attempt, the planned ALP-NET workshop on policy and the decision-making context should be used as a platform to analyse the peculiarities of the political process around the Alpine transport issue and to discuss innovative approaches to tackle the existing problems in co-ordination and co-operation.

Sustainable Transport Policies

European Conference of Ministers of Transport (ECMT) (2000)
Sustainable Transport Policies, ECMT, Paris.

Contact: ECMT, 2 rue André Pascal, F-75775 Paris Cedex 16; Phone: +33 1 45 24 94 35; Fax: +33 1 45 24 97 42; E-mail: ecmt.contact@oecd.org

Details: Available from: http://www.oecd.org/cem/pub/pubpdf/SustainE.pdf

The report identifies key policy issues for sustainable development in the transport sector, lists issues where progress have been made as well as policy objectives that have to be met. This is combined with recommendations in the process of decision-making and implementation. Overall, the report argues for a an enhanced role of transport ministers in sustainable transport policy.

It argues that even though substantial progress in the sustainability of transport has been made, there remain important problems and challenges: unsustainable rates of traffic growth; severe noise and nuisances from traffic in built up areas; persistent growth in emissions of greenhouse gases; poor air quality in specific locations; and destruction and fragmentation of protected landscapes and habitats.

The European Conference of Ministers of Transport is working to improve policies and move towards solutions in any of these areas, notably:

- improved decision-making incorporating best practice in cost-benefit analysis and environmental assessment;
- efficient and coherent pricing and financing of infrastructure;
- reducing CO2 emissions from road transport;
- promoting the use of low emission trucks;
- improving the competitiveness of road alternatives, especially rail and inland shipping;
- improving road safety;
- resolving conflicts between transport and sustainable development in urban environments.

The report argues that sustainability issues can only be resolved if decisions are taken in an integrated manner across sectoral administrative divisions. Thus, transport ministers should have a greater say in policy areas, like land use planning, housing and regional development, if unsustainable traffic generation is to be avoided. They should also have a significant role in shaping fiscal policy where it affects transport prices. Overall, the report calls for a more proactive role of transport ministers in achieving sustainable development.

Transport Policy Scenarios for the EU: 2020 Images for of the Future

Banister, David; Dreborg, Karl; Hedberg, Leif et al (2000)
"Transport Policy Scenarios for the EU: 2020 Images of the Future", Innovation, Vol. 13, No. 1, pp. 27-45.

Contact: David Banister, Bartlett School of Planning, University College London, Wates House, 22 Gordon Street, London WC1H 0QB, UK; Phone: Tel: +44 020 7679 7501 / 7456 / 4797; Fax: +44 020 7679 7502; E-mail: d.banister@ucl.ac.uk

Details: The article stems from the EU funded POSSUM project. Available from: Carfax Publishing, Taylor & Francis Ltd, Customer Services Department, Rankine Road, Basingstoke, Hants RG24 8PR, UK; E-mail: enquiry@tandf.co.uk; http://www.tandf.co.uk

The authors argue that it is essential to take a longer term view if sustainable mobility it to become a reality. The article takes a perspective to 2020 and constructs images of the future which conform to the principles of sustainable mobility. Set at the EU level, clear environmental, regional development and efficiency targets are established, within which strategies are developed, based on different combinations of technological innovation and the decoupling of economic growth from transport growth. The external political situation is taken as given with either a move towards greater co-operation (and extension) or towards greater fragmentation (and regionalisation) in Europe.

The three images of the future demonstrate that challenging targets for sustainable mobility can be achieved through a range of different policy actions within the transport sector and more widely. Immediate action is required and choices that are even more difficult will have to be made in the EU 15, if large-scale extension of the EU takes place. Improvements in vehicle technology alone will not achieve the targets. Changes that are more fundamental have to take place in the way in which people make travel

choices and in the means by which freight is transported. All of these measures must involve less travel, more efficient and cleaner travel modes.

COST 332 – Transport and Land-Use Policies: Innovations in Institutional Arrangements for Co-ordination

European Commission (2000)
Transport and Land-Use Policies: Innovations in Institutional Arrangements for Co-ordination, Luxembourg: Office for Official Publications of the European Communities.

Contact: Jean-Marc Offner, LATTS-ENPC, Cité Descartes, Avenue Blaise Pascal, 6-8, F-77455 Marne-la-Vallee Cedex 2; Phone: +33 1 64 15 35 91; Fax: +33 1 64 15 36 00; E-mail: offner@latts.enpc.fr

Details: The report and a great deal of additional information on COST Transport is available via the CORDIS server: http://www.cordis.lu/cost-transport/home.html

The objective of COST 332 is to assess the innovative institutional methods of co-ordination between transport projects and regional planning. Thus, the question of how to obtain coherence between transport and planning projects lies at the heart of the work of COST 332:

- sectoral coherence between technico-administrative and technico-political sectors;
- regional coherence between the various geographical levels;
- temporal coherence between the different time-scales of the administrative and planning procedures.

One part of the work in the project was dedicated to a comprehensive European bibliography of the relationships between transports and land-use. The basic analytical work of the co-ordination between transport and land-use policies has been mainly supported by case studies.

The two sectors under consideration and their co-ordination then put forward the problem of the consequences of the spatial uses (e.g., transport is using space and has to be approached and assessed as such). With such a viewpoint, the interdependency and interconnection of social problems appear at the core of public action. Administrative organisations cannot anymore be run by routines and repetition of standardised acts. They have to find innovative solutions that must be adjusted to the reality of situations. As far as the two policy sectors involve separate systems of action, the general question set to co-ordination of devices or adjustments is that of the re-constitution of a place where to decide and act politically and collectively. The question is that of the consistency of public actions more than that of the co-ordination of numerous and multiple actors.

The case studies used for the project highlight three interdependent dimensions which characterise contemporary public action and decision: circularity, space of relationships, and problem logic. Furthermore, recommendations are suggested to researchers and decision-makers.

Transport Policy and Research: What Future?

Giorgi, Liana and Pohoryles, Ronald J. (eds) (2001)
Transport Policy and Research: What Future?.

Contact: Dr. Liana Giorgi, Interdisciplinary Centre for Comparative Research in the Social Sciences (ICCR), Schottenfeldgasse 69/1, A-1070 Wien; Phone: +43 1 524 13 93-150; Fax: +43 1 524 13 93-200; E-mail: l.giorgi@iccr-international.org

Details: Includes results from three EU funded projects: TENASSESS, CODE-TEN and POSSUM. Available via Ashgate Publishing Company: http://www.ashgate.com

What is the meaning of 'sustainable mobility'? Is there a European common transport policy? To what extent is policy relevant for transport development? What is the contribution of European transport research? These are some of the questions and themes addressed by this book which distils the results of three EU funded projects under the Fourth Framework RTD Programme, namely TENASSESS, CODE-TEN, and POSSUM. The majority of the contributions derive from the TENASSESS project.

Overall, it is necessary to develop and elaborate strategic visions for the future that can assist the formulation and implementation of relevant measures towards sustainable mobility. To do this it is important to understand the dynamics surrounding policy formulation and implementation, the conflicts of interest underlying these processes at regional, national and supra-national levels, the inherent contradictions of the ecological modernisation discourse as it applied to transport, and the role of the public or the citizen in determining trajectories for future developments. In addition, it is important to examine the dynamics of the science-policy interaction in the field of transport. The articles in the book contribute to these aspects, ranging from theoretical, policy-making and practical issues.

Transport Policy and Environmental Protection in the European Union

Epiney, Astrid and Gruber, Reto (1997)
Verkehrspolitik und Umweltschutz in der Europäischen Union: Zur Einbeziehung ökologischer Aspekte im Bereich des Straßen- und Schienenverkehrs, Freiburg, Universitätsverlag.

Contact: Prof. Dr. Astrid Epiney, Institut für Völker- und Europarecht, Universität Freiburg, Miséricorde, CH-1700 Freiburg; Phone: +41 26 300 8094; Fax: +41 26 300 9776; E-mail: astrid.epiney@unifr.ch

Details: Available from the Institute of European Law at the Universität Freiburg: http://www.unifr.ch/europar/d/main_d.html

Transport policy is developed as a common policy field within the EU Treaty. Even though this notion is not defined in the Treaty, it has to be acknowledged that regarding the transport policy's definition and implementation the Union places special emphasis on this policy field. Transport policy should not be restricted to the support and supplement of national policies, but it should be an EU-wide policy area characterised by active policy-making. The significance of transport policy in the Treaty ascribed to the following aspects:

- within the different Member States, transport policy also served public interests (e.g. for the supply of fringe areas, establishing transport networks, or the development of certain regions);
- within the Member States there are different roles of the state in transport policy-making which points to the necessity of a common conceptual policy framework;
- there is an inseparable connection between a common transport policy and the Single European Market.

However, all these developments lead to severe restraints for the quality of the environment. Thus, every perspective on the transport policy of the European Union must entail the close relationship and conflict between transport and the environment. Against this backdrop, the European transport policy should not only be interpreted as a policy for the realisation of the Single European Market. It is necessary, so the authors argue, to develop an independent transport policy that specifically includes environmental issues. Regarding the specifications in the Treaty, this is legally anchored. Thus, the transport policy of the EU should be created according to the development of the concept of sustainable mobility. An approach like this is not yet developed on the level of legally binding acts.

Alpine Convention: A Documentation

Hasslacher, Peter (2000)
Die Alpenkonvention: Eine Dokumentation, Innsbruck, Österreichischer Alpenverein (Serie: Alpine Raumordnung Nr. 17).

Contact: Andreas Holzner, Österreichischer Alpenverein, Akademische Sektion Innsbruck, Geschäftsstelle, Rechengasse 5, A-6020 Innsbruck; Phone: +43 1 512 587964; Fax: +43 1 512 587964; E-Mail: oeav.akad.ibk@tirol.com; Website: http://members.tirol.com/oeav.akad.ibk

Details: Available via: http://www.alpenverein.at

After numerous demands of CIPRA International, in 1988 the European Parliament finally took the unanimous decision to start an international agreement about the protection and the sustainable development of the Alpine region. In 1989, the first Alpine Conference of the Environmental Ministers took place in Germany where a resolution about the reason and content of the Alpine Convention was signed. A framework convention was signed in Austria in 1991. Herein, the contracting partners formulate the ambitious aim to build up internationally binding framework conditions for an environmentally sensitive development within the whole Alpine region, that is a balance between economy and ecology.

This convention was a new form of a policy document which includes framework conventions with subsequent implementation protocols. The protocols have the aim of defining concrete policy goals. A two-tier approach was selected: In the first phase, an international working group consisting of high level civil servants, also including NGOs from all member states, develop a draft protocol under the responsibility of one member state. In the second phase, the negotiated draft protocol if presented to all contract parties. The aim is the signing of the protocol by all member states, that is the protocol is signed by the Environmental Ministers at the biennial Alpine Conference.

Looking at the timeframe of the Alpine Convention, the process for the ratification of the framework convention on a national level and the setting up of the individual protocols took a very long time: in the case of the transport protocol it took ten years to receive at a protocol. At the next, and seventh, Alpine Conference of the Environmental Ministers in 2002 should decide about the establishment and location of a permanent office.

Alpine Convention: Transport Protocol

Protokoll zur Durchführung der Alpenkonvention von 1991 im Bereich Verkehr.

Contact: CIPRA International, Im Bretscha 22, FL-9494 Schaan; Phone: +423 237 40 30; Fax: +423 237 40 31; E-mail: cipra@cipra.org

Details: Available via http://www.cipra.org

The protocol aims to guarantee a rational, secure and co-ordinated handling of traffic in the Alpine region. Transport infrastructure and transport modes should be better co-ordinated, and intermodality should be strengthened. Existing transport systems and infrastructures are to be used most efficiently, external costs and infrastructure costs are to be paid by users. Furthermore, there should be a modal shift towards more environmentally friendly transport modes, intermodal transport system should be developed and, overall, there should be an effort towards reducing traffic whenever possible.

Railway infrastructure should be improved through the construction and the development of large Alpine crossings. Furthermore, there should be better connections and terminals. Freight transport over long distances should be transported on rail, and intermodal transport systems should be promoted.

The Alpine Convention includes a declaration of intent that no trunk roads for Alpine crossing traffic will be constructed. New trunk roads for cabotage is possible but under restricted terms. When making tour-

ism areas accessible there should be a preference for public transport. Furthermore, a monitoring about the supply and use of transport infrastructures should be developed and environmental goals, standards and indicators must be defined and used.

The Transport Policies of Austria, Switzerland and the European Union and their Impact on the Development of the Alpine-crossing Freight Transport since 1985

Urstöger, Christian (1997)
Die Verkehrspolitiken Österreichs, der Schweiz und der Europäischen Union und deren Auswirkung auf die Entwicklung des alpenquerenden Güterverkehrs seit 1985, Universität Salzburg, Diplomarbeit.

Contact: Prof.Dr. Herbert Dachs, Institut für Politikwissenschaft, Universität Salzburg, Rudolfskai 42, A-5020 Salzburg; Phone: +43 662 8044 6603; herbert.dachs@sbg.ac.at

Details: Master Thesis at the Institute of Political Science, University of Salzburg. Available from: http://www.ubs.sbg.ac.at

The Alpine crossing freight transport has witnessed a dynamic development over the last 30 years. Since the foundation of the European Community, the amount of transit traffic is sixfold in Austria alone. Transport in Europe has reached a dimension which must be seen as critical. This was intensified by the democratisation and opening up of East European countries (increase of older lorries with higher emission values on the roads).

It is mainly the Alpine countries of Austria and Switzerland which are set between what seems to be a contradictory situation: on the one hand, there are the economic interests of the whole European Union, on the other, there is the necessity to preserve the Alpine region. As centre of the European transport network, this ecologically very sensitive area is exposed to an intensive national and international debate about transit traffic. Regarding topographical reasons, traffic between the regions north and south of the Alps must be concentrated on only a few axis. Thus the Alpine crossing traffic develops to a political and economical strongly debated issue.

Overall, to maintain the effectiveness of the Alpine crossings in the rail and road infrastructures is a European responsibility. The protection of the Alps concerning environmental destruction is seen as the most prominent aspect identified by the countries concerned, their citizens and regions.

The master thesis evaluates the reasons and decision structures that are at the basis of the current situation in the area of Alpine crossing freight transport and other related policy issues.

European Transport Policy and Sustainable Mobility

Banister, David et al (2000)
European Transport Policy and Sustainable Mobility, London, Spon Press.

Contact: David Banister, Bartlett School of Planning, University College London, Wates House, 22 Gordon Street, London WC1H 0QB, UK; Phone: +44 020 7679 7501 / 7456 / 4797; Fax: +44 020 7679 7502; E-mail: d.banister@ucl.ac.uk

Details: Available from http://www.sponpress.com

The book is the outcome of research undertaken in the EU funded project POSSUM (Policy Scenarios for Sustainable Mobility). The basic thinking behind this book is that we need to have a fundamental rethink about EU transport policies and priorities so that real progress can be made towards sustainable mobility. Trend-based analysis does not lead in the appropriate direction as it is predicated on trying to mitigate the steady and relentless increase in travel, rather than attempting to stand back and take a longer (and wider)

perspective on the problem. Scenario building approaches permit the perspective to be more holistic, trend breaking, and to view transport within its wider economic and social development context. It is the first time that such an exercise has been undertaken, with a range and depth of ideas and experiences, that none of the participants in the research could have anticipated.

The book is intended to present both the scenario building methodologies and the substantive research results. The authors think that both the method and the empirical findings offer new perspectives on the understanding of and investigation of transport problems at EU level.

The book is split into three main parts: Part one reviews recent trends in European transport together with policy developments over the last twenty years. Part two develops a scenario approach to challenge conventional wisdom by setting clear targets for sustainable mobility in transport in 2020, and then develops Images of the Future to achieve these targets. Part three brings together policy actions and conclusions from the scenario building process, and emphasises the role the different actors must play in the process if positive action towards sustainable mobility is to be achieved.

Transport Law in the European Union. Room for manoeuvre for the Member States in the area of land transport.

Epiney Astrid and Gruber Reto (2001)
Verkehrsrecht in der Europäischen Union. Zum Gestaltungsspielraum der EU-Mitgliedstaaten im Bereich des Landverkehrs. Baden-Baden.

According to the EU treaty, transport policy is one of the common policies. On the background of the rising significance of transport policy issues in Europe, this study examines the remaining room for manoeuvre of the Member States and their regional bodies. Since it is still on this level, where the autonomous perception of certain public interests (e.g. environmental protection, social and regional goals) is formed and the organization and structure of transport (and transport service companies) are influenced.

A separately published case study applies the findings to the case of Switzerland:

Sollberger Kaspar, Epiney Astrid (2001)
Verkehrspolitische Gestaltungsspielräume der Schweiz auf der Grundlage des Landverkehrsabkomens. In: Schweizer Schriften zur europäischen Integration. Bern, Zürich.

Project and Policy Evaluation in Transport

Giorgi, Liana et al. (eds.) (forthcoming in 2001)
Project and Policy Evaluation in Transport, Aldershot, Ashgate.

Contact: Liana Giorgi, International Centre for Comparative Research in the Social Sciences (ICCR), Schottenfeldgasse 69/1, A-1070 Wien; Phone: +43 1 524 13 93 150; Fax: +43 1 524 13 93 200; E-mail: l.giorgi@iccr-international.org

Details: ICCR Book Series

Today the policy analyst has a multitude of available assessment methods with differing underlying assumptions and a wide range of criteria for weighing and aggregating impacts and presenting results. No clear guidelines exist to tell which assessment method suits which decision-making situation best or how to integrate the results of the different methods.

In the field of transport, evaluation is not new, yet it is not as entrenched at the level of policy as in the fields of health, education, housing or work. There are several reasons for this. Indicative is that the term ‘policy’ as a research field in its own right is indeed new in transport, whereas the terms ‘planning’ and ‘assessment’ have been dominant with infrastructure investment – and hence also project appraisals –

delineating the main reference framework. This has also meant that the professional group that has emerged to provide evaluations comprises mainly economists and engineers with little input from political scientists or institutional economists that have dominated the policy evaluation field in other areas. The process of European integration has however changed the evaluation landscape in transport – the Transport RTD programme under the Fourth Framework Programme provides ample evidence to this. The drive towards harmonisation has brought policy evaluation as distinct from project appraisal on to the agenda and has increased demands for 'strategic assessments' for checking the consistency of 'policies, plans and programmes (PPP)' or for approaching 'the design of projects in a generic sense'. It is not surprising that these new demands arise by way of the debate on 'sustainability' both with respect to the environment and with respect to distributional considerations or accessibility. The latter are issues that question the utilitarian principles that underlie the classical transport planning approach with its strong emphasis on economic efficiency. From the methodological viewpoint, they also reveal the complexity of impact assessment where there is a multitude of types of impacts and impact groups and where cost-benefit or cost-effectiveness analyses are required. Thus even though CBA has been used widely to measure efficiency and displays high credentials as an aid to rational thinking it becomes much more complicated to apply seriously when the question of 'whose costs and benefits?' is posed. This book represents one of the first attempts to tackle the above questions in a theoretically sound and multi-disciplinary way and with the European perspective at centre stage. It is expected to be published in fall 2001.

The Policy Making Process in the European Union

McGowan, Francis (forthcoming in 2001)
"The Policy Making Process in the European Union", in Giorgi, Liana et al (eds) Policy and Project Evaluation in Transport", Aldershot, Ashgate.

Contact: Francis McGowan, Sussex European Institute, University of Sussex, Falmer, Brighton BN1 9QN, UK; Phone: +44 1273 68 71 38; Fax: +44 1273 62 32 46; E-mail: f.mc-gowan@sussex.ac.uk

Details: Published in forthcoming book of the ICCR Book Series.

The paper examines the main aspects of the EU policy-making process, particularly as it affects the areas of energy and transport policy. In doing so, it starts from an assumption that, along with the spectrum between national political systems and international organisations, the EU shares many similarities with institutions, practices and problems in national policy settings. As a result, one can be able to consider EU policy processes from the vantage point of debates within the political science and policy analysis literature. Furthermore, one also needs to recognise that the EU system is rather distinctive due to its 'international' character and the institutional compromises that have shaped its development. Factors such as the incomplete nature of the political system, the multilevel nature of policy making (and of influencing policy) and the relatively high propensity towards regulation as a mode of governance render the EU unique, and one need to consider these differences. As a result, the paper also draws upon concepts and approaches that have been developed within the literature which has developed to explain the EU.

The paper is divided into four sections: First, there is a review of the historical evolution and institutional development of the EU as a context to the rest of the paper. Second, it elaborates upon some of the distinctive features of the EU as well as considering how the EU has been analysed over the last fifty years. Third, it looks at the institutional interaction within the EU both as the European level and between the EU and national (and other) levels. Fourth, it looks at how one can understand policy change within the EU.

31st Conference of the Governors of the ARGE ALP

ARGE ALP (2000)
31. Konferenz der Regierungschefs der Arbeitsgemeinschaft Alpenländer, Ergbnisprotokoll, Innsbruck, Amt der Tiroler Landesregierung.

Contact: Karl Ott, Amt der Tiroler Landesregierung, Abteilung VI B4, Herrengasse 1-3, A-6020 Innsbruck; Phone: +43 512 508 40 80; Fax: +43 512 508 40 85.

Details: Final Protocol of the Conference held on 16 June 2000 in Locarno. Available from http://www.argealp.org

The ARGE ALP deals with a range of policy issues concerning the Alpine region with transport being one of them. ARGE ALP has a number of project groups, including 'Traffic Census', 'Transnational Passenger Railway Transport' and 'Combined Transport'. Furthermore, there is an evaluation of the Brenner traffic and the activities of the action group Brenner motorway.

There was the presentation of the re-evaluation of the transport concept of the ARGE ALP as well as the organisation of an Alpine transport conference in spring 2001.

Additional discussion points were the co-operation between Interreg III B (Alpine region) and the Alpine Convention, and the creation of a standing secretary of the Alpine Convention which is not decided yet.

Other Research Activities and Publications in the European Union

Abbati, C (1987)
Transport and European Integration. Commission of the European Communities.

Alter, K (1998)
Who are the masters of the treaty? European governments and the European Court of Justice. International Organization, Vol.52, No.1.

Bergman, T (1997)
National parliaments and EU affairs committees: notes on empirical variation and competing explanations. Journal of European Public Policy, Vol.4, No.3, pp.373-387.

Cini, M (1997)
The European Commission: Leadership, organisation and culture in the EU administration.

Gatsios, C and Seabright, P (1989)
Regulation in the European Community. Oxford Review of Economic Policy, Vol 5.

George,S (1991)
Politics and Policy in the European Community. OUP.

Haas, P (1998)
Compliance with EU directives: insights from international relations and comparative politics. Journal of European Public Policy, Vol.5, No.1, pp.17-37.

Heritier, A (1999)
Policy Making and Diversity in Europe, CUP.

Hix, S (1995)
Approaches to the study of the European Community. West European Politics, 17/1.

Hix, S (1999)
The Political System of the European Union. Macmillan, 1999.

Keohane, R and Hoffman, S (1992)
Institutional Change in Europe in the 1980s. in Keohane, RO and Hoffman, S (eds). TheNew European Community: Decisionmaking and Institutional Change.

Laffan, B (1998)
The European Union: a distinctive model of internationalisation. Journal of European Public Policy, 1998, Vol.5, No.2, pp.235-253.

Laffan, B ODonnel, R and Smith, M (2000)
Europes Experimental Union. Routledge.

Loughlin, John (ed) (2001)
Subnational Democracy in the European Union: Challenges and Opportunities, Oxford, University Press. Contact: John Loughlin, School of European Studies, Cardiff University, Humanities Building, PO Box 908, Cardiff CF1 3YQ; Phone: +44 29 2087 4585; Fax: +44 29 2087 4946; E-mail: Loughlin@cf.ac.uk. Includes country case studies about Germany, Austria, France and Italy.

Mc Gowan, F and Wallace, H (1996)
Towards a European Regulatory State. Journal of European Public Policy, 1996.

McGowan, F (1998)
Transport Policy. in El-Agraa, A (ed). The European Union: history, institutions, economics and policies. Hemel Hempstead: Prentice Hall.

Neunreither, K (1994)
The Democratic Deficit of the European Union. Government and Opposition, 29, 1994.

Ney, S. and M. Schmidt (2001)
The Austrian Policy Process: Continuity and Change. Approaches Towards a More Sustainable Development in Austrian Policy Making. in Schleicher-Tappeser, R. et al. (2001). Country Report as part of the study "Long Term and Transversal Issues in Policy Making in European Governments and Parliaments". EURES, Freiburg. www.eures.de.

Onufrio, G.(2001)
Long Term Initiatives in Italy. in Schleicher-Tappeser, R. et al. (2001). Country Report as part of the study "Long Term and Transversal Issues in Policy Making in European Governments and Parliaments". EURES, Freiburg. www.eures.de.

Decision-Making in the European Union: Towards a Framework of Analysis. Journal of European Public Policy, 2/1.

Pollack, M (1996)
The New Institutionalism and EC Governance: The Promise and Limits of Institutional Analysis. Governance: An International Journal of Policy and Administration, 9/4.

Richardson, J (ed.) (1996)
European Union. Power and Policy-Making, Routlegde.

Ross, G (1995)
Jacques Delors and European Integration. Polity Press.

Schroeder, M. (2001)
Langfrist- und Querschnittsthemen in der Schweiz. in Schleicher-Tappeser, R. et al. (2001). Country Report as part of the study "Long Term and Transversal Issues in Policy Making in European Governments and Parliaments". EURES, Freiburg. www.eures.de.

Schleicher-Tappeser, R. et al. (2001)
Long Term and Transversal Issues in Policy Making in European Governments and Parliaments. Final Report. EURES, Freiburg. www.eures.de.

Tenière-Buchot, Pierre(2001)
Inquiry Concerning the Institutions, Methods and Procedures Used by the French Government and Parliament. in Schleicher-Tappeser, R. et al. (2001). Country Report as part of the study "Long Term and Transversal Issues in Policy Making in European Governments and Parliaments". EURES, Freiburg. www.eures.de.

Wessels (1997)
The Growth and Diffusion of Multilevel Networks. in Wallace, H. and Young, A.R. (eds). Participation and Policy-Making in the European Union. Clarendon Press, 1997.

4.1.2 Austria

Author of this section: ICCR

Austrian Transport Policy

Federal Ministry of Transport, Innovation and Technology (2001)
Österreichische Verkehrspolitik, Bundesministerium für Verkehr, Innovation und Technologie (BMVIT), Wien (file from BMVIT website).

Details: Available via the BMVIT website http://www.bmv.gv.at/vke/policy.htm

The political and economic reforms in Central and Eastern Europe and the opening up of these countries to the West radically altered Austria's position as a major geographical crossroads for traffic and transport. This as well as major innovations in technology relevant to transport, prompted the Austrian Ministry of Transport to draft an Overall Transport Concept (Gesamtverkehrskonzept).

The aims and principles of the Overall Transport Concept are:

- The prime consideration of transport policy must be people and their needs in respect of quality of life, and undamaged environment, prosperity and mobility.
- Transport policy must play a pro-active, forward-looking role in shaping the transport system and not simply react when problems have already arisen. A successful and active transport policy demands an intermodal approach.
- Transport policy must act to safeguard precious assets such as public health or the environment, where these would be threatened by uncontrolled further development of the transport system.
- Transport measures thus need to strike a balance between divergent interests.

Following on from these principles there are ten objectives identified for the Overall Transport Concept. For the practical implementation of the Overall Transport Concept, the Ministry of Transport worked out a Federal Transport Infrastructure Plan (Bundesverkehrswegeplan).

Austrian Federal Transport Infrastructure Plan

Bundesministerium für Verkehr, Innovation und Technologie (1999)
Österreichischer Bundesverkehrswegeplan, BMVIT, Wien.

Contact: Dr. Werner Kovacic, Federal Ministry of Transport, Innovation and Technology, Department II/A/1, Radetzkystraße 2, A-1030 Vienna; Tel: +43 1 71162-1100; Fax: +43 1 71162-1599; E-mail: Werner.Kovacic@bmv.gv.at

Details: Available via the BMVIT homepage: http://www.bmv.gv.at/vk/2infra/bvwpmain.htm

The Federal Transport Infrastructure Plan and the Master Plan should be regarded as the practical implementation, as far as transport infrastructure is concerned, of the 1991 Austrian Overall Transport Concept. The principal transport objectives of the Concept include:

- avoiding unnecessary traffic;
- switching traffic to environmentally friendly forms of transport;
- opening up regions to which access has previously been poor; and
- involving the populations affected, in order to secure public acceptance of transport policy.

The aim of the Federal Transport Infrastructure Plan was to provide the machinery, based on sound scientific knowledge, for creating a transport network which in economic terms was as good as it possibly could be. Consequently, this includes the essential element of strategic environmental impact assessment and gives equal consideration to the needs of the economy. The Master Plan embodies the essential thrust of the Federal Transport Infrastructure Plan and states requirements as to how the railway and road network should evolve by the year 2015. The Master Plan looks not at the specific interests of just one mode of transport but on a multimodal basis at the needs of Austria, its regions and people. The following issues are identified as having prime importance in the Master Plan:

- expansion of the rail network must eliminate the problem of poor accessibility;
- create new capacity and make the railways attractive;
- additions to the road network must be made with caution;
- equality of opportunity between the regions must be promoted;
- capacity must handle the volume of necessary traffic in a way which is as kind to the environment and as safe as possible, and there should be nothing to encourage new road traffic;
- railway journey times should be such that an integrated timetable as part of an operating programme can be put together to serve the needs of the customers.

Trans Alpine Transit Traffic on the Brenner Axis: The Decision Making Process and the Actors and their Strategies

Freudensprung, Paul (1997)
Trans Alpine Transit on the Brenner Axis: The Decision Making Process and the Actors and their Strategies, TEN-ASSESS, Deliverable WP7.

Contact: Dr. Liana Giorgi, Interdisciplinary Centre for Comparative Research in the Social Sciences (ICCR), Schottenfeldgasse 69/1, A-1070 Wien; Phone: +43 1 524 13 93-150; Fax: +43 1 524 13 93-200; E-mail: l.giorgi@iccr-international.org

Details: The report was part of the EU-funded TEN-ASSESS project where it represents a deliverable of WP7 as a country case study. Available via the ICCR homepage http://www.iccr-international.org/projects/

The objective of the report is to investigate in-depth the conflict patterns, actors and their strategies in the field of transport policy formulation and decision-making. The decision-making process will be analysed according to three different but equally important scenes of debate for the development of the situation of transit traffic: the construction of a railway/intermodal key-link as part of the trans-European networks; the Ecopoint system which is the core part of the Agreement on Transit Traffic between Austria and the EU; and road pricing, both specific road charges on the Brenner motorway and the general motorway toll in Austria.

There has been a massive shift of all actors from the traditional view of transport of the 1970s ('more transport means more wealth') towards a more environmental sensitive approach to transport services ('sustainable mobility'). Sustainable development is now the principle organising and co-ordinating principle of transport policy development. Nowadays, almost any transport concept in Austria reads like the operationalised requests of environmentalists. This shift was fostered and accelerated by the pressure of the many citizens' movements, who in such a way initiated one of the most important transformation processes in Austria.

However, there remain barriers in the development of transit traffic with little or no indication of suitable solutions in the near future:

- the dissatisfaction of the Tyrolean population and many political actors with the effectiveness of the Agreement on Transit Traffic (Ecopoints) between Austria and the Commission;
- the different opinions of the Commission and the Austrian government on the appropriate sum for a specific road charge on the Brenner motorway; and
- the increasing resistance against an electronic road pricing system, as well as technical and juridical problems concerning its implementation in Austria.

Alemagna - Planned Concrete Monster through South Tyrol

Gruber, Paula; Pirhofer, Christine; Revolti, Caterina et al. (1997)
Alemagna – Geplantes Betonmonster durch Südtirol, Universität Innsbruck, Seminarbeit.

Contact: Dr. Ronald J. Pohoryles, Interdisciplinary Centre for Comparative Research in the Social Sciences (ICCR), Schottenfeldgasse 69/1, A-1070 Wien; Phone: +43 1 524 13 93-111; Fax: +43 1 524 13 93-200; E-mail: r.pohoryles@iccr-international.org

Details: Seminar paper for the module "Trans-European Networks" at the Institute of Political Science at the University of Innsbruck, Module leader Dr. Ronald J. Pohoryles. Available via: r.pohoryles@iccr-international.org

For more than 30 years, there has been a discussion about the 'Alemagna' motorway. It would be the shortest connection between Venice and Munich. The aim is to connect the economical centres of Veneto and south Germany. Thus, there are largely economic interests not only of industrial companies but also of the EU as a whole. Even though the project was postponed not only once in the last two decades, the plan is still alive and the planned route is getting closer towards South Tyrol. One of the strongest protests against the plans came from the local residents and the population at large. The paper describes the history of the 'Alemagna' project, analyses the facts and discusses alternatives.

The report includes economic, social and environmental issues into the analysis. It concludes that there is still a fundamental incongruity between the economic goals of certain actors and the social and environmental burdens felt by the population affected by large infrastructure plans.

Counting on Nature

Transitforum Austria – Tirol (1997)
Mit der Natur rechnen, Transitforum Austria – Tirol, Innsbruck.

Contact: Fritz Gurgiser, Transitforum Austria – Tirol, Salurnerstrasse 4/III, A-6020 Innsbruck, Phone and Fax: +43 512 579 560; E-mail: fritz.gurgiser@tirol.com

Details: Conference proceedings of the "International Conference on Alpine Transit" on February 21-22 1997 in Innsbruck. Available via Transitforum Austria – Tirol, E-mail: transitforum@tirol.com

The conference brought together speakers from policy-making, industry, environmental NGOs, and university. The proceedings include presentations about the following issues:

- Development trends in the highly subsidised European road freight transport regarding environment, economy and employment;
- Alpine Convention as an instrument for sustainable development;
- Regional development in the Alpine region;
- Short transport routes – the Alpine product of direct marketing;
- Transport resistances – The resistance in the Alpine region;
- European transport policy with regard to comprehensive environmental protection;
- Short transport routes as an alternative for people and nature: regional economic cycles in practice; and
- European transport and land-use policy – together or against each other?

On the Brenner for the Alps

Transitforum Austria – Tirol (2000)
Am Brenner für die Alpen, Transitforum Austria – Tirol, Innsbruck.

Contact: Fritz Gurgiser, Transitforum Austria – Tirol, Salurnerstrasse 4/III, A-6020 Innsbruck, Phone and Fax: +43 512 579 560; E-mail: fritz.gurgiser@tirol.com

Details: International project publication about the impacts of the Alpine crossing road freight transport regarding environment, economy and social issues on the Brenner. Available via Transitforum Austria – Tirol, E-mail: transitforum@tirol.com

The reports aims to offer information about the Alpine crossing road freight transport. However, one has to bear in mind that it is written by the most prominent Austrian NGO in the Alpine region that is strongly and openly against transit traffic across the Alpine region along the Brenner motorway. The report mentions the different perception of Alpine crossing traffic between the affected regions and countries and those who are mostly responsible for transit traffic. Furthermore, the report investigates not only environmental issues regarding Alpine transit traffic but also economic and social issues.

The argument is that it is mostly the increasing number of lorry freight transit traffic which generates environmental degradation in the Alpine region. The most prominent actors for the Transitforum Austria –Tyrol as an NGO are not the common carriers but the policy-makers at the European, national and regional level as they are responsible for setting the frameworks for a cooperation between environmental and economic needs which is in the interest of the citizens. However, so the argument, it is not only transit traffic which is responsible for environmental and social burdens but also cabotage. The argument goes that it is every road, every rail, every tunnel; every by-pass is an interference in the Alpine eco-

system. Relying on some centres or out-of-town shopping malls takes value away from the regions. This loss of regionally created value leads to a loss in local infrastructures.

Alpine Transit on the Brenner: about democracy and resistance, election pledges and election fraud

Transitforum Austria – Tirol (1999)
Am Beispiel Alpentransit: Gnadenlos verraten und verkauft. Über Demokratie und Widerstand, über Wahlversprechen und Wahlbetrug, Transitforum Austria – Tirol, Innsbruck.

Contact: Fritz Gurgiser, Transitforum Austria – Tirol, Salurnerstrasse 4/III, A-6020 Innsbruck, Phone and Fax: +43 512 579 560; E-mail: fritz.gurgiser@tirol.com

Details: Available via Transitforum Austria – Tirol, E-mail: transitforum@tirol.com

This is a publication by the leading transit traffic NGO in Austria. Within the publication, the NGO criticises policy-makers to not take serious the problems in the Alpine region at the Brenner motorway in Tyrol. It calls for more responsibility of the citizens to make themselves heard and to raise their voices against the problems in connection with Alpine transit traffic. The NGO calls for a shift in policy-making towards giving the people and nature the most prominent role.

Transit Saga - Citizen Resistance at Europe's exhaust

Sickinger, Hubert; Hussl, Richard (1993)
Transit-Saga: Bürgerwiderstand am Auspuff Europas, Innsbruck, Thaur.

Contact: Fritz Gurgiser, Transitforum Austria – Tirol, Salurnerstrasse 4/III, A-6020 Innsbruck, Phone and Fax: +43 512 579 560; E-mail: fritz.gurgiser@tirol.com

Details: Available via Transitforum Austria – Tirol, E-mail: transitforum@tirol.com

The book illustrates the arguments and positions of the different actors in the transit transport policy field. After outlining the history of the transit discussion in Austria, it analysis the arguments of policy-makers, political parties, NGOs and the industry. Furthermore, the book investigates the different competence in transport policy between the European, national and regional level.

The transit resistance in Tyrol since 1987 is outlined in the second part of the book. The main part focuses on the discussions and positions around the Transit Agreement between Austria and the European Community.

Innsbruck Declaration – Coming to terms with Freight Transport in the year 2000 plus

Wirtschaftskammer Österreich (2000)
Innsbrucker Erklärung zur Bewältigung des Güterverkehrs im Jahr 2000 plus.

Contact: Dr. Viktor Navratil-Wagner, Bundessektion Transport, Verkehr, Telekommunikation, Wirtschaftskammer Österreich, Wiedner Hauptstrasse 63, Postfach 170, A-1045 Wien; Phone: +43 1 501 05 3251; Fax: +43 1 501 05 257; E-mail: viktor.navratil-wagner@wko.at

Details: Available via WKÖ homepage: http://wko.at/bsv/Internet/innsbruck.htm

The Federal Section on Transport Policy within the Austrian Chamber of Commerce holds the following views concerning the forecasted transport development:

- thinking in a foe image – e.g. against lorries – does not lead to satisfying solutions concerning the problems of freight transport;
- it is necessary to create realistic and practical measures on the basis of objective analyses and taking into account all transport modes (rail, road, water ways and air);
- without the economy there is not transport and without transport there is no economy – only when the economy prospers one can realise a modern environmentally friendly transport structure and secure employment;
- the ever growing provincialism of the Alpine transport policy with its unrealistic adherence to outdated dogmas of transport policy will bring out no solutions to current problems;
- an isolated evaluation of freight transport from border to border (rail or road) in a sensitive ecosystem like the Alpine region does not lead to a sustainable transport policy.

The Federal Section on Transport Policy identifies the following requirements for Alpine-crossing transport:

- comprehensive reflection and inclusion of all Alpine crossings and transport modes for solving the Alpine transport problem;
- creation and implementation of the planned high capacity rail infrastructure (after TEN) in the Alpine region with the necessary preliminary terminals and interfaces;
- internationally comparative charges for the Alpine crossings as a basis for a deconcentration of traffic based on the principle of shortest distances;
- preference of the issues 'Treaty EU – Switzerland', 'Road Pricing Directive', 'Brenner toll problem' instead of solutions for individual countries;
- laying the foundations for an efficient co-operation of different transport modes, i.e. road, rail and combined transport;
- acceptance of transit as an essential right of each country and its economy, as otherwise there would be not division of labour between different countries;
- securing an environmentally friendly development of transport in the Alpine region without putting to much burden on specific regions within Europe;
- realisation of ecological goals only with measures which are based on a comprehensive view on passenger and freight transport.

Transport Report – Transport Development in Tyrol

Tiroler Landesregierung (2001)
Verkehrsbereicht 2000 – Die Verkehrsentwicklung in Tirol, Innsbruck, Tiroler Landesregierung.

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Details: Available from http://www.tirol.gv.at/landesbaudirektion/

The report describes the development of transport on roads, railways as well as developments in public transport. It also includes issues like the Ecopoint regulations, the lorry night traffic and the effects of road traffic (like NOx development, accidents).

Furthermore, the report portrays the freight road transport as well as the development of freight transport on the Brenner (road and railway).

There is also some emphasis on the development of public transport and on local and regional plans regarding public transport.

4.1.3 France

Author of this section: NESTEAR

Decision-making procedures in France are stated in the law (LOTI voted in 1982 and revised since). This requires first an ex-ante and ex-post evaluation for important infrastructure projects. The modalities of evaluation are specified in road directives with definition of socio-economic rate of return and multicriteria analysis and CGPC (conseil Général des Ponts et Chaussées) improves regularly the methodologies so that new developments in assessment of environmental impact can be introduced and harmonisation of methods between road, rail and inland waterways projects can be implemented.

An other aspect of the procedure is the obligation of public debate at different stage of the project as it has been detailed in the TENASSESS European project where trans-Alpine case has been selected as a case study for France with the redaction of a specific report on this subject.

During the recent years a “Schema de Service” has been prepared for the long-term orientation?. The “schema de service” replaces the former “infrastructure master plan”. Focus is now put on utilisation of networks rather than on the construction of new links. From the research point of view it is clear that many project have been developed since the LOTI on this topic.

These researches can be briefly presented in the following way:

a) researches to improve the cost benefit analysis which still remains an important part of the evaluation process:

- evaluation of the impact on environment in monetary units in relation with establishment of a "satellite" national account for transport (rapport annuel de la Commission des Comptes des Transports de la Nation)
- measure of the cost of accidents
- estimation of the value of time (rapport du groupe Boiteux sur les méthodes d'évaluation des investissements d'infrastructures - Avril 1994, et updating of the estimation)

b) studies on the harmonisation of evaluation procedures between modes with a distinction between inter-urban and urban transport; the "Conseil Général des Ponts et Chaussées has been particularly involved in these studies

c) researches on the decision process and researches on the public debates originated by the infrastructure evaluation.

Within the PREDIT programme, the French pluriannual research programme within the "strategic" group, several sub-groups have been devoted to different aspect of the problem of evaluation, from information needs, to modelling and estimation of the transport impacts as well on the decision process itself.

Concerning the "Schema de service" the process is in progress and new researches are defined to follow up its implementation.

In June 2001 a new report has been published concerning the evaluation of projects in France; this report deepens previous analysis and give new estimation of parameters for the measure of the external impacts

in monetary units: “Transports, choix des investissements et coûts des nuisances – groupe de travail présidé par Marcel Boiteux – Commissariat Général au Plan – Juin 2001”.

4.1.4 Germany

Author of this section: IWW

Purpose and Objectives of National Transport Plans

By planning further demand-responsive development and new construction of transport infrastructure the Federal Government wishes to ensure that the citizens and enterprises will retain their mobility even with continuously increasing traffic volumes.

The Federal Government is the owner of the federal transport infrastructure. So it is responsible for their construction and maintenance, i.e. for financing them. The financial resources required for this purpose must be used in responsible manner and to the benefit of the public. That is why it must be carefully ”planned” how and where investments would be most appropriate and most urgently needed.

Since the middle of the seventies the Federal Government has, therefore, based its investment policy for the federal transport infrastructure on multimodal planning. Multimodal planning takes place within the framework of overall transport concepts and is reflected in so-called federal transport infrastructure plans (FTIP’s) which are established by the Federal Government.

The process of revising the German BVWP

The German standardized evaluation scheme for transport infrastructure projects has been one of the most advanced concepts in the eighties. As it has not been developed further in the be-ginning of the nineties because the German unification had set other priorities, the concept now looks rather conventional and calls for major revision. The extent of revision necessary, however, is evaluated differently by the Ministry and the main consultants on one hand, and the Environmental Agency as well as the Scientific Advisory Board on the other. While the Ministry would prefer to leave the methodology basically unchanged, other stakeholders strongly argue for a major extension to broaden the platform of evaluation by a system based approach.

A system approach implies that the strategic impacts on a network or even intermodal scale are evaluated. On this scale, the international and regional interfaces and the gravity changes in space or the global environmental impacts can be measured with higher reliability.

The planned changes, however, seem to be relatively modest. While updated empirical information, more sophisticated models as well as modified valuation approaches are taken into account and though additional environmental and spatial issues will indeed be implemented, the main structure of the expected CBA within the new BVWP seems to follow closely the criteria of the CBA applied within the old infrastructure masterplan.

Within the frame of a project funded by the Federal Environmental Agency of Germany IWW developed a procedure for planning an environmentally sustainable transport system as part of the federal transport infrastructure planning. The newly established approach differs from the Standardized Evaluation Scheme. First, the present cost values applied in the assessment for the federal transport plan have to be enhanced by costs for tropospheric ozone, carcinogenic substances, outdoor noise as well as nature and

landscape. Second, the starting points for the procedure are politically defined environmental goals. The new approach considers infra-structure planning on a network level and gives environmental goals a higher importance than in the traditional infrastructure planning. Transport policy scenarios are designed and evaluated, until one of these scenarios achieves the predefined goals and generates economically optimal results.

Concept of Federal Transport Infrastructure Planning (BVWP)

The German BVWP is methodologically oriented on central transport-related political and social goals. These goals are:

- Warranty of a lasting environmental sustainable mobility
- Fortification of the economic location Germany and employment incentives
- Promotion of sustainable regional structures
- Securing fair and comparable competitive situations for all transport modes
- Improvement of traffic safety
- Reduction of the usage of nature, landscape and non-regenerative resources
- Promoting the European integration

The trans-Alpine traffic is not explicitly considered in these goals and in the decision process. It can be seen as a part of the goal of European integration but is certainly not a main factor in the infrastructure planning process.

FTIP's cover the infrastructure of

- Federal trunk roads (motorways and highways),
- Federal railways owned by the railways (Deutsche Bahn, DB AG), as the Federal State holds a major interest in them,
- Federal waterways,
- The infrastructure for the magnetic levitation line Berlin – Hamburg, which is in the planning stage.
- Connections to / from ports, airports, goods distribution centres, not this facilities itself. They are private enterprises, although in some cases the Federal government, the Federal States or the municipalities hold major interests in them.

Time period

FTIP's are set up about every ten years; they cover a horizon of about twenty years and are updated about every five years. Up to now this happened in 1973, 1977, 1979, 1985 and 1992.

Modes of transport

Passenger: rail, road and air (only in modelling transport);

Freight: rail, road and inland waterways.

The emphasis of the FTIP is on policies; the new projects applied to the FTIP's are measures to gain them.

Relationship with other sectors of the economy, macro-economic planning:

Relationship is given by an overall economic assessment (cost-benefit ratio) of all new and upgrading projects applied to the FTIP's. It bases on a macro-economic evaluation, which takes behalf on:

- Reduction of transportation costs;
- Reduction of vehicles standing and operating costs incl. energy;
- Maintenance costs of transport infrastructure;
- Contributions to traffic safety;
- Improvement of accessibility;
- Spatial effects (e.g. use of labour structurally unemployed);
- Environmental effects;
- Investment costs.

National / regional / local

Although the FTIP's are national transport plans, the regional (Federal States) and even local levels are already involved in the preparation of the FTIP's when applying for new projects. The regional level has also influence on FTIP's with the decision of the development acts not only in the Parliament but also in the Federal Council. A special possibility of influencing federal trunk road planning is the Federal Government's right to issuing directives. Before exercising this right, discussions with the Federal State concerned have to take place.

The FTIP has no direct influence on local authority planning for real estate utilisation and building, since at the level of general investment planning the measures are indicated only as corridors without any specific alignment and, thus, do not refer any specially affected resident, owner of property etc. The FTIP can neither anticipate nor replace decisions to be taken in subsequent planning stages; neither can it determine a specific route or further-reaching details of the alignment. The same applies to the requirement plans. These decisions are taken in the subsequent procedures for obtaining the building right and determining the alignment, as well as in the plan approval procedure.

The single Federal States are free to set up their own master Traffic Plans. According to the framework of the FTIP's, they give the opportunity to revise priorities for FTIP measures concerning to territory of the single states.

Long-term / short-term

FTIP's cover measures and traffic development for a horizon of about twenty years. They are established about every ten years, including/revising backlog of the former FTIP. An update every five years takes place to ascertain its need to the transport development. Realisation of single measures depends on the budgetary means available every year and if they have reached "construction maturity".

Strategic / practical and Planning cycle

Since 1992 FTIP's base on regulatory outline conditions, which have influence on traffic development. Therefore, FTIP's reflect the investment goals of the transport policy of the Federal Government. It is a general investment plan and thus a planning instrument and not a financing scheme or programme. It does not contain any details for funding and the time when a particular measure is to be realised.

Environmental impact assessment (EIA)

In Germany, the implementation of the environmental impact assessment (EIA) is lawfully regulated in the law about the environmental impact assessment (UVPG). Thereby, the EIA is no independent proce-

dure but a not independent part of the official procedures implemented for the purposes of approving projects or project plans.

The UVPG defines a basic procedure for the assessment of environmental impacts and the types of projects, where this procedure has to be implemented. For some project-types there are already special legal provisions of the federation (e.g. BImSchG) that regulate the EIA independently. In this cases, the UVPG is validate only, if it exceeds these provisions as regards level of detail or specification. In addition, there are four federal states that have their own UVPG's, which stipulate an EIA for further projects. Furthermore, there are EIA's defined in the regional planning procedures in various states.

Responsible for the execution of the EIA are the local authorities of the federal states.

Example: EIA in the case of road construction:

According to the bulletin to the EIA in road planning (Merkblatt zur Umweltverträglichkeitsstudie in der Straßenplanung MUVS) published together by the federal minister of transport and the responsible ministries of the states, there has to be made an environmental impact study (EIS) that provides all environmental relevant information like:

- Description of the road construction project, specification of the land use the expected noise and pollutant emissions, waste water and refuse
- Overview of the most important alternatives with specification of choice criteria as regards environmental impacts
- Description of the possibly affected environment
- Description of the significant effects on the environment
- Description of the planned measures for prevention, reduction and compensation
- Description of the remaining significant effects of the project on the environment
- An understandable summary
- Hints on difficulties occuring during the composition of the statements.

It must be differentiated between the construction-, facility- and operation-determined impacts. Therefore, even the impacts occurring only during the phase of construction are relevant for the decision about the project as a whole.

The purpose of the EIS should be:

- The preparation of a road planning that causes minimal environmental damage
- The presentation and assessment of the projects impacts including the possibilities of avoiding and compensation of damage.

Normally, the EIS takes place in two steps:

- Regional sensibility analysis, object-oriented regional analysis and assessment, definition of relative unproblematic line corridors and of special areas of conflict
- comparison of alternatives
  comparative evaluation on plan alternatives including maximal and zero scenario

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4.1.5 Italy

Author of this section: DITS

Regional Integration of the new Lugano - Milan Line (Gottardo Line) – Final Report

Regione Lombardia (1999)
Integrazione Regionale della Nuova Linea Lugano-Milano del Gottardo – Rapporto Conclusivo.

The present study summarises a research process, developed by Gruppo CLAS, Centro Studi PIM and Metropolitana Milanese, on transportation, territorial, environmental and socio-economical problems concerning the realisation of a new railway line that connects the new Gottardo basis tunnel to the Milan node and to the main Italian rail network.

The study is divided into two volumes: the first one shows the present infrastructure and territorial situation and presents some development scenarios; the second one presents a comparative evaluation of the project alternatives.

The transportation demand evolution in the short and medium term is then analysed. Multicriteria methodology for project evaluation is utilised in order to support the decision-making processes.

1st Report on the Alps overall state

CIPRA (1998)
1mo Rapporto sullo stato delle Alpi.

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Corso Turati 49, 10100 Turin
ISBN 88-85504-44-2

This document is the Italian edition of "1st Report on the Alps overall state", jointly published in French, Italian, German and Slovenian. This documents (written by different authors) contains a general overview on the present state of the Alps based on different points of view, related to social, environmental and economical issues. The document contains also some considerations on transport matters, mainly based

on the assumption that the current situation presents an unsustainable demand of traffic on the Alpine road crossings. The suggestions given by the report are generally based on low-impact (especially in environmental terms), low-cost and short-term solutions. This document contains also statistical data in an aggregated form.

4.1.6 Slovenia

Author of this section: MARIBOR

The political system of Slovenia

National Assembly

The National Assembly is composed of deputies of the citizens of Slovenia and comprises 90 deputies. Deputies are elected by universal, equal, direct and secret voting. One deputy of the Italian and one deputy of the Hungarian national communities shall always be elected to the National Assembly. The electoral system shall be regulated by a law passed by the National Assembly by a two-thirds majority vote of all deputies.

Deputies, except for the deputies of the national communities, are elected according to the principle of proportional representation with a four-percent threshold required for election to the National Assembly, taking into consideration that voters have a decisive influence on the allocation of seats to the candidates.

The National Assembly is elected for four years. If the term of the National Assembly were to expire during a war or state of emergency, its term shall expire six months after the end of the war or state of emergency, or earlier if the National Assembly itself so decides.

Elections to the National Assembly are called by the President of the Republic. A new National Assembly shall be elected no sooner than two months and no later than 15 days before the expiry of four years from the date of the first session of the previous National Assembly. If the National Assembly is dissolved, a new National Assembly shall be elected no later than two months after the dissolution of the previous one. The term of the previous National Assembly shall end on the first session of the new National Assembly, which shall be called by the President of the Republic no later than 20 days after the election of the new National Assembly.

Deputies of the National Assembly are representatives of all the people and shall not be bound by any instructions. The law shall establish who may not be elected a deputy, and the incompatibility of the office of deputy with other offices and activities. The National Assembly confirms the election of deputies. An appeal may be made before the Constitutional Court, in accordance with the law, against a decision of the National Assembly.

The National Assembly may pass decisions if a majority of deputies are present at the session. The National Assembly adopts laws and other decisions and ratifies treaties by a majority of votes cast by those deputies present, save where a different type of majority is provided by the Constitution or by law.

Laws may be proposed by the Government or by any deputy. Laws may also be proposed by at least five thousand voters.

The National Assembly may call a referendum on any issue that is the subject of regulation by law. The National Assembly is bound by the result of such referendum. The National Assembly may call a referendum from the preceding paragraph on its own initiative, however it must call such referendum if so re-

quired by at least one third of the deputies, by the National Council or by forty thousand voters. The right to vote in a referendum is held by all citizens who are eligible to vote in elections. A proposal is passed in a referendum if a majority of those voting have cast votes in favour of the same. Referendums are regulated by a law passed in the National Assembly by a two-thirds majority vote of deputies present.

The National Council

The National Council is the representative body for social, economic, professional and local interests. The National Council has 40 members.

It is composed of:

- four representatives of employers;
- four representatives of employees;
- four representatives of farmers, crafts and trades, and independent professions;
- six representatives of non-commercial fields;
- twenty-two representatives of local interests.

The National Council may:

- propose to the National Assembly the passing of laws;
- convey to the National Assembly its opinion on all matters within the competence of the National Assembly;
- require the National Assembly to decide again on a given law prior to its promulgation;
- require the calling of a referendum as referred to in the second paragraph of Article 90;
- require inquiries on matters of public importance as referred to in Article 93.

Where required by the National Assembly, the National Council must express its opinion on an individual matter. The National Council may pass decisions if a majority of members are present at the session. The National Council decides by a majority of votes cast by those members present. Decisions requiring the calling of a referendum shall be adopted by the National Council by a majority vote of all members.

The Government

The Government is composed of the president and ministers. Within the scope of their powers, the Government and individual ministers are independent and accountable to the National Assembly.

Ministers are appointed and dismissed by the National Assembly on the proposal of the President of the Government. Prior to appointment, a proposed minister must appear before a competent commission of the National Assembly and answer its questions.

The President of the Government is responsible for ensuring the unity of the political and administrative direction of the Government and coordinates the work of ministers. Ministers are collectively accountable for the work of the Government, and each minister is accountable for the work of his ministry. The composition and functioning of the Government, and the number, competencies and organization of ministries shall be regulated by Law on organisation and competences of ministries (Zakon o organizaciji in delovnem področju ministrstev (published in the Official Journal of the Republic of Slovenia (Uradni list RS) No. 71/94)).

4.1.7 Switzerland

Author of this section: ECOPLAN

The political system of Switzerland. Institutions, processes and perspectives

Linder Wolf (1999)
Schweizerische Demokratie. Institutionen, Prozesse, Perspektiven. Bern.

In order to understand the "politics" of transport policy in Switzerland, one has to understand the political system of Switzerland first. The unique combination of Swiss "polity" elements like federalism, direct and consensus democracy, non-presidential and non-parliamentary form of government substantially influences the political process and its outcome. Just like other policy fields, Swiss transport policy is carried on within this "polity" framework. It is therefore worth describing the most influential elements of the Swiss political system in the first place.

Switzerland is a Federation, which means that the 23 cantons have a institutionalised influence on Federal politics. The cantons are evenly represented in the Small Chamber of the Federal Assembly (parliament) whose acceptance is required in order to pass any law.

In transport policy, this influence is even stronger because the Confederation and the cantons have a shared competence. In fact, each canton can define its own transport policy within the framework of the Federal restrictions. Of course, the actual political position of the cantons depends on their individual transport situation, e.g. transport burden in some Alpine cantons.

Direct Democracy is probably the most influential feature of the Swiss political system. The Swiss people influence policies not only by electing a parliament but under certain conditions have the right to decide factual issues.

With the signatures of 100'000 people, a so-called popular initiative can be launched and a change of the Federal Constitution be proposed. The popular initiative must be discussed by both chambers of the Federal Assembly. The parliament can recommend accepting or rejecting the initiative or can make its own counter proposal. The initiative is then voted on by the people and the cantons. For acceptance, a majority of both the people and the cantons is required, which gives smaller cantons a relatively high weight. Statistics show that only about 10% of initiatives are successful.

The people also have the right to referendum. If 50'000 signatures are collected within 100 days, a new law enacted or certain international treaties accepted by the Federal Assembly are subjected to a popular vote. For acceptance, only a simple majority of the people is required. Statistically, half of the law projects put forward by the Federal Assembly have been rejected.

The principle of concordance is another important element. Since 1959, the government (Federal Council) is made up of members of the same four political parties. Government's decisions are taken by a majority of its seven ministers. From these seven ministers, the parliament elects a president of the Confederation for a term of office of one year. However, the president has only representational duties and is not given more power than his colleagues in the government.

These and other elements form a unique system of Swiss consensus democracy that largely determines the decision-making process. Substantial policy changes, which usually require a change of the Constitution, are possible only if they are supported by a majority of the people, cantons, political parties and important pressure groups. The resulting decision-making process may be somewhat slow but it ensures solutions that are largely accepted and therefore can be implemented more easily.

This textbook is one of the most up-to-date and comprehensive presentations of the Swiss political system written by a renowned Swiss political scientist.

EU/Swiss Transport Policy: Institutions, processes and strategies of the European transport policy and its interactions with Switzerland

Kux Stephan, Wicki Christof et al. (2000)
Verkehrspolitik EU/Schweiz. Institutionen, Prozesse und Strategien der europäischen Verkehrspolitik und deren Wechselwirkungen mit der Schweiz. NFP41-D1. Bern.

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Details: http://www.nfp41.ch/reports/projects/kf-d01.html

The study analyses the interaction between Swiss and European transport policy looking into the example of trans-Alpine road transport. At the centre of interest are both the substantial and the institutional dimension. Substantially, the question is of importance to what degree Switzerland was in a position in the bilateral negotiations with the EU to preserve its autonomous transport policy and to establish a legal framework for it. From the institutional point of view, a network analysis helps to study the interplay between Swiss domestic politics and foreign policy, i.e. European policy, and to underline the increasing overlap between the two policy arenas. The study demonstrates that Swiss transport policy is substantially and institutionally increasingly determined by the European level (down-stream effects). Autonomous Swiss solutions are no longer tenable.

The main problem for Switzerland is that a European transport policy hardly exists as such and that it takes a strong market orientation. The principle of internalisation of external costs is only recognized in concepts, but not in law. Only infrastructure costs can be charged now. This asymmetrical evolution of Swiss and European transport policy formed the main obstacle in the negotiations on road transport.

One of the reasons for Switzerland's weak influence at the European level is uneven Europeanization. Institutional interaction between Switzerland and the EU could not keep pace with the substantial interdependence. In short: the participation of Swiss political actors in the European decision-shaping processes in transport policy is too weak measured against the impact of European transport policy on Swiss decision making. This applies mainly to environmental organizations, political parties, the parliament and the cantons. The federal administration dominates the networks of European multi-level governance. Yet the presence as such does not automatically guarantee influence and the achievement of interests.

The papers by international experts compiled in the Proceedings of the conference of March 1999 complete the above considerations:

Kux Stephan (Ed.) (2000)
Verkehrspolitik Schweiz – EU. Referate der Tagung vom 26. März 1999. NFP41-T3. Bern.

More information on T3 is available at: http://www.nfp41.ch/reports/confproceed/kf-t03.html

Sustainable Alpine Transport Policy: the negotiations on the Bilateral Agreement on Land Transport in a European context

Wicki Christof (1999)
Nachhaltige Alpenverkehrspolitik: die bilateralen Landverkehrsverhandlungen im europäischen Spannungsfeld. Chur, Zürich.

Contact: Dr Christof Wicki, Hubelrain 21, CH-6005 Luzern; Phone: +41.41.220.16.61, E-mail: chw@bluewin.ch

In his book, the author deals with major developments in European transport policy, focussing on the negotiations on the Bilateral Agreement on Land Transport between the EU and Switzerland. He focuses

on the key actors (governmental and non-governmental), their aims and strategies as well as their power and their ability to influence decisions within the investigated policy network. The dissertation is based on the approach of policy networks, which draws no clear distinction between state and society.

The most important results of the study are:

- The decision-making process in transport policy on the national level is dominated by governmental institutions. Non-governmental actors have only marginal influence, unless they have had institutionalised connections to the "power centre" for a long time. Other NGOs (e.g. environment protection groups) tried to gain weight in the political process by influencing the public opinion, which has, however, only a short-term effect.
- Although Switzerland is still in a position to develop national transport policy concepts (e.g. MRHVT), the negotiation process showed that the influence of EU strategies and policies on national policy is increasing.

The book is an interesting case study. It can be useful to discuss future consensus building processes in trans-Alpine and other transport policy issues.

Switzerland/EU: Assessment and perspectives of transport policy

Walter Felix, Wicki Christof, Frybourg Michel (2000)
Schweiz und EU: Standortbestimmung und Perspektiven in der Verkehrspolitik. Teilsynthese Wechselwirkungen Schweiz – Europa. NFP41-S7. Bern.

Contact: Mr Felix Walter, ECOPLAN, Thunstrasse 22, CH-3005 Bern; Phone: +41.31.356.61.61; Fax: +41.31.356.61.60, E-mail: walter@ecoplan.ch

More information on S7 is available from: http://www.nfp41.ch/reports/synthesis/kf-s07.html

Everything Swiss National Research Programme 41 has contributed to the issue under the programme's subtitle of "Interactions Switzerland/Europe' is incorporated in this synthesis in a comprehensive assessment, and a perspective of foreign transport policies. The synthesis detected increasing European influence on areas such as market regulations, Alpine transport policies, institutional interrelationships, and research policies.

However, Switzerland not only has to adapt better to European developments, but also has to strengthen its influence on these developments.

The analyses concur with nine priority action fields for Swiss transport policy:

- co-ordinated Alpine transport policy;
- integration in trans-European transport networks;
- free access to international rail networks;
- co-ordinated strategies for air transport;
- strengthening of Swiss interests in EU policy process;
- increased co-operation in telematics;
- increased co-operation in research;
- increased regional planning for border regions;
- assessment of the consequences of EU membership.

Transport Research and Transport Policy in Switzerland

Walter Felix (1999)
Transport Research and Transport Policy in Switzerland. In: ECMT European Conference of Ministers of Transport: Transport Economics Research and Policymaking. Paris, p. 111-117.

Contact: Mr Felix Walter, ECOPLAN, Thunstrasse 22, CH-3005 Bern; Phone: +41.31.356.61.61; Fax: +41.31.356.61.60, E-mail: walter@ecoplan.ch

Details: Contribution to the discussions at an International Seminar in Paris, May 1999. The paper can be downloaded in English and French from www.ecoplan.ch (http://www.ecoplan.ch/download/Ecmtenglcor.pdf)

This short paper deals with the policy influence of transport research in Switzerland. The author estimates the total (non-industrial) Swiss Transport research budget to be roughly EUR 20 million, which is very little compared to other countries.

The author describes already existing links between policy and research and gives some success stories of positive interaction, i.e. the implementation of propositions put forward by Swiss researchers. Furthermore, he assesses the strengths and weaknesses of the current state of interaction between research and policy. The paper ends with a list of key factors for an effective policy/research interaction. The elements to be improved are:

- Co-ordination of various research programmes and sponsors;
- dissemination of research (for some programmes);
- international co-operation; improvement of financial conditions for participations in European programmes;
- concentration of skills in transport economics in one or two academic centres; co-operation of transport institutes from various universities.

Acceptance of the Swiss transport policy by the voting public on the one hand and its implementation on the other

Vatter Adrian, Sager Fritz, Bühlmann Marc et al. (2000)
Akzeptanz der schweizerischen Verkehrspolitik bei Volksabstimmungen und im Vollzug. NFP41-D12. Bern.

Contact: Dr Adrian Vatter, Politikforschung & -beratung, Gerberngase 27, CH-3011 Bern; Phone: +41.31.312.65.75; Fax: +41.31.312.92.65; E-mail: vatter@ipw.unibe.ch

Details: An English summary of this study can be downloaded from http://www.nfp41.ch/download/moduld/d12-kf-e.doc.

Based on the analysis of 27 federal and 102 cantonal votes, this study examines the most important factors for success or failure that contribute to a sustainable Swiss transportation policy.

The two most important areas that divide voters are transportation overload and the language one speaks. However, the language conflict is only partly an expression of the existence of differing transportation policy preferences among the language groups. Other issues such as taxes, Europe, environmental protection, individual freedom and geographical involvement also differentiate the language groups from one another.

The study deals with Swiss transport policy in general and does not make any specific statements about trans-Alpine crossing. The authors try, however, to explain why the Alpine Initiative was surprisingly

accepted by the public in 1994. The main reasons were the dividedness of the conservative camp and the strong focus on environmental protection of the initiative.

Acceptance of sustainable transport policy in the political process. Germany, the Netherlands and Switzerland compared

Widmer Thomas, Schenkel Walter, Hirschi Christian (2000)
Akzeptanz einer nachhaltigen Verkehrspolitik im politischen Prozess. Deutschland, Niederlande und Schweiz im Vergleich. NFP41-D13. Bern.

Contact: Dr Thomas Widmer, Universität Zürich, Institut für Politikwissenschaft, Karl-Schmid-Str. 4, CH-8006 Zürich; Phone: +41.01.634.38.42, Fax: +41.634.49.25, E-mail: thow@pwi.unizh.ch

Details: An English summary of this study can be downloaded from http://www.nfp41.ch/download/moduld/d13-kf-eng.doc

How can the acceptance of sustainable transport policy be improved? This is the question that this research project in political science seeks to answer. In its first section, this report uses sustainability and acceptance theories to derive concrete hypotheses. Particular emphasis is laid upon actors and their networks, as well as on the use of political steering instruments. The quality of the process, that is, discussion, negotiation and mediation styles, is key to our understanding of sustainability.

In Switzerland, the transit issue is central to transport policy. Transport by rail and its financing are fairly widely accepted. Due to a relatively low-level priority of certain issues, the acceptance of traffic taxes for specific purposes (incentive taxes) is not as self-evident. In terms of process quality, the Swiss system of direct democracy has known considerable success in the case of transport policy, and has resulted in efficient and sustainable overall solutions. Specific issues in Swiss transport policy, for example conurbations and terminal policy, could benefit from a closer look at Dutch region-building, spatial planning, and public-private-partnership. Germany's experience with open actor networks could also be relevant to the Swiss transport policy-making.

The 28-tonne limit and the policy network

Markus Maibach, Christoph Schreyer, Silvia Banfi, Rolf Iten, Peter De Haan (1999)
Schweizerische Verkehrspolitik im Spannungsfeld der Aussenpolitik Fallbeispiel 28-Tonnen-Limite; NFP41-M6. Bern.

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Details: An English summary of this study can be downloaded from
http://www.nfp41.ch/download/materialien/m6-e.ZIP

The 28-tonne limit has had a decisive influence on recent developments in Swiss transport policy. The scientific Policy Network Analysis explains this process by analysing the different actors in relation to each other. To this end the various phases in the sample case of the 28-tonne limit are used which in the analysis are treated as an expression for bringing together the different policy fields. The analysis has shown that this is an "Open Policy Network" (trans-sectoral, stable, with a large number of actors) where the domestic and foreign sub-networks (state and non-state actors) merge continuously with each other in the various phases. The outriders here were the economy and the state actors. Only later did the political parties reinforce their activities of the international network. The so-called "Two Level Game" where the (national) networks assemble behind the actors in direct negotiation (in this case the Transport Department and the European Commission), was breached in particular in the bilateral negotiations phase. This

gave those actors who were able to use their skills to link the various features of the networks together with solutions that were capable of consensus an important power in decision-making.

4.2 Combined transport

This chapter looks in particular at the specificity of the transport system of the trans-Alpine region and the issue of exploitability of rail transport and combined transport. In order to address this it is important to consider dynamic modelling of supply and demand; supply chain management; and the assessment of capacity saturation including infrastructure options and the consideration of regional traffic.

4.2.1 European Union

Author of this section: NESTEAR

Overview

Intermodal transport is a major challenge for European policy in order to solve the problem of Alps crossing in order to maintain the fluidity between North and South of Europe. Intermodal transport was very early considered as a priority for European transport policy and first European combined transport master plans have been drawn at the end of the eighties before mentioning Transeuropean Network as an essential component of European integration in the Maastricht Treaty part of the major combined transport corridors.

Today the reality is that intermodal transport is very much concentrated on trans-Alpine links: more than 75 % of international intermodal transport is related to an Alpine region, as origin, destination or as a transit region. This means that the future of intermodal transport and the future of the Alpine crossing are closely linked.

From a very practical point of view it is clear that Alpine crossing for freight now requires the drilling of basis tunnels in order to protect narrow Alpine valleys in altitude, and to reduce the energy and environmental costs related to transport in mountains. However, basis tunnels are long tunnels, from twenty to fifty kilometres and cannot be envisaged as road tunnels. At some stage, in the transport chain, there must be a transfer from road to rail.

This close interdependence between intermodal policy and Alpine transport policy make it difficult in a short introduction to give a complete overview of the intermodal European policy which will always have a direct impact on Alpine transport even though intermodal policy in Europe does not reduce to Alpine crossing or to mountains crossing.

The European intermodal policy is based on an analysis of the transport system in order to improve its performances form an economic, environmental and road point of view:

- to combine the flexibility of road for terminal transport with possible economies of scale for rail, in particular for long distances trips
- to reduce the environmental impact of transport and the consumption of energy
- to improve driving and working conditions. The stimulation of intermodal transport has been developed from different angles
- to adopt the regulations: regulations of terminal transport, but also the norms to harmonise the techniques

- to subsidise infrastructure investments for terminals and links: intermodal transport is well represented in the 14 priorities of trans-European networks, among which several projects are related to Alpine crossing (Lyon-Turin, Brenner in particular)
- to help the launching of new services and subsidise some operation expenditure for the launching period which is very rarely accepted, considering the European principles which privilege market regulations (PACT programme)
- to finance technological researches concerning intermodal techniques, transhipment techniques, information system in order to improve the performances and the quality of service provided to the users.

Several basic techniques are indeed concerned: transport of maritime containers, combined transports (swap bodies, trailers), rolling road (and rolling motorways with high frequency dedicated lines under investigation), road techniques. The promotion of Short Sea Shipping is also concerned, … as air alternative solution to Alpine crossing.

Nowadays this European intermodal policy is taking a new dimension

- the objective of a new equilibrium between modes is expected to be set as a new political objective in the next Commission "White paper"
- the principle of infrastructure charging are reconsidered in order to face such important investments costs with the possible perspective of cross-financing between modes
- and finally the question of reorganisation of rail sector is raised since the 91/440 directive publication in order to stimulate rail entrepreneurial attitude, to introduce competition in rail sector and to make the market more transparent.

In the rail reorganisation, intermodal transport was the first type of activity to be considered. Liberalisation of international intermodal transport was the fist to be decided: free access is already a reality. However in practise, the changes are fairly slow, and only few new entrants have asked for access.

Concerning trans-Alpine intermodal services it is important to recall that they have often shown the way to improve the situation from an organisational point of view.

As shown in the IQ project, many best practises of intermodal transport have been developed for over twenty years in trans-Alpine services: innovation in terminal management, in rail operations in logistics organisation.

In the recent years, several new propositions have been experimented or proposed: trans-Alpine transport will probably, again, give new best practises examples in the years to come.

However, one should not underestimate the difficulties encountered and the deep changes at works: the new regulation and the separation between infrastructure management and rail operations has in a first period destabilised the system. The infrastructure charges have increased, at least in Italy and Germany, and many intermodal operators could not face road competition. National rail companies have been tempted to enter the intermodal market, in competition with their former daughter companies: from a co-operation scheme between national companies a generalised competition scheme was set, changing completely the rules of the game.

This transition period is not yet over and the conditions of a new equilibrium between operators are not yet completely clear. Interrogations remain on the development of national policies and charging rules are not yet definitively decided.

Therefore the intermodal policy chapter will probably be a strategic chapter of ALP-NET in a period of deep transition when confrontation of ideas between actors will take their full significance and interest to influence attitude towards more satisfying solution.

The Railway Policy of the Union: The Reform of the Railway Sector within the European Union

Hanreich, Günther (1998)
"Die Eisenbahnpolitik der Gemeinschaft: Die Reform des Eisenbahnsektors in der Europäischen Union", Österreichische Zeitschrift für Verkehrswissenschaft, 3-4/98, 7-11.

Making railway transport more attractive in the European Union is now the central issue of the Common Transport Policy, that is, it is one of the central transport policy goals. The establishment of the Single European Market is, of course, an important goal, but the EU has to develop a new and better transport system that allows free transport of people and goods in a sustainable way.

If the increasing traffic demand should be satisfied, we should not be dependent on road traffic alone. The EU needs a new policy that stimulates the use of environmentally friendly transport modes. This should allow to sustain mobility over the next century. This means that all transport users have to meet the costs they produce. Only this guarantees a fair competition between all transport modes and creates an increase of railway and public transport.

The strategy of the European Commission aims at strengthening the railway transport. The aims are: to create free markets; to convince railway companies to become market oriented companies; to improve public transport; and to further integrate national systems.

Without these changes, railway transport will be marginalized. However, the EU tries to prevent this: the argument is that we need efficient railway traffic to maintain mobility in a sustainable form.

Developing a Quality Strategy for Combined Transport

International Union of Combined Road-Rail Transport Companies - UIRR (2000)
Developing a Quality Strategy for Combined Transport, Brussels, UIRR.

Contact: Martin Burkhardt, UIRR, 31 rue Montoyer bte 11, B-1000 Brussels; Phone: +32 2 548 78 95; Email: headoffice.brussels@uirr.com.

Details: Study is part of the PACT (Pilot Actions For Combined Transport) programme. Available from http://www.uirr.com

The UIRR and the European Commission have jointly embarked on a project between autumn 1999 and 2000, which seeks to give direction for the improvement of the quality of combined transport (CT) in Europe. The immediate trigger for starting the project was the rather dramatic downturn in CT quality between 1997 and 1999, when systematic quality measurement by the UIRR was begun, based on data from its members in co-operation with the railways.

It appears that the major cause of this quality deterioration was the rail component of the CT product and that this was probably somewhat compounded by the various weaknesses in the interaction between the national railways and the CT operators and their customers, the logistic service providers.

In 2000, the quality problems have continued and have lent urgency to the resolution of key issues as outlined in these findings:

- Strategic structural issues that should be addressed in the political arena, focusing on liberalisation and privatisation and the introduction of more competition in the railway industry;

- Institutional problems, requiring substantial investments by the railway operators but also requiring fundamental analysis of key issues, e.g. examination of the relationships between different actors and their interests, investigation into product industrialisation and innovation possibilities; and
- Issues relating to operating processes and procedures covering both commercial and operational aspects of the entire CT transport chain.

International Union of Combined Road-Rail Transport Companies (UIRR) Report 2000

International Union of Combined Road-Rail Transport Companies (2000)
UIRR Report 2000, Brussels, UIRR.

Contact: Martin Burkhardt, UIRR, 31 rue Montoyer bte 11, B-1100 Brussels; Phone: +32 2 548 78 95; Email: headoffice.brussels@uirr.com

Details: Available from http://www.uirr.com

In 2000, the UIRR held its Annual General Assembly in Brussels to celebrate its 30th year of existence. This report consists articles from different people who give important insights and analysis about the combined transport situation from the view of combined road-rail transport companies.

Furthermore, it contains some interesting data on combined transport in Europe as well as future trends.

Intermodality: A Contribution towards a Sustainable Development and Environmental Protection

Tschirner, Peter (n.d)
"Intermodality: A Contribution towards a Sustainable Development and Environmental Protection", Working Paper, Wien, Wirtschaftskammer Österreich.

Contact: Tschirner, Peter, Wirtschaftskammer Österreich, Abteilung für Verkehrspolitik, Wiedner Hauptstrasse 63, A-1045 Wien; Phone: +43 1 501 05 4003; Email: peter.tschirner@wko.at

Details: Available from contact person.

The working group on freight transport in the Austrian Chamber of Commerce decided to analyse as one of the topic areas problems of intermodality in the framework of sustainable development and environmental protection on the one side and economic and organisational efficiency on the other side. This required a study on the advantages and the impediments to intermodality, an analysis of the potentials for freight transfer between modes and investigations into

- technical and technological solutions (infrastructures, vehicles, logistics);
- economic solutions; and
- organisational solutions (improvements on the interface between modes and on the services for users).

Furthermore, it should be indicated how traffic policies of North America and Europe handle intermodal development. A brief outlook is given to the situation in Japan.

The following conclusions are made:

- intermodal transport can only ease up loads on main road arteries caused by truck traffic to a certain extend;

- shifting of goods transport from roads to railways in the short run often meets with bottlenecks at rail tracks and terminal capacities; and
- intermodal transport has to find its right place on the market.

EUTP II Thematic Network on Freight Transfer Points and Terminals

Contact: EURA A/S, Ms. Charlotte Hedemark Nielsen, Rue du Cornet 22, B-1040 Brussels; Phone +322 230 7202; Fax +322 280 1759; E-mail: chn@eurabxl.com

Details: EUTP II, contract nr. 2000-TN.10081; Project funded by the European Commission under the transport RTD Programme of the 5th framework programme (1st call, Key Action 2).

The main purpose of the EUTP II project is to maintain the dynamic concertation activity created by the EUTP project with a view to further develop a framework, to enhance and create synergy in the European research effort related to intermodal freight transfer points. EUTP II will establish a broad dissemination and improve the exchange of knowledge. This thematic network will be used to co-ordinate activities in relation to national and European RTD projects, involving all the relevant European stakeholders. EUTP II will establish clustering activities and links to research programmes in the Member States will be made. The project Home Page will include a comprehensive database relating to European intermodal research. A specially developed search tool and a graphic presentation of European test sites will be available. Links will be made from the graphic user interface to intermodal RTD projects.

THEMIS Thematic Network in Optimising the Management of Intermodal Transport Services

Contact: NEI B.V., Mr. Jan van Ginkel, K.P. van der Mandelelaan 11, NL-3006 AD Rotterdam; Phone +3110 453 8793; Fax +3110 452 3680; E-mail: ginkel@nei.nl

Details: THEMIS, contract nr. 2000-TN.10006; Project funded by the European Commission under the transport RTD Programme of the 5th framework programme (1st call, Key Action 2).

THEMIS is a Thematic Network for Intermodal Freight Transport Information and Management Services. It is focused on the integration of Traffic Management systems with Intermodal Freight Information systems. The work of THEMIS is centred around three major sets of activities: a) Dissemination activities, which include: Dissemination/Concertation meetings, Internet Discussion groups, organisation of Workshops and Eastern European Dissemination actions b) Project clustering activities c) Working Groups that are further subdivided in Topic Groups as necessary. Strategic final decisions and recommendations that are to come from the Network are discussed and decided upon by a strategic technical board, the Technical Coordination and Synthesis Team (TCST) that works closely to the overall Steering Committee.

CO2 emissions study

Contact: IRU International Road Transport Union, 3 rue de Varembé, CH-1211 Geneva 20, Switzerland Phone: +41 22 918 2700; Fax +41 22 918 2741

Details: Press release number 618 of 20 September 2001; available online at: www.iru.org.

The IRU commissioned this study in order to compare CO2 emissions generated by combined transport road-rail and pure road transport operations. According to the IRU, the conclusions show that “the public’s perceptions of environmental performance don’t match the reality”.

The study looked at 17 major trans-European operations featuring regular combined transport services. In six cases, combined transport was found to offer a clear advantage over road transport in terms of lower

CO2 emissions. However, in four of these, the advantage stemmed largely from the fact that the rail component was powered by electricity generated by non-fossil fuel power stations, predominantly nuclear ones. In the other two cases, efficiency is high because road feeder and distribution flows did not add significantly to the overall distance travelled by goods. In all cases where combined transport performed as well as or better than road, the combined transport solution involved shipping unaccompanied semi-trailers or containers by rail. In the three cases where combined transport performed worse than road, the combined transport solution employed was “rolling highway”.

4.2.2 Austria

Author of this section: ICCR

The emphasis in combined transport across the Alpine regions of Austria is currently on the north-south rolling road systems across the Brenner and the Tauern. Most available studies focus on the potential for a shift of traffic from road to rolling road, rather than analysing the potential of unaccompanied intermodal transport across the Austrian Alps. This is rather surprising, as the drawbacks of rolling road transport are well understood (e.g. inefficiency in terms of transported weight). Furthermore the capacity constraints of rolling road transport severely limit the percentage of road transport that could be shifted (see also "Reducing Ecopoints in Transit to Italy – Combined Transport as Short-term Solution?").

Combined Transport in Alpine Transit

Loderbauer, Helmut (1996)
Der Kombinierte Verkehr im Alpentrasit, Wien, Technische Universität, Diplomarbeit.

Contact: Univ.-Ass. Dr. Rainald Löscher, Institut für Eisenbahnwesen, Verkehrswirtschaft und Seilbahnen, Technische Universität Wien, Karlsplatz 13/232, A-1040 Wien; Phone: +43 1 58801 23210; Fax: +43 1 58801 23299; E-mail: rainald.loescher+e232@tuwien.ac.at

Details: Master Thesis at the Institut für Eisenbahnwesen, Verkehrswirtschaft und Seilbahnen, Technische Universität Wien; http://www.bauwesen.tuwien.ac.at/

Road traffic, which is characterised through an increasing growth rate, interferes with human life quality increasingly. Combined (freight) traffic, which was developed as an alternative to conventional transport systems, is able to combine the advantages of the extensively structured road network with the non-polluting transportation by railway.

In this thesis, the author tries to explain and describe the requirements of the freight units, the vehicles and infrastructure, which is necessary for the loading. The thesis has a special emphasis on Alpine transit traffic. The analysis of the circumstances that are specific for this system shows the momentary restrictions of the operational area and the acceptance problems of the customers.

New or further developed railway traffic systems, which are linked with innovations in the techniques of loading, shall show that a big capacity for the transfer of the (long-distance) good traffic from the road to the rail track exists. Through the co-operation of the conventional freight traffic on the track and the combined traffic, the railway established an adequate alternative to the good traffic on the road but without waiving its advantages. So the opposing interests of the market economy and a harmonic and healthy lifestyle can be satisfied with this new ecological and economic mentality.

Basic Considerations about the Future of Freight Rail Transport

Sattler, Erich (1996)
"Grundsätzliche Überlegungen zur Zukunft des Schienengüterverkehrs", Österreichische Zeitschrift für Verkehrswissenschaft, 2/96, 21-22.

Contact: Konrad Biegelbauer, Dr. Wolfgang Scharinger, Prokuristen, Geschäftsbereich Güterverkehr, Österreichische Bundesbahnen, Elisabethstrasse 9, A-1010 Wien; Phone: +43 1 930 00 0; Fax: +43 1 930 00 25010; E-mail: stabl.kom@kom.oebb.at

Details: Article in journal Österreichische Zeitschrift für Verkehrswissenschaft

The European integration, the division of labour in production, the extension of trade as well as the increasing demand from East European markets will lead to an increase in traffic. Furthermore, the change towards high-quality goods creates new demands for logistics and quality of services: the proportion of mass goods is decreasing; there is a trend towards smaller shipments; and there are higher demands on speed, service and transport technologies.

There are still some infrastructure problems regarding road and rail and they influence the demand in favour of transport modes with sufficient capacity. The Austrian Railways (ÖBB) were able to meet the market developments and opportunities in the central European area: in Austria, the ÖBB are market leaders in freight transport (market share approx. 40 per cent); in Europe, the ÖBB are in a niche market (a specialist for Austria). Overall, the market share for combined transport will increase.

The internationalisation of the market also calls for an internationalisation of rail companies, that is, they have to think in broader spatial categories, not only nation-wide. The co-operation with carriers should be a central issue for rail companies.

The freight rail transport can help solve transport problems of the future if there is a future-oriented infrastructure policy and if there is a market-oriented, expansive strategy (of all railway operators) which creates a common rail transport offer which, in turn, meets the qualitatively and quantitatively increasing demands of transport markets.

The Importance of Rolling Road in Austria for Transport and Environmental Policy

Käfer, Andreas et al (2000)
Verkehrs- und Umweltpolitische Bedeutung der ROLA für Österreich, Wien, ÖKOMBI.

Contact: Andreas Käfer, Trafico, Fillgraderstrasse 6/2, A-1060 Wien; Phone: +43 1 586 41 81; Fax: +43 1 586 41 81 10; E-mail: trafico.wien@magnet.at

Details: Study on behalf of ÖKOMBI (Austrian Society for Combined Transport. Available from http://www.oekombi.at

One of the goals of the Austrian Transport Policy is to move freight transport away from the roads and to more environmentally friendly transport modes, like rail, ship and combined transport. As part of the combined transport modes, the rolling rode was introduced in 1980.

The aim of this study was to evaluate the advantages of the rolling road for the environment, road networks, and the national economy.

The use of rolling road shows a steady increase since 1985. There is an average yearly variation of +21.5%. In sum, 254,308 lorries were transported in and through Austria between 1984 and 1999. 42% were transported on the Brenner route, 36% and the Danube axis, and 19% on the Tauern axis.

If, in 1999, all the transported vehicles had carried their freight on the road, this would have amounted to about 58 Mio kilometres on the Austrian roads. In the year 2010, this would amount to about 71 Mio

kilometres. Furthermore, calculations show that road transport of freight transported on rolling road would have caused additional emissions of about 69 tonnes particles, 1290 tonnes NOx and 113 000 tonnes CO2.

The monetary calculation of the external effects show considerable external costs which emerge in road transport and which could be avoided with rolling road. In 1999, S 245 Mio (about € 17.8 Mio) expenses could be saved with rolling road.

Reducing Ecopoints in Transit to Italy – Combined Transport as Short-term Solution?

Seidelmann, Christoph (2001)
"Ökopunktekürzung im Transit nach Italien – Kombinierter Verkehr kurzfristiger Ausweg?", Internationales Verkehrswesen, 53/1-2, 18-21.

Contact: Christoph Seidelmann, Studiengesellschaft für den kombinierten Verkehr, Börsenplatz 1, D-60313 Frankfurt/Main; Phone: +49 69 28 35 71; Fax: +49 69 28 59 20; E-mail: sgkv@sgkv.de

Details: Article in journal "Internationales Verkehrswesen"

As a result of the recently announced reduction in Ecopoints for transit traffic by road across Austria to Italy, it is anticipated that, in 2001 and 2002, there will be a reduction in the number of some 33,000 journeys by German-registered lorries and 40,000 journeys by foreign-registered lorries (mainly of Austria and Italy). This implies shifting some 70,000 journeys to intermodal transport.

It is thought that the hoped-for capacity of the trunk road Manching – Brennersee, to the extent of 20,000 journeys per year, is unrealistic. Furthermore, a capacity increase of another 60,000 journeys on the Wörgl – Trento route is rather questionable since there is a lack of suitable rolling stock and, to a certain extent, of terminal capacity.

In so far as unaccompanied intermodal transport is concerned, there is little chance for the proposed capacity increase on the Brenner route to become a reality on a short-term basis, i.e. from 2001/2002 onwards, in view of the existing capacity shortage experienced by the Italian railway system.

Now, SBB Cargo operates with a capacity utilisation factor of 100 %. By favouring the use of intermodal transport, it would be possible to free up some capacity but this would, in turn, require a certain amount of transit traffic to be shifted back to the roads. It would appear to be highly unlikely that a massive increase in intermodal transport capacity can be put into effect.

Fernpass-Reschen-Railway as Policy and Economically Related Alternative to the Brenner Base Tunnel

Vieregg, Martin (1994)
Fernpass-Reschen-Bahn als verkehrspolitisch und wirtschaftlich sinnvolle Alternative zum Neubau der Brennerachse, München, Vieregg-Rössler GmbH.

Contact: Martin Vieregg, Vieregg-Rössler GmbH Innovative Verkehrsberatung, Sendlinger Strasse 46, D-80331 München; Phone: +49 89 260 236 55; Fax: +49 89 260 236 56; E-mail: Vieregg@vr-transport.de

Details: Study on behalf of the Inntal Gemeinschaft e.V. regarding an alternative concept for the railways between South Bavaria and Northern Italy. Available from http://www.vr-transport.de

The study investigates alternatives to the Brenner axis between Munich and Verona. Currently the construction of two new railway tracks for the 406 kilometre long railway connection between the two cities is planned. Centre-piece of this project is the 55 kilometre long Brenner Base Tunnel which should be

supplemented by a further 181 kilometres of railway tunnels. This would allow raising the capacity of the Brenner axis to up to 400 trains per day as well as to increase the speed of freight trains up to 160 km/h and 250 km/h for passenger trains.

However, this mixed transport concept does not work in practice, as faster and slower trains will hamper each other. Thus, the author discusses an alternative to the Brenner axis, which, in his opinion, is a railway across the Fernpass-Reschen route. This would have many advantages compared to the Brenner axis regarding freight and passenger railway transport.

4.2.3 France

Author of this section: NESTEAR

Intermodal transport has been considered for a long time as a priority of the French Transport Policy.

Back in the beginning of the eighties intermodal transport was supposed to take an increasing share of the freight transport; it was a product for the future of rail freight.

Focus was first put on railway techniques; then the rail access problem of ports was also raised to improve the competitiveness of French ports in the transport of maritime containers.

An important debate took place very early on the importance to be granted to the implementation of intermodal terminals. However, intermodal transport did not appear very profitable for the SNCF and for intermodal operators: although 25 % of rail freight is now due to intermodal transport, it is difficult for this technique to cover its costs.

For the intermodal terminals the question was to know whether the initiative has to be launched by local authorities or national authorities: local authorities could decide of a better location with improved regional access but national co-ordination can be necessary for better co-ordination in order to avoid unnecessary investment.

In the recent period two official reports have been prepared, one focusing on terminal implementation (rapport Daubresse) and the other one proposal for the sustainable development of combined transport (rapport du CNT - July 1998): in this last report 10 propositions have been made for a combined transport policy. Concerning the implementation of terminals to face national and European needs the management of terminal, the co-operation between operators, the adaptation of the regulations, the facilitation of access for transport SME, and finally financial conditions for investments in infrastructure.

Combined transport is a priority of the French “schema de service in France” as part of the priority for rail freight. A master plan for intermodal terminal is mentioned with focus on major nodal points in French transport system. Major ports are included in this analysis of major nodal points of the network.

In the “voluntary” scenario developed in the masterplan a tripling of intermodal transport is expected in the ten years to come: this objective has direct consequences on the crossing of the Alps.

This crossing of the Alps problem has raised again the question of the development of “rolling road”; since in the years to come it will be difficult to face the increase of truck traffic it is proposed to promote the “rolling road” technique by using in the first phase the old tunnel, which should be modernised by 2005. The new tunnel is not expected before 2015. For rolling road a new type of wagon is tested, the modular wagon with regular wheels, the truck being part between the axis of the wagon, using a “pivoting” plate for the loading of the truck.

For an overview of European situation a report has been recently published by ACEA (Association des Constructeurs Européens d'Automobiles): "Landscape and perspective for intermodal transport" following a meeting of the scientific advisory group of ACEA attended by professionals and representatives of the Commission held in December 2000.

4.2.4 Germany

Author of this section: IWW

Studies society for combined transport (SGKV)

Studiengesellschaft für den kombinierten Verkehr e.V. (SGKV).

Contact: Dipl.-Volkswirt Dr. rer. pol. Christoph Seidelmann, Börsenplatz 1, D-60313 Frankfurt, Phone: +49 69 28 35 71, Fax: +49 69 28 59 20, Email:cseidelmann@sgkv.de

Details: Available from http://home3.ecore.net/sgkv/

The study society for combined transport (SGKV) is a friendly society that wants to increase the efficiency of the transport system by promotion of the combined transport. The SGKV is financed commonly by German companies of the industry and transport sector and by the Federal Ministry of Transport. It was founded in 1928. Activities of the SGKV are the organisation of the cooperation of the partners in the transport chain, the support of standardization processes and multi-modal research and development activities. The society is representing the interests of the combined transport towards the federal government and the European Union. Presently, the SGKV is involved in the two European research projects CESAR and IN.HO.TRA.

Who does what in combined transport research

Studiengesellschaft für den kombinierten Verkehr e.V. (SGKV) (2001)
"Wer forscht was im kombinierten Verkehr?", Frankfur a.M.

Contact: Christoph Seidelmann, Studiengesellschaft für den kombinierten Verkehr, Börsenplatz 1, D-60313 Frankfurt/Main; Phone: +49 69 28 35 71; Fax: +49 69 28 59 20; E-mail: sgkv@sgkv.de

The SGKV serves as an information centre for the combined transport where all relevant research work that is done in this field in Germany is registered and archived. The publication contains all the research papers, studies, reports and dissertations that were reported to the SGKV until the end of the year 2000.

Intermodal Freight Transport Data (InFreDat)

PTV, Kessel&Partner et al. (2001), unpublished
Intermodale Güterverkehrsdaten. Research work on behalf of the European Commission, DGVII.

Contents:

- Analysis of the availability of the actual for the future expected data about combined transport
- Identification of data needs of different user groups with respect to combined transport

- Systematisation of data requests into categories
- Development of a transport chain model for the estimation of lacking data
- Development of different options for data extraction with CBA-Analysis
- Implementation of the methods and the model on pilot relations

Alternative strategies for a growth of the combined transport

HaCon Ingenieurgesellschaft mbH (2001)
"Alternative Strategien für ein Wachstum des kombinierten Verkehrs".

Contact: Bundesministerium für Verkehr, Bau- und Wohnungswesen, 53170 Bonn, Ref. A43

The objective of the study is the development of guidelines for measures and strategies in the field of combined transport, that are based on the basis of a short analysis of the current situation and trend forecasts for the relevant influencing factors.

Scenarios for the freight transport between Germany and Italy (alp transit) and Propositions for the solution of the Ecopoint problem

Müller, Wolfgang, Seidelmann, Christoph (2000)
Szenarien zum Güterverkehr zwischen Deutschland und Italien (Alpentransit) und Lösungsvorschläge zur Ökopunktproblematik. Research work on behalf of the Federal Ministry for transport, building and housing.

Contact: Christoph Seidelmann, Studiengesellschaft für den kombinierten Verkehr, Börsenplatz 1, D-60313 Frankfurt/Main; Phone: +49 69 28 35 71; Fax: +49 69 28 59 20; E-mail: sgkv@sgkv.de

For the road transit via Austria, which is quantitatively the most important alternative for transport flows between Germany and Italy, the Austrian government has announced rigorous restrictions. Detour reactions and shifts to the combined transport will lead to different but always problematic consequences. The analysis shows

- which alternatives are available for the German foreign trade
- the difficulties and additional costs of the alternatives
- the capacity of the switchover facilities
- the potential political reactions connected with the alternative traffic flows

Combined transport in the alp area

Arbeitsgemeinschaft Alpenländer Arge Alp, Kommission IV - Verkehr, Projektgruppe Kombinierter Verkehr (1998)
"Kombinierter Verkehr im Alpenraum".

Contact: Christoph Seidelmann, Studiengesellschaft für den kombinierten Verkehr, Börsenplatz 1, D-60313 Frankfurt/Main; Phone: +49 69 28 35 71; Fax: +49 69 28 59 20; E-mail: sgkv@sgkv.de

Objective of the study is to show, how the combined transport in the alps and on the feeding routes north and south of the alps can be encouraged.

Other Publications

Büchner, Christoph (2000)
Perspektiven des Kombinierten Verkehrs Schiene/Straße nach der Deregulierung des europäischen Verkehrsmarktes – untersucht am Beispiel des Alpentransits. Available from: http://stud-www.uni-marburg.de/~Buechnec/text.htm.

Meerkamp van Emdem; Ian C., Ritzinger, Herrmann (Hrsg.) (2001)
Schriftenreihe ALPENFORUM. Nachhaltige Wirtschaftsentwicklung im Alpenraum. St.Georgen ob Murau. http://www.alpenforum.org.

4.2.5 Italy

Author of this section: DITS

FS Research on international passes

FS Spa (1998):
Direttrici di transito internazionali. Gruppo di lavoro istituito per la valutazione dell'evoluzione dei traffici e la previsione di utilizzazione di nuovi transiti – Sintesi dei risultati dello studio.

Details: issued by FS Spa in 1998 and carried out by the work group for the evaluation of the traffic evolution and the new crossings utilisation prediction

Contact: Mr. Goliani
Piazza della Croce Rossa 1, 00161 Roma
Phone: +39 06 44102414
Fax: +39 06 44103887
E-mail: m.goliani@tiscalinet.it

This report describes the present situation and the foreseen interventions for all the Alpine railway crossings, which Italy is interested in. Concerning both passenger and freight transport, information is provided for local and long distance lines regarding the number of trains and passengers and the quantity of goods passing in a day. A comparison between railway and road traffic is presented. Another comparison concerns the railway freight traffic for each crossing. Other information supplied are:

- Capacity margins;
- Results of a study regarding the development of the demand;
- Reference scenario without the development of new crossings;
- Reference scenario with the development of new crossings;

In conclusion, some critical conditions are pointed out. These conditions concern the transit through Brenner, the line to Modane and particularly the Turin-Bussoleno line.

The study refers to the following researches:

- Costa-Leontieff study
- PROGNOS study on the hypothesis of Moving Highway (Railway Super Highway)
- PROGNOS study on long run passengers

- Local transport research by ASA Trasporto Metropolitano e Regionale

New trans-Alpine railway line Turin-Lyon - Intermediate Report - GEIE Alpetunnel

GEIE Alpetunnel (1998)
Nuovo collegamento ferroviario Translapino Torino – Lione – Rapporto intermedio.

Details: issued by GEIE Alpetunnel in 1998

Contact: Mr. Cavagnaro
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Phone: +39 06 44703403
Fax: +39 06 49380716
E-mail: alpe.tunnel@flashnet.it

After three years of activity and at the beginning of a new study program (1998-2000), Alpetunnel has thought it right to present this report on the project state of the art, in order to illustrate the activities in progress while reporting the results of the studies carried out. The report confirms the importance of the connection as a key element of a large European railway system composed of new lines run by passenger and freight trains. The importance of the connection is even more evident if we think to the transportation demand increase that will be generated by the elimination of some specific physical, historical and political barriers such as the British Channel, the wide-gauge in Spain and the opening of the borders with Eastern countries.

The report includes a synthesis of the studies carried out in the period 1995-1997. Among them the analysis and prediction of passenger and freight traffic, the analysis of the present line and its limits, the presentation of the various projects for the international section of the above line, the operating program prediction, the basis tunnel project, a preliminary economical evaluation of the project and last, but not least, an environmental impact evaluation.

4.2.6 Slovenia

Author of this section: MARIBOR

The potential of the Northern Adriatic Region

Contact: Samo Zupančič, Faculty of Economics, Kardeljeva ploščad 17, 1000 Ljubljana, Slovenia

Details: Available from Faculty of Economics, Kardeljeva ploščad 17, 1000 Ljubljana, Slovenia

Cross-border regional economic cooperation – potential of northern Adriatic ports of Trieste, Koper and Rijeka.

A study of the potential of combined Transport in Slovenia

Contact: Ljubo Žerak, M.Sc., Institute of Traffic and Transport, Kolodvorska 11, 1000 Ljubljana, Slovenija, phone: +386 1 29 14 626, fax: +386 1 231 92 77, e-mail: ljubo.zerak@prometni-institut.si and COWI – Denmark

Details: Available from: Institute of Traffic and Transport, Kolodvorska 11, 1000 Ljubljana, Slovenia

Combined transport is a mature transport sub-sector in Slovenia. In general, the physical infrastructure is adequate, although not entirely optimal for the purpose of combined transport traffic. The combined transport terminal network in Slovenia is very dense. There are indications, that improved efficiency in the sector may be achieved by the closure of the smaller terminals without decrement to combined transport traffic levels.

The condition and operational efficiency of terminal operations is relatively low, due partly to deficiencies in equipment and communications (especially IT based document handling and traffic monitoring and control), but also to inefficient management. Thus, the degree of utilisation of existing capital resources is low. It is proposed that involvement of the private sector in combined transport terminal operations, the provision of support to research and service development and support to the provision of financing would increase the capabilities of the combined transport sector to the point where it could significantly increase it's share of the transport market.

To further such a process, it is suggested that the Government of Slovenia introduce means to regulate road transport and ensure full economic costing of the various modes of transport, with the objectives to achieve an economically optimised modal distribution of inland cargo traffic, and minimise the direct and indirect cost associated with excessive road traffic.

Main recommendations of a study:

- The conclusions provides a focus for the identification of specific recommendations:
- Terminals that are attractive to a private sector operator should be leased to a suitable party, and the remaining terminals should be closed.
- Additional reinvestment in terminal equipment should be suspended until these issues have been addressed.
- The benefits of combined transport should be promulgated, to raise awareness of combined transport services nationally amongst operators.
- Information on the most appropriate sources of finance should be made available to prospective investors to assist them in attaining reasonably priced finance.
- New block trains services should be introduced, where perceived to be warranted, with the revenue risk shared by all relevant parties - railway operator, the shipper, the network manager and the combined transport operator.
- A detailed international market study should be commissioned, to assist in the strategic planning for combined transport operators.
- Additional qualitative assistance should be made available, such as selective support to vocational training, qualification processes (IS09000), quality labelling.

Restricting licences to hauliers, lorry bans, raising the cost of road transport to ensure that it pays its full costs should be introduced, to ensure that road users pay their full costs, and to »funnel« traffic onto combined transport services. A portion of the revenue raised should be transferred to the combined transport sector to cover, inter alia, the selective assistance and research needs identified above.

4.2.7 Switzerland

Author of this section: ITEP/ECOPLAN

Some historical elements on Swiss combined transport

Though freight traffic has been a core issue in Swiss transport since several centuries. Swiss railway network has rapidly expanded around the end of the 19th and the beginning of the 20th centuries and provides by now extensive geographical coverage, over plain regions, and Alpine and Jura valleys as well. Since 1874, industrial connecting lines are submitted to Swiss federal legislation. In 1950, there were already more than 1400 of those connecting lines, linking industrial plants and other companies to the main railway network, which gives an average of one connecting line every 4 kilometres. At the same time, 13 metric gauge lines were equipped with wagon carrier trucks (small chariots on which one can load freight wagons of a different gauge), making it possible for them to piggy-back standard freight wagons. There was already, at that time, some forms of combined transport using containers, although containers were rather small, with a maximum length of 2m50 and a maximum weight of 5 tons; it was thus possible to place side-by-side as much as three of those containers, fitting transversally in a flat wagon. Transport statistics of that time are not detailed enough to know the volume or the share of combined transport.

C25 gauge allows for 8'6" container and automobile carrying train traffic

National Swiss rail network is built according to OCF I (C25) gauge, which is compatible with the traffic of:

- Conventional freight wagons
- Standard land containers (height of 2m60, or 8'6") loaded on flat wagons
- Automobile carrying shuttle trains through the Alpine tunnels

In 1966 in Switzerland appeared the first real road alternative to roll-on/roll-off for Alpine crossing. That was the San Bernardino road tunnel, open all year long; just before its opening, more than 500'000 passenger cars and 17'000 lorries were crossing by train the St. Gotthard chain. Although, it was only on the beginning of the 70's that Swiss railways started to react to road competition, which was becoming stronger and stronger despite major legal limitations (see 2.1.7, concerning overall weight limit, and the interdiction of night-time and week-end lorry traffic).

A combined solution to carry by train lorries and trailers

In 1976, 60% of lorries were at least 3m50 high. To carry those lorries on standard flat wagons would require to enlarge gauge by 50 cm towards the top angles, which was impossible without major rebuilding of existing rail tunnels. Such an option was not economically feasible, as the Swiss network has about 450 tunnels longer than 100 metres.

For this reason, a combined solution has been adopted, involving:

- Utilisation of specific flat wagons, equipped with small wheels (of 36 cm diameter), providing a loading surface at 41 to 43 cm distance over the rolling plan (instead of 117 cm for generic flat wagons)
- Upgrading of existing tunnels on the North-South corridor through St. Gotthard, in order to ensure the required gauge only with those specific flat wagons. Hundreds of millions of Euros have thus been invested between 1976 and 1981, to upgrade gauge from C25 to P/C50 (allowing trucks of 3m70

maximum height loaded on specific flat wagons and 9'6" maritime containers loaded on standard wagons) and then to P/C60 (pushing the height limit of lorries to 3m80).

Consequently, the St. Gotthard corridor offered for 20 years the more generous railway gauge for Alpine crossing.

Through traffic, combined transport and capacity saturation

For Switzerland, combined transport issues are more tightly linked to through traffic than to domestic needs. Combined traffic is thus seen as the only reasonable alternative to overwhelming road freight traffic crossing through Switzerland. Through traffic share in the North-South corridor rose from 72% in 1981 up to 86% in 1996, whilst total traffic (in terms of ton-kilometres) increased by 30% during the same time interval.

Combined traffic growth on North-South Swiss links is spectacular. In 1985, carrying of full lorries (3% share of the overall freight tonnage) or non-accompanied combined traffic (19% share) was still small compared to 78% of the overall freight tonnage carried by standard wagons. Thirteen years later, transport of full lorries (5% share) and non-accompanied combined traffic (44% share) are almost equivalent to conventional freight traffic (51%).

Currently, two particular elements impede further growth of large-gauge combined traffic through the St. Gotthard corridor:

- Capacity saturation on the main axes, and on access lines as well. Despite of the reduction of slow passenger train traffic on this axis, overall passenger and freight demand comes close to the technical capacity of the corridor.
- The increasing share of lorries higher than 3,80 m. Those lorries cannot be carried with the current gauge.

To deal with those issues, Swiss authorities are implementing a gradual upgrading scheme:

- As a first stage, implemented in 2001, gauge of the Lötschberg-Simplon axis has been upgraded, in order to allow traffic of 9'6" maritime containers and of 4 metres high lorries loaded on specific flat wagons. To upgrade from C30 initial gauge up to P/C80 one was not a minor adjustment; in some parts of the axis, it was only possible to upgrade one track's gauge to P/C80, the second track being upgraded to P/C45 gauge.
- Second stage, the most expensive one, is to build simultaneously 2 new basis-tunnels, in St. Gotthard and in Lötschberg. Works are already under progress, and opening to service is expected in the year 2007 for Lötschberg, and in 2013 for Gotthard.
- Finally, many additional actions will be carried on access lines, in order to suppress local bottlenecks.

Promoting combined transport for domestic freight traffic

Despite short distances between Swiss economic poles (the farther they are apart is a 400-kilometres distance), interdiction of road freight traffic during night-time and week-ends, combined to very high road taxation, may also push towards a higher share of combined transport for domestic freight traffic as well. Several policy activities as well as research publications are dealing with this issue (see below for publications).

Publications on combined transport across Switzerland

Several studies on combined transport have been commissioned by the Service for transport Studies (GVF - Dienst für Gesamtverkehrsfragen / SET - Service d'Étude des Transports), which is currently attached to the Federal Office for Spatial Development (ARE, already mentioned in section 2.2.7)

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http://www.developpement-territorial.admin.ch/

Hereafter follows a list of recent publications on combined transport, which may be found also at http://www.admin.ch/gvf/inhalte/publikationen/berichte/berichte96-00_g.html

Sigmaplan, GFV Mandate # 328/2001
Alpenquerender Güterverkehr auf Strasse und Schiene 1999 – Alpenübergänge der Schweiz, Bern 2001
(Freight Transalpine Transport by Road and Rail - Swiss Crossings, with English, German, French, and Italian summaries).

M. Arendt, GFV Report # 2/2000
Intermodales Modell für den schweizerischen Binnengüterverkehr (GVM-CH) Methodenbericht, Bern 2001
(Methodology Report on an Intermodal Model for Swiss Domestic Freight Traffic, with English, German, French, and Italian summaries).

Sigmaplan, GFV Mandate # 328/2000
Schwere Güterfahrzeuge und Gütermengen durch die Schweizer Alpen 1999, Bern 2000
(Heavy Vehicles and Trailers - Freight Traffic Volume Crossing the Swiss Alps, with German, French, and Italian summaries).

GFV Report # 2/99 (= ECOPLAN (1999) http://www.ecoplan.ch/Projekte/SVA4engl.html;
Die verkehrlichen Auswirkungen des bilateralen Landverkehrsabkommens zwischen der Schweiz und der Europäischen Union auf den Strassen- und Schienengüterverkehr, Bern 1999
(Effects on Road and Rail Freight Traffic of the Bilateral Agreements Between Switzerland and the European Union, with German, French, and Italian summaries).

GFV Report # 1/98
Transport: yesterday, today, and tomorrow; Facts, Data, and Policy; Information on Swiss Transport System and on Swiss Transport Policy, Bern 1998
(published in English, German, French, and Italian).

GFV Report # 1/96
Crossing the Alps; Road and Rail Freight Traffic through the Alps in 1994, Bern 1996
(published in English, German, French, and Italian).

GFV Report # 2/91
Transport de marchandises à travers les Alpes 1989; Aperçu de l'évolution depuis l'ouverture du tunnel routier du Saint-Gothard, Bern 1991
(Freight Traffic through the Alps in 1989; An Overview of the Trends since the Starting of Operation of the St-Gotthard Road Tunnel, published in German, French, and Italian).

Within the National Research Programme on Transport and Environment (NRP 41, www.nfp41.ch), several studies have been carried out on Combined Transport:

Ruesch Martin, Paras Milan, Kettner Simon (2000)
Standort- und Transportkonzepte für den kombinierten Ladungsverkehr; Verlagerungspotentiale und Umsetzungsstrategie für den Import-/Export- und Binnenverkehr; Study; B2 of NRP 41, see www.nfp41.ch.

Abstract: More combined transport with fewer terminals: With an optimised concept for terminals, combined goods traffic (containers by rail, final distribution by road) could shift about 1 million additional tonnes of goods (25 per cent) from road to rail, and so reduce the overall road freight volume by 2 per cent. On the other hand, if other countries were to introduce heavy vehicle fees at a similar level to that in Switzerland, the combined goods traffic could increase its market share by a factor of between four and ten, and consequently reduce overall road freight volumes by 15 to 40 per cent. These results, for inland and import/export traffic (i.e. excluding transit traffic), were estimated using a newly designed goods traffic model.

Maggi Rico, Bolis Simona, Maibach Markus, Rossera Fabio, Rudel Roman, Schreyer Christoph (1999)
Multimodale Potenziale im transalpinen Güterverkehr; Study B4 of NRP 41, see www.nfp41.ch.

and the three following background reports:

Rossera Fabio, Rudel Roman (1999)
The supply of combined transport services; Increasing their market penetration; Study M7 of NRP 41, see www.nfp41.ch.

Bolis Simona, Maggi Rico (1999)
Modelling the transport and logistics choice of a shipper; Study M8 of NRP 41, see www.nfp41.ch.

Maibach Markus, Schreyer Christoph, Lebküchner Matthias (1999)
Politikstrategien zur Förderung des Kombinierten Verkehrs; Study M9 of NRP 41, see www.nfp41.ch.

Abstract: Challenges for trans-Alpine Freight Markets or: The economics of the Alpine Initiative. This synthesis report summarises the three individual studies on the market for trans-Alpine goods traffic. It provides a summary of the economic aspects of this highly topical issue of trans-Alpine goods traffic. From the point of view of supply (materials Vol. M7), of demand (M8), and possible policy support strategies (M9), the central conclusion is that reliable and punctual deliveries, primarily overnight, are critical for success in this market.

The Summary demonstrates the impact of banning goods traffic at night, and the impact of (premature) closing times of terminals, as well as the potential benefits of faster handling and speeding-up combined transport schemes. Differentiating between the market segments of "full truck load" (FTL) and "less than truck load" (LTL) becomes increasingly important.

On the demand side, the impact of monetary values and flexible switching between transport modes on reliability and travelling times have been identified (adapted stated preference survey), which could serve as important inputs for traffic models and scenarios.

Finally, an analysis of policy support strategies demonstrates how current policies could be improved, and that the expected shift from road to rail can only be achieved if the railways - as a result of competitive pressure - drastically improve their performance

Ernst Basler + Partner AG (2000)
Güterverkehr; Teilsynthese des Moduls B; Study S2 of NRP 41, see www.nfp41.ch.

Under the heading „Freight Traffic – Market or Regulation?", this part synthesis, based on the projects of Module B, shows the current trends in the goods traffic market and the potential of different strategies for an environment-friendly management of goods transport.

Widmer Thomas, Schenkel Walter, Hirschi Christian (2000)
Akzeptanz einer nachhaltigen Verkehrspolitik im politischen Prozess; Deutschland, Niederlande und Schweiz im Vergleich; Study D13 of NRP 41, see www.nfp41.ch.

This study treats, among other analysis from the point of view of political science, the „terminal policy" in Switzerland compared to Germany and the Netherlands.

Some information for Swiss traffic may also be provided by the Public Transport Information Service:
LITRA - Informationsdienst für den öffentlichen Verkehr
LITRA - Service d'information pour les transports publics
Contact person: Tony Lüchinger
Function: Redactor
Address: LITRA, P.O. Box 7123, 3001 Bern
E-mail: webmaster@litra.ch
http://www.litra.ch/

Finally, there is also an important although already old German study:

Gresser Klaus, Honerla Lutz (1988)
Szenarien zum mittelfristigen alpenquerenden Schienengütervehrkehr durch Östereich und die Schweiz, BVU (Beratergruppe Verkehr+Umwelt GmbH) - FE # 60232/88, Freiburg i. Br., 1988 (Middle-Range Scenarios for the Rail Freight Transalpine Traffic through Austria and Switzerland).

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http://www.bvu.de/

Operators of combined transport in Switzerland

For general combined transport (containers, trailers and semi-trailers):
HUPAC Intermodal S.A.
Viale R. Manzoni 6, CH-6830 Chiasso
http://www.hupac.ch/
E-mail: info@hupac.ch
Tel. +41 91 695 28 00
Fax +41 91 695 28 01

Especially for roll on / roll off services for vehicles up to 4 metres high and up to 44 overall weight:
RAlpin S.A., c/o HUPAC
Viale R. Manzoni 6, CH-6830 Chiasso
http://www.ralpin.ch/
E-mail: info@ralpin.ch
Tél. +41 91 695 28 88

For general combined transport and especially for the Roadrailer (Kombitrailer) system:
DANZAS Solutions
Güterstr. 61, CH-4133 Pratteln
http://www.ch.danzas.com/
Ines Furler
Kundendienst Inland
Tél. +41 61 315 95 21
Fax +41 61 821 16 17
E-mail: ines.furgler@ch.danzas.com

Some projects, studies, and contact points in Switzerland for domestic combined transport issues

ÖBU - Schweizerische Vereinigung für ökologisch bewusste Unternehmungsführung
Projektbeschreib KLV-CH, Zürich 1998
(Description of the Swiss combined transport).

ÖBU
Obstgartenstr. 28, 8035 Zürich
Tél. +41 1 364 37 38
Fax +41 1 364 37 11

IVT
Kombinierter Güterverkehr Schweiz, Zürich 1997-1999
(Combined Freight Transport in Switzerland).

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(Institute of Transportation, Traffic, Highway- and Railway- Engineering)
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http://www.ivt.baum.ethz.ch/indexE.html
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Fax +41 1 633 10 57
E-mail: webmaster@ivt.baug.ethz.ch

ITEP
La Suisse: pays test pour les transports combinés, Lausanne 2000
(Switzerland: A Test-Bed for Combined Transport).

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4.3 Pricing and financing

In this chapter, we will in particular consider the issue of marginal social cost pricing and the consequences of these concepts for the Alpine crossings, possible solutions for a harmonised, non-discriminatory, fair and efficient pricing for the regions concerned and the effects of pricing strategies on route choice, modal split and the generation of traffic. Current research on new approaches of financing of road and rail network investments has also been reviewed.

4.3.1 European Union

Author of this section: ECOPLAN

Overview

A comprehensive description of the EU transport research and policy has already been given in section 2.1.1 of the present report. The most important EU publications with respect to the pricing and financing issues discussed above are as follows:

- 1992: White Paper on the Future Development of the Common Transport Policy[53]
- 1995: Green Paper entitled Towards fair and efficient pricing in transport – policy options for internalising the external costs of transport in the European Union[54]
- 1998: White Paper entitled Fair payment for infrastructure use. A phased approach to a common transport infrastructure charging framework in the EU[55]
- 1998: Euro-Vignette directive: Proposal for a new system of charging for heavy goods vehicles, approved by the European Parliament in 1999[56]
- 1991: Alpine Convention[57], signed by Germany, France, Italy, Liechtenstein, Monaco, Austria, Slovenia, Switzerland and the European Union.
- 2000: Transport protocol (to the Alpine Convention) signed by all but the EU and Slovenia

Furthermore, the Bilateral Agreement on Land Transport between the European Union and Switzerland as well as the regulation agreed on the pricing of the Brenner Alpine crossing with Austria are of major importance in this context.

53 COM(92) 494 final.

54 COM(95) 691 final.

55 COM(98) 466 final.

56 European Parliament and Council Directive 1999/62/EC of 15 June 1999.

57 See Footnote 23 on page 23.

Activité de preparation, d'accompagnement et du suivi (APAS)

In order to prepare for future transport RTD programmes, the APAS-Programme (Promotion, Accompanying and follow-up actions and other activities) has been carried out in the period of 1994-1995. Among others, the pricing and financing of new transport infrastructure has been subject to discussion in the strategic transport part of the programme. The corresponding report is not presented below, because its results have been further developed in the framework of the fourth and fifth research programme of the EU.

RTD Programme, Fourth Framework Programme of the EU

The European Union's research activities in the field of pricing and financing have been intensive within the fourth framework programme. The overall objective of the programme was to contribute to the optimisation of transport systems by means of prenormative and prelegislative research. Contributions have been elaborated to the development, integration and management of a more efficient, safer and environmentally friendly transport system that will ensure the sustainable mobility of goods and people. Both, general policy concerns (competitiveness, safety, energy and environment) as well as different geographical levels (European, national, regional, urban) have been covered.

The most important research projects focussing on pricing and financing aspects are presented in the section below. For a complete overview of all projects carried out in this context, see http://www.cordis.lu/transport/home.html.

RTD Programme, Fifth Framework Programme of the EU

Within the GROWTH part of the fifth framework programme, it is the Key Action 'Sustainable Mobility' that deals with the transport services. There are many projects currently going on with a focus on pricing. A further task on the use of the revenues/financing has been included in the call of June/September 2001.

For exhaustive information about the fifth research programme, see http://www.cordis.lu/fp5/home.html.

High Level Group on Infrastructure charging

The High Level Group on Infrastructure charging of the EU[58] has elaborated three main reports so far. In June 1998, the first report expounded the pricing principles that are appropriate for achieving an economically efficient transport sector, with due account being taken on safety, environmental and other external costs. The second report, elaborated in 1999, discussed how to identify, measure and estimate the various components of transport costs, including infrastructure maintenance, environmental, congestion and accident costs. The third report assessed the economic instruments available for recovering each type of cost in each mode of transport, and recommended the most appropriate reform of the existing pricing regime for the practical implementation of social marginal cost pricing. These reports are presented in the subsequent sections.

Implementation of marginal cost pricing in transport – integrated conceptual and applied model analysis (MC-ICAM)

European Commission (ongoing)

Implementation of marginal cost pricing in transport – integrated conceptual and applied model analysis (MC-ICAM) Research Project within the RTD Programme in the field of transport, 5th Framework Programme of the EU. Brussels.

58 Members of the High Level Group: Mr. Gunnar Bjerde, President of Volvo Transport AB, Sweden; Professor Rigas Doganis, Aviation Consultant, UK; Professor Emilio Gerelli, Environmental Economist, University of Pavia; Professor Phil Goodwin, Professor of Transport Policy, University College London; Mr Jean-François Poupinel, Chariman and CEO, Cofiroute, France; Mrs Barbara Schmidbauer, Member of the European Parliament and Rapporteur on the Parliamentary Committee on Transport; Dr. José Viana Baptista, Presidente do Conselho de Administraçao, ICAT, Portugal; Mr. Peter Wagner, CEO of DANZAS and Director of Deutsche Post.

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Hämeentie 3, P.O Box 269, FIN- 00531 Helsinki

Details: http://www.mcicam.net/

The MC-ICAM project will address issues related to the implementation of marginal cost pricing. More particularly, it will investigate an implementation path of change how to get from the current non-optimal situation with non-marginal cost pricing to the optimal end state(s) and develop policy conclusions relating to it. The project will cover all major modes (urban, interurban road, rail, air, water), both freight and passenger transport, and all relevant levels of decision-making (local / regional, national, EU).

Implementing Pricing Reform in Europe – Effective Use of Research on Pricing in Europe (IMPRINT EUROPE)

European Commission (ongoing)
Implementing Pricing Reform in Europe – Effective Use of Research on Pricing in Europe (IMPRINT EUROPE), Thematic Network within the RTD Programme in the field of transport, 5th Framework Programme of the EU. Brussels.

Contact: Project Co-ordinator/ Project Secretary: Prof Chris Nash / Julie Whitham
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Fax: +44 113 233 5334
email: cnash@its.leeds.ac.uk / jwhitham@its.leeds.ac.uk
http://www.imprint-eu.org/

The IMPRINT-EUROPE thematic network is designed as a follow-up to CAPRI (see below). It will bring together researchers, professionals, policy-makers and operators in order to promote the implementation of transport pricing reform based on marginal cost principles. The network encompasses both urban and inter-urban transport and all of the main passenger and freight modes.

The specific objectives are:

- To facilitate the exchange of experience and transfer of knowledge among scientists and practitioners in the field of pricing;
- To draw together the results of previous and ongoing research in the field of pricing and to make them accessible to policy-makers, practitioners, industry and other professionals in a series of seminars and deliverables designed to assist them in developing and responding to pricing policy reform;
- To identify, through critical comparative work, the prerequisites for the development of an integrated approach to implementing the White Paper's proposed pricing reforms. The first seminar is scheduled for October 2001.

Unification of Accounts and Marginal Costs for Transport Efficiency (UNITE)

European Commission (ongoing)
Unification of Accounts and Marginal Costs for Transport Efficiency (UNITE), Research Project within the RTD Programme in the field of transport, 5th Framework Programme of the EU. Brussels.

Contact: Prof. Christopher Nash, University of Leeds, http://www.its.leeds.ac.uk
Woodhouse Lane, LS2 9JT Leeds, GB; Phone: +44 113 233 53 26; Fax: +44 113 233 52 34; E-mail: cnash@its.leeds.ac.uk

Details: Available from: European Commission, DG for Energy and Transport, Information, Communication and Diffusion of Technology, Unit/A5, Rue de la Loi 200, B – 1049 Brussels, Phone: +32 2 295 54 52; Fax: +32 2 295 61 18

Fair and efficient pricing of transport infrastructure use is a fundamental aspect of developing a sustainable transport policy that takes account of the full social costs and benefits of transport. UNITE will supply policymakers with the framework and state-of-the-art cost estimates to progress this policy.

UNITE has three core objectives:

- to develop pilot transport accounts for all modes, for the EU15 and additional countries;
- to provide a comprehensive set of marginal cost estimates relevant to transport contexts around Europe; and
- deliver a framework for integration of accounts and marginal costs, consistent with public finance economics and the role of transport charging in the European economy.

The methodology as well as the knowledge gathered in the framework of this project will provide for an important input into comparable activities specifically related to the Alps.

Within UNITE, there are case studies planned, among them a study on the "Munich-Verona Road and Rail Freight Case" that is located in the Alpine area.

Designs for Inter-Urban Road Pricing Schemes in Europe (DESIRE)

European Commission (ongoing)
Designs for Inter-Urban Road Pricing Schemes in Europe, Research Project within the RTD Programme in the field of transport, 5th Framework Programme of the EU. Brussels.

Contact: Prof. José Manuel Viegas, Transportes, Inovacao e Sistemas A.C.E., http://www.tis.pt
Rua Vilhena Barbosa 11, P –1000 285 Lisboa; Phone: +351 1 842 14 10; Fax: +351 1 842 14 11; E-mail: global@tis.pt

Details: Available from: European Commission, DG for Energy and Transport, Information, Communication and Diffusion of Technology, Unit/A5, Rue de la Loi 200, B – 1049 Brussels, Phone: +32 2 295 54 52; Fax: +32 2 295 61 18

The aim of DESIRE is to assess, based on case studies, inter-urban road pricing. The research seeks to deliver a set of best designs for future inter-urban road pricing schemes (IRPS) for heavy-vehicles as well as an in-depth analysis of the different criteria determining the success of these schemes. One objective is to assess schemes according to their capability to apply the principle of marginal cost pricing to road transport, while most existing systems aim at full cost recovery.

The main output of DESIRE is a set of recommendations that allow to exploit pricing to render more efficient the use of the existing transport infrastructure as advocated in the European Commission's Green and White Papers on pricing in transport.

In parallel to the case study validation, DESIRE will provide a forum for experts from manufacturers, infrastructure operators and academia to get informed and express their views on recent developments in the area.

REal COst Reduction of Door-to-door Intermodal Transport (RECORDIT)

European Commission (ongoing)
REal COst Reduction of Door-to-door Intermodal Transport (RECORDIT), Research Project within the RTD Programme in the field of transport, 5th Framework Programme of the EU. Brussels.

Contact: Andrea Ricci; ISIS, Istituto di Studi per l'Integrazione dei Sistemi; Via Flaminia, 21 – 00196 Roma (Italy); Tel. + 39 06 321 26 55; aricci@isis-it.com; Website: www.recordit.org

The objectives of RECORDIT are to:

- define and validate a methodology for the calculation of the real costs of intermodal freight transport
- compare real costs to charges and taxes currently paid
- assess current imbalances and market distortions
- recommend policy and business actions allowing to drastically reduce intermodal costs and to increase the attractiveness of intermodal transport options.

Two deliverables are already available: "Accounting Framework" and "Methodology for the analysis of mechanisms of cost and price formation at corridor level" with annexes (see website). A case study is dedicated to the Brenner axis and the Basle-Genoa axis has been analysed as well. This project could provide interesting information for pricing as well as for intermodal transport.

Pricing European Transport Systems (PETS)

Nash Chris et al. (2000), Pricing European Transport Systems (PETS), final report for publication (http://www.europa.eu.int/comm/transport/extra/final_reports/strategic/PETS.pdf).

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The PETS project has established a general framework for pricing principles and especially marginal cost pricing. The principles have been applied to five case studies, one being trans-Alpine freight.

The key conclusions of PETS are:

- The methodology to calculate marginal costs exists; however, the necessary information is not always easy to collect.
- A purely commercial pricing system is not efficient since it neglects important externalities.
- It is important to estimate marginal costs, and not average cost, especially for congestion, accidents and noise, where non-linearities occur.
- The effects of marginal cost pricing depend on the circumstances (existing taxes, congestion etc.) and differ widely. Rail does not necessarily benefit from steps towards marginal cost pricing, and road prices are not increased at least in some cases.
- In road freight transport, generally there is a need to increase prices.

Following marginal cost pricing rules, it has been shown that for passenger traffic, in inter-urban case studies, the price of motoring should be reduced (the reason: a relatively high level of existing taxation). In urban areas however, prices should be increased. For freight, road charges should be increased with the exception of Switzerland in the case of a low estimate of external costs, because the existing taxes are already quite high.

Pricing European Transport Systems (PETS), Transalpine Freight Case Study

ECOPLAN (1999)
Transalpine Freight Case Study. Case Study within PETS (Pricing European Transport Systems). Research Project within the RTD Programme in the field of transport, 4th Framework Programme of the EU.

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Details: Available from: ECOPLAN, http://www.ecoplan.ch (full report, summary, annex I: Internal and Producer Costs of Transalpine Freight Transport; annex II: External Costs of Transalpine Freight Transport; annex III: Description of the IWW Freight Model) or from the European Commission, DG for Energy and Transport, Information, Communication and Diffusion of Technology, Unit/A5, Rue de la Loi 200, B – 1049 Brussels, Phone: +32 2 295 54 52; Fax: +32 2 295 61 18

This PETS case study looked at 14 different land transport corridors of the so-called "Arc of the Alps" between the Ventimiglia corridor at the Ligurian coast and the Wechsel corridor in the southeast of Austria. A substantial part of trans-Alpine freight transport is medium- or long-distance transport. In many cases, the larger part of the whole distance is covered outside the Alpine region. If the PETS pricing principles were only applied within the trans-Alpine corridors, the potential of a more appropriate transport pricing scheme would be underestimated. Therefore, the case study assumed that the pricing policy pursued outside the Alpine region (i.e. "European level") also followed the PETS pricing principles. These cost estimates have been used as inputs for the design of four different pricing scenarios.

Using a transport model developed by the Institut für Wirtschaftspolitik und Wirtschaftsforschung, University of Karlsruhe, the likely effects on mode and route choice of a replacement of the current pricing schemes by the PETS pricing scenarios have been assessed.

The main findings of the case study can be summarised as follows:

- Starting from the PETS pricing principle - or the price-relevant costs as assessed in this report - and the existing pricing scheme, a need for action can be identified. The current pricing schemes do not accurately reflect short-run marginal social costs, either in road or in rail transport. In the case of road freight, the need for action is a priority at the European level (i.e. outside the Alpine area) and for the trans-Alpine corridors with low existing charges and tolls (e.g. Ventimiglia and the corridors in Eastern Austria).
- The marginal cost pricing scenario does not lead to a substantial increase in rail transport. In the case of road transport our marginal cost estimates derived from the literature and additional own calculations are not high enough to change the prices in a way that induces road transport to switch extensively to rail transport.
- Switzerland cannot hold its high share of rail transport if marginal cost pricing is introduced. In the case of the lower bound, the road transport volume on the Swiss corridors almost doubles whereas it decreases on the French and Austrian corridors. First of all traffic from the Brenner and the Mont Blanc divert back to the Gotthard if Switzerland gives up its rail-friendly transport pricing policy and changes to marginal social cost pricing using values for the price-relevant costs as assessed in this report.
- If cost recovery is demanded from each mode and not from the transport sector as a whole (i.e. total trans-Alpine freight transport), rail freight transport has to bear a very large financial burden. One can assume that with this burden rail freight transport would largely cease to exist.
- The results calculated suggest that pricing based on economic efficiency objectives alone will not save rail - if it starts from the price-relevant cost rates assessed in this project. Substantially higher

productivity gains than assumed in the case study are needed if rail wants to increase its market share under a marginal cost pricing scheme. Major efforts are needed from the railway companies. There is a urgent need to design the general set-up for rail in way that such incentives are induced. It is crucial that the introduction of more competition in the rail freight transport market, as intended by the liberalisation efforts in the rail sector is successful.

- In this case study, marginal social cost pricing does not yield lower revenues from trans-Alpine freight transport compared to the current situation unless one starts from very low marginal cost estimates. If this is done, the remaining revenues could be collected by a passage charge. The analysis using the transport model then suggests that road freight transport should bear a large part of the financial burden.

Strategic European Multi-Modal Modelling (STEMM), Case Study Transalpine Freight Transport

ECOPLAN (1999)
Transalpine Freight Case Study. Case Study within STEMM (Strategic European Multi-Modal Modelling). Research Project within the RTD Programme in the field of transport, 4th Framework Programme of the EU.

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Details: Available from: ECOPLAN, http://www.ecoplan.ch (full report, summary) or from the European Commission, DG for Energy and Transport, Information, Communication and Diffusion of Technology, Unit/A5, Rue de la Loi 200, B – 1049 Brussels, Phone: +32 2 295 54 52; Fax: +32 2 295 61 18

This case study on trans-Alpine freight transport (TAFT) pursued two main objectives: to test the applicability of the inter-modal freight transport model developed within the STEMM project; and to estimate the potential effects of packages of policy instruments and of specific instruments for improved intermodality respectively.

The case study area are the 14 trans-Alpine road and rail transport corridors within the Alpine arc reaching from the Ventimiglia corridor at the Ligurian coast to the Wechsel corridor in eastern Austria. From the point of view of inter-modal transport, TAFT is one of the most advanced markets in Europe: The share of road-rail combined transport on total cross-border transport within Europe has amounted to 5.2% in 1990. If the trans-Alpine flows are excluded this share drops to 1.7%. The reasons behind this fact are first of all the regulatory framework in the Alpine countries Austria and Switzerland (28 t limit and night / Sunday driving bans for HGV (CH), road tolls (A), investments in the rail and terminal infrastructure).

The case study describes different policy instruments, their effects as well as their implementation in the model developed within the STEMM research project. Four main scenarios (‘packages of instruments’) are then defined and tested for their impacts on the mode shares in trans-Alpine freight transport. The analysed scenarios are as follows:

- **Scenario MIN:** Business as usual in transport policy, i.e. some measures to support inter-modal transport and to promote rail revitalisation, only very limited additional policy measures in road freight transport
  Rail: limited deregulation in the rail sector transport, moderate subsidisation of inter-modal transport, some infrastructure extensions in the Alpine regions
  Road: some additional pricing (low diesel tax, Alpine vignette)
- **Scenario MIX:** combination of policy measures in the road and rail sector, additional measures and some tightening up of existing instruments

Rail: extension of subsidisation of inter-modal transport, limited deregulation and infrastructure extension
Road: introduction of a European mileage tax and of an Alpine vignette, additional efforts to better enforce existing regulations

- **Scenario PRO RAIL:** strongly rail oriented strategy, limited action in the road transport sector
  Rail: far-reaching, successful rail deregulation, high subsidisation of inter-modal services, large extension of the rail infrastructure in the Alps
  Road: moderate additional pricing (diesel tax, Alpine vignette)
- **Scenario ANTI ROAD:** strongly road oriented strategy
  Rail: limited deregulation, carrying on with financial aids
  Road: full internalisation of external costs, strict enforcement of regulations, additional Alpine-specific charges

The model run results show large impacts on modal split. The share of inter-modal transport services can be substantially increased. The extent depends on the mix of policy instruments chosen. On the Swiss corridors, in the case of the scenarios MIN and MIX there is still an increase of road transport compared to the current situation because it is assumed that the 28 t limit for HGV is abolished in the base case 2010. The impacts in the real world might be lower due to limitations in the modelling:

- It is assumed that the switch from road to inter-modal services can and will be accommodated in the rail sector without increasing cost, lowering average speed and decreasing reliability. The model does not reflect the strategies the inter-modal and railway operators use to react on the policy measures.
- It has not been possible to model certain determinants for the mode choice (i.e. the consignment size) speaking against the use of inter-modal services
- For some instruments (e.g. the rail deregulation), the implementation in the real world might be less successful than assumed in the model.

With regard to the different instruments the following conclusions can be drawn:

- Improvements of efficiency and productivity in the rail sector can have a large effect. Accordingly, a successful realisation of the Freightways concept and of rail deregulation is crucial to increase inter-modality in TAFT. It has at least the same potential effects as an increased subsidisation but costs much less
- The extension of the rail network is an important condition to make the switch from road to inter-modal services possible. The effects on the Swiss corridors show that an attractive Rolling Motorway service, for example, can attract a substantial part of TAFT. The unwelcome side effect is that this service competes not only with "pure" road transport but also with unaccompanied combined transport
- Policy measures in the road sector are as important as in the rail sector. Especially the mileage tax to internalise the external costs of road freight transport considerably affects (long distance) trans-Alpine freight transport. The impact is stronger than the one of specific measures for the Alpine corridors (e.g. an Alpine vignette)

The model runs have shown the strong need of a co-ordinated strategy between the Alpine countries to avoid environmentally and economically undesirable detour traffic.

Acceptability of Fiscal and Financial Measures and Organisational Requirements for Demand Management (AFFORD)

European Commission (2000)
Acceptability of Fiscal and Financial Measures and Organisational Requirements for Demand Management, Research Project within the RTD Programme in the field of transport, 4th Framework Programme of the EU. Brussels.

Contact: Government Institute for Economic Research (VATT), http://www.vatt.fi
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Details: Available from: European Commission, DG for Energy and Transport, Information, Communication and Diffusion of Technology, Unit/A5, Rue de la Loi 200, B – 1049 Brussels, Phone: +32 2 295 54 52; Fax: +32 2 295 61 18

The AFFORD project deals with urban transportation problems and especially with urban transportation pricing. There is an obvious paradox between the economic theory, which suggests that marginal cost pricing is the right solution to such problems, and practical experience, which suggests that such pricing measures may be hard to implement.

The principle of marginal cost pricing and practical fiscal and financial measures have already attracted considerable interest within the transportation research and professional community. On that basis, strong arguments have been put forward in support of pricing measures as a means of controlling road use demand, especially in the most heavily congested European cities. The AFFORD project aims to investigate this paradox and its possible solutions, through a combination of economic analysis, predictive modelling, attitudinal surveys, as well as through the assessment of a full range of fiscal and financial measures within a number of case study cites in Europe.

Even though the AFFORD project is not directly related to the specific situation of the Alpine regions, its results can be used as important hints for similar research to be carried out for the Alps.

Costs of Private Road Travel and their Effects on Demand (TRACE)

European Commission (2000)
Costs of Private Road Transport and their Effects on Demand, Research Project within the RTD Programme in the field of transport, 4th Framework Programme of the EU. Brussels.

Contact: Hugh Gunn, now at RAND Europe (formerly at Hague Consulting Group,) – Leiden, Newtonweg 1, 2333 CP Leiden, The Netherlands, Tel. +31 71 524 5151, Fax +31 71 524 5191; reinfo@rand.org Hugh_Gunn@rand.org

Details: http://www.europa.eu.int/comm/transport/extra/profiles/trace.html

The aims of the projects can be summarized as follows:

- to understand and demonstrate the relationship between costs (both time and money) and the demand for car travel (long and short);
- to produce a comprehensive review of empirical and modelling evidence of time and cost elasticities and 'values-of-time' (long and short term)
- to produce an easy to use 'Elasticity Handbook' to include values for elasticities for a range of 'prototypical contexts';
- the assessment of first order impacts on car travel demand at different planning levels.

Evidence of indications of the influence of means of payment and actual and perceived costs will be sought in the course of these investigations. The core of the project is the generation of short and long term elasticities for a large set of 'prototypical contexts'. These contexts are designed to represent a range of European demographic and socio-economic circumstances, types of population, levels of urbanisation and different levels of competitive positions of different transport models, amongst other variables. To generate the elasticities three existing state-of-the-art transport forecasting systems and land use/transportation models will be used. A comprehensive overview of long and short-term elasticities, presented in the form of Elasticity Handbook, allows the estimation of the first order impacts on car travel demand of policies that affect travel time and costs.

Concerted Action on Transport Pricing Research Integration (CAPRI)

European Commission (2001)
Concerted Action on Transport Pricing Research Integration, Research Project within the RTD Programme in the field of transport, 4th Framework Programme of the EU. Brussels.

Contact: Prof. Christopher Nash, University of Leeds, http://www.its.leeds.ac.uk/projects/capri/ Woodhouse Lane, LS2 9JT Leeds, GB; Phone: +44 113 233 53 26; Fax: +44 113 233 52 34; E-mail: cnash@its.leeds.ac.uk

Details: Available from: European Commission, DG for Energy and Transport, Information, Communication and Diffusion of Technology, Unit/A5, Rue de la Loi 200, B – 1049 Brussels, Phone: +32 2 295 54 52; Fax: +32 2 295 61 18

The main objective of this Concerted Action was to facilitate dissemination to Member States of the results of projects dealing with the pricing of transport and to attempt to build up a consensus on the policy implications.

The concerted action provides a synthesis of relevant results to an inter-governmental Committee, set up by the Commission.

There are various reports from CAPRI:

- Current Position and Proposed Outline of the Concerted Action (State of the Art)
- Pricing Principles
- Valuation of Externalities
- Road Transport Pricing Issues with particular reference to urban road pricing
- Interurban Road Pricing
- Rail, other public transport and air transport pricing
- Final report

Models for Transport Environment and Energy – version 2: Strategic Transport Policy Analysis (TRENEN-II-STRAN)

European Commission (1999)
Trenen II STRAN: Policy Analysis for externalities in road transport: models and results; available from: http://www.cordis.lu/transport/src/trenenrep.htm and http://www.europa.eu.int/comm/transport/extra/trenenia.html.

Contact: Prof. Stef Proost, Katholieke Universiteit Leuven, http://www.econ.kuleuven.ac.be Naamsestraat 22, BE – 3000 Leuven; Phone: +32 16 32 68 01; Fax: +32 26 32 67 96; E-mail: stef.proost@kuleuven.ac.be

The objective of the TRENEN II STRAN project is the development of strategic models for the assessment of pricing reform in transportation, and their application to the European Union. The strategic models are designed to analyse two types of policy problems. The first problem is to measure the gap between present and efficient prices across all modes. What prices are too low and what prices are too high compared to their marginal social cost? The second problem is to measure the potential of different types of pricing instruments to improve the pricing of transport.

Within TRENEN-II-STRAN, several case studies have been carried out (e.g. Belgium, Ireland), but the project does not directly refer to the Alpine Region. However, the set of strategic models for policy assessment in the field of taxation, pricing, regulation and financing will provide inputs for similar studies referring to the Alps.

Quality Indicators for Transport Systems (QUITS)

European Commission (1997)
Quality indicators for transport systems (QUITS), Research Project within the RTD Programme in the field of transport, 4th Framework Programme of the EU. Brussels.

(see http://www.europa.eu.int/comm/transport/extra/quitsia.html and http://www.cordis.lu/transport/src/quits.htm)

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QUITS has demonstrated the viability of making a detailed bottom-up assessment of a wide range of cost factors, specific to individual journeys/routes, modes of transport, purposes, desired times of arrival and expected lengths of stay at a destination. QUITS methodology focuses on modal comparison, and is therefore useful for benchmarking purposes.

Case study calculations showed substantial reductions in external costs, (due to air pollution, global warming, noise and accidents) for rail compared to road transport on selected major European routes. QUITS has demonstrated the feasibility of evaluating external costs for journeys along specific routes, as part of the research base for the implementation of economically efficient pricing measures in the European transport sector.

One case study was dealing with the link Frankfurt – Milan (freight and passengers, road and rail) and has provided data for this Alpine crossing.

Cost Evaluation and Financing Schemes for Urban Transport Systems (FISCUS)

European Commission (2001)
Cost Evaluation and Financing Schemes for Urban Transport Systems, Research Project within the RTD Programme in the field of transport, 4th Framework Programme of the EU. Brussels.

Contact: Prof. José Manuel Viegas, Transportes, Inovacao e Sistemas A.C.E., http://www.tis.pt
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The main goal of the FISCUS project was to analyse existing cost allocation methodologies and financing schemes, and conceive new ones in response to identified gaps and weaknesses. The evaluation of real transport costs (internal and external) for the various urban transport modes (bus, tram, rail, private transport, water transport, underground, walking and cycling) with the objective of enabling cost comparisons between public transport and private car over the same journey was a major task of the project. Furthermore, it dealt with the financing of urban mobility understood as corresponding to who pays, directly or indirectly the provision of transport infrastructure and services, but also to who bears its (positive or negative) consequences without being directly involved. The main output is a European handbook for evaluating real urban transport costs and designing financing schemes for urban transport systems. When analysing the full costs of urban mobility, it is not acceptable to develop solutions of financial support of those costs that simply say "apply prices equal to marginal social costs" ignoring the consequences (or even the dimensions) of incomplete coverage of those costs. In the end, all costs are always covered, and it is not appropriate to defend a policy that deliberately ignores who those payers might be. Prices should be defined considering the marginal social costs of the systems at their current level of operation, but not necessarily to be equal to those marginal costs. In parallel to those social marginal costs, other issues have also to be considered, and the definition of prices (as well as the possible contributions of non-users in order to ensure full cost coverage) has to be made with this wider view, keeping in mind that some pricing issues cannot be solved on urban scale alone.

The key conclusion of the FISCUS project is that, all mobility costs being always paid by someone, a systematic approach to these issues is strongly recommended.

Pricing Acceptability in the Transport Sectors (PATS)

European Commission (2000)
Pricing Acceptability in the Transport Sectors, Research Project within the RTD Programme in the field of transport, 4th Framework Programme of the EU. Brussels.

Contact: Prof. José Manuel Viegas, Transportes, Inovacao e Sistemas A.C.E., http://www.tis.pt
Av. 5 de Outubro, P –1050 049 Lisboa; Phone: +351 21 359 30 20; Fax: +351 21 359 30 21; E-mail: global@tis.pt

Details: Available from: European Commission, DG for Energy and Transport, Information, Communication and Diffusion of Technology, Unit/A5, Rue de la Loi 200, B – 1049 Brussels, Phone: +32 2 295 54 52; Fax: +32 2 295 61 18

The main objectives of this project are to:

- Identify the reasons behind the attitude of acceptance/non-acceptance of transport pricing, and the arguments that support those standpoints;
- Find the means and measures to increase its acceptability;
- Identify the legal and political barriers to the implementation of pricing schemes;
- Analyse of the distributional impacts;
- Design acceptable pricing schemes and policy packages, taking account of efficiency and fairness issues.

The PATS project aims to bring new and deeper knowledge on the conditions to enhance acceptability of pricing schemes to the transport sector by integrating those requirements in the underlying structural environment. The economic relevance of the research lies also in its added value in enabling a more market oriented approach, through the knowledge of the reasons for opposition and acceptability of pricing

schemes, which in turn enables the improvement of the organisation and management of the transport systems.

It was recognized that even if the economic foundations of transport pricing are solid, its concrete and practical implementation still create major problems in terms of acceptability. The findings of the reactions to the Commission's Green and White Papers confirmed that the acceptability of transport pricing is more dependent on practical issues and convictions and believes of the stakeholders than on its economic principles and foundations.

Integrated Strategic Transport Infrastructure Networks in Europe (COST 328)

European Commission (1998)
Integrated Strategic Transport Infrastructure Networks in Europe, Research Project within the European Cooperation in the field of Scientific and Technical Research. COST 328. Brussels.

Contact: Michel Frybourg, Groupe ENOES, http://www.enoes.com
Avenue Félix Faure 108, F-75015 Paris; Phone: +33 1 45 62 17 32; Fax: +33 1 45 63 55 44; E-mail: Frybourg@club-internet.fr
Scientific Secretary of COST 328: European Commission, Fax: +32 2 296 37 65; E-mail: COST-Transport@cec.eu.int

Details: Available from: Office for Official Publications of the European Communities, Luxembourg. ISBN: 92-828-4573-7.

COST 328 has shown that to be economically effective in Europe, the construction of new strategic European infrastructure cannot be done, as in the past, as a series of disconnected modal projects, or as a series of national or local issues. The network is only economically relevant when it is used for added value operations by users. Working Group 2 of this project has dealt with a case study related to the various aspects and problems of the 'trans-Alpine Freight Transport (TAFT)'. The TAFT market fails to function efficiently due to various policy failures. First, transport policies have been and are still following a national logic. Regulations in the transport sector on a national level together with national planning perspectives of the infrastructure hinder the emergence of an integrated TAFT network. Secondly, policies that have been designed in the interest of national players, such as railways and combined transport companies, are only slowly giving way to an integrated European approach. Thirdly, the newly arisen focus on environmental issues leads to un-holy alliances with the already existing interests. This leads to a situation where different stakeholders strongly support a transport policy focusing on national issues. Under these circumstances, the policy options are severely limited.

Aggregate flow models allowed for the quantification of the overall implications of specific strategies (e.g. the 28 tons limit), whereas microeconomic analysis has given more precision to strategic potentials in terms of price strategies for forwarders. The combination of this evidence has helped to identify critical success factors. Introducing actors' analysis has permitted specific weights to be given to these factors in terms of relevant actors in the case of specific bottlenecks.

The conclusion is that, in contrast to earlier expectations, organisational issues form the key Critical Success Factor for improving the opportunities of network integration on the Trans Alpine freight route networks. These findings are clearly not only confined to the Alpine routes, but their significance in the concentrated, highly political, and highly competitive environment of the Trans Alpine range is to be noted.

High Level Group on Transport Infrastructure Charging: Final Report

High Level Group on Transport Infrastructure Charging (1998)
High Level Group on Transport Infrastructure Charging: Final Report, first report, Brussels.

Contact: European Commission DG VII, Rue de la Loi 200, BE – 1049 Brussels, http://europa.eu.int/comm/dgs/energy_transport/index_en.html

Details: Available from: European Commission, DG for Energy and Transport, Information, Communication and Diffusion of Technology, Unit/A5, Rue de la Loi 200, B – 1049 Brussels, Phone: +32 2 295 54 52; Fax: +32 2 295 61 18

The first report of the High Level Group provided an important input into the Commission's White Paper on Fair Payment for Infrastructure Use. The report concluded that there is a need for a Community level approach to infrastructure charging that includes all modes of transport. The same basic charging principles should be applied to all the major modes of transport in each Member State, and charges should be based on the user-pays principle, charging all users of transport facilities for the costs they impose. In order to reduce distortions to competition, differences in charges to users should apply only where there are real differences in costs.

Furthermore, when investments in new transport infrastructure are planned, the investment decision should be made on the basis of a full social cost benefit analysis covering both the internal and the external costs and benefits. As far as already existing infrastructure is concerned, charging should be realised on the basis of the total marginal cost, again covering both, internal and external marginal cost.

It may be appropriate to set the user charges above the marginal cost level, if the capital costs of infrastructure need to be recovered, particularly in cases when marginal costs are below average costs. Rather than simply charging all users the average cost, the report concludes that a market pricing approach could be adopted, based on Ramsey/Boiteux Pricing principles. All users are charged the marginal costs at least, with additional charges being levied in relation to the price sensitivity of each user group and to the level of quality of service offered.

Final Report on Estimating Transport Costs

High Level Group on Transport Infrastructure Charging (1999)
Final Report on Estimating Transport Costs, second report, Brussels.

Contact: European Commission DG VII, Rue de la Loi 200, BE – 1049 Brussels, http://europa.eu.int/comm/dgs/energy_transport/index_en.html

Details: Available from: European Commission, DG for Energy and Transport, Information, Communication and Diffusion of Technology, Unit/A5, Rue de la Loi 200, B – 1049 Brussels, Phone: +32 2 295 54 52; Fax: +32 2 295 61 18

The focus of the second report is to identify and estimate the various components of costs associated with the use of existing infrastructure, and has identified in particular those costs that vary with the volume of vehicle movement. While precise estimation of marginal external costs in all situations would be impractical, the technical advisors of the High Level Group have agreed that reasonable approximations are possible in most cases. The cost estimates provided in the technical papers of the second report are often sufficiently high to be of policy significance and vary in nature and degree from one mode to another and also between Member States.

On the basis of the principles given in the first report and the findings of the technical advisors, the High Level Group concludes that a practical basis for charging for different elements of cost – including external cost – could be developed in most cases:

- For accidents, transport insurance should be asked to cover medical, injury compensation, additional congestion as well as environmental costs in order to make insurance costs more closely reflect the marginal costs of accidents.

- Urban congestion charges should reflect time delay costs and an element for wear and tear, varying by time of day, road type etc.
- Infrastructure costs should be charged for all major infrastructure.
- Environmental costs should be recovered using fuel duties

The report recommends that the Member States should

- adopt common definitions for the various elements of transport costs for each mode;
- adopt standard methodologies for the identification and valuation of the impacts of externalities;
- prepare national cost accounts for the main modes;
- and calculate marginal costs for the main modes on a common conceptual basis, for all Member States and all modes.

The next step is to develop appropriate charging mechanisms to recover marginal external costs in order to meet Community objectives of increasing fairness and efficiency.

Charging Users Directly for Transport Infrastructure Operating Costs

High Level Group on Transport Infrastructure Charging (1999)
Charging Users Directly for Transport Infrastructure Operating Costs, third report, Brussels.

Contact: European Commission DG VII, Rue de la Loi 200, BE – 1049 Brussels, http://europa.eu.int/comm/dgs/energy_transport/index_en.html

Details: Available from: European Commission, DG for Energy and Transport, Information, Communication and Diffusion of Technology, Unit/A5, Rue de la Loi 200, B – 1049 Brussels, Phone: +32 2 295 54 52; Fax: +32 2 295 61 18

This third report of the High Level Group assesses the economic instruments available for recovering each type of cost in each mode of transport, and recommends the most appropriate reform of the existing pricing regime for the practical implementation of marginal social cost pricing (including both internal monetary and external costs). The focus is on the charges levied by infrastructure managers for the use of existing infrastructure in a regulated market. Questions of how to best recover full infrastructure costs, where necessary, using two-part Tariffs or Ramsey-Boiteux pricing, are not dealt with further in this report, but are recommended for future consideration.

Choosing which type of instrument (pricing, regulation, etc.) is appropriate for achieving any particular policy requires that options are selected and appraised against specific criteria. These include the policy instrument's effectiveness in achieving the policy goal, the degree of transparency and simplicity of the chosen instrument, compliance and enforcement, the cost of implementation, operation, information and transactions associated with the policy, and the acceptability of the policy to the differing political and public views (including those of various stakeholders). The choice should also be made taking into account the current policy mix and a full assessment of the relative costs and benefits (such as gains in effectiveness in reaching the policy goal).

The Group found that broadly similar pricing instruments are appropriate in each of the five modes of transport. However, differences between modes in the structure of infrastructure markets and in the number of purchasers of infrastructure services affects the practicality and cost effectiveness of different charging regimes. User charges that are able to reflect the marginal infrastructure and environmental costs, and to recover fixed costs where necessary, are the ideal policy instruments. These should be im-

plemented through road pricing schemes and through a combination of track/station/port/airport access charges and en route charges for the other modes.

Other Research Activities and Publications in the European Union

Arbeitsgemeinschaft Herry / Infras / Prognos (1994)
Einzel- und gesamtwirtschaftliche Wegekostenrechnung Strasse/Schiene in Österreich und der Schweiz, Schlussbericht zu Phase I. Im Auftrag des Bundesministeriums für öffentliche Wirtschaft und Verkehr (Wien) und des Dienstes für Gesamtverkehrsfragen im Eidgenössischen Verkehrs- und Energiewirtschaftsdepartement (Bern). Bern/Wien.

ASECAP – Association Européenne des Concessionaires d'Autoroutes et d'Ouvrages à Péage (ongoing)
CESARE Project on Common EFC System for an ASECAP Road Tolling European System, Contact: ASECAP, Rue Edmond-Valentin 3, F – 75007 Paris; Phone: +33 1 47 53 39 29; Fax: +33 1 47 53 39 45; E-mail: info@asecap.com, http://www.asecap.com
CESARE deals with the development of an interoperable Electronic Fee Collection service based on short range communication at 5,8 GHz (DSRC), for implementation throughout the whole of Europe, to be used by all types of vehicles (cars, trucks, long-distance coaches).
The first phase of CESARE is a 1-year project that started in December 1998. It will produce the detailed functional and technical specifications of such a common EFC system and will define the basic elements of the contractual agreements between the operators in order to offer the service. These elements will be compiled in a Memorandum of Understanding, which will define the opportunity for general or bilateral contracts between operators and possible external institutions issuing payment means accepted in the system. The standards and pre-standards issued by CEN on this subject are a pre-requisite for the definition and specification of the system.

DIW, Infras, Consultancy Dr. Herry and NERA (1998)
Infrastructure Capital, Maintenance and Road Damage Costs for Different Heavy Goods Vehicles in the EU, Final Report for the Commission of the European Communities, Directorate-General for Transport, DG VII. Brussels.

Herry, Faller, Metelka, Snizek und van der Bellen (1992)
Verkehrswegerechnung für den Brennerkorridor. Im Auftrag des Amtes der Tiroler Landesregierung. Wien.

Infras und IWW (2000)
External Costs of Transport; Accident, Environmental and Congestion Costs in Western Europe; update/extension of former UIC study on external effects (1995); Karlsruhe/Zürich.

Juha Tervonen, Electrowatt-Ekono Oy et al. (2001)
Estimating and Charging Marginal Transport Costs in Finland; available from: http://www.mintc.fi/www/sivut/english/default.html.

Ministerie van Verkeer en Waterstaat, Directoraat-Generaal Rijkswaterstaat
A thematic comparison of transport policy approaches in Europe, final report, Contact and copies: Dr. Roxanne Powell-Ladret, AVV (Transport Research Centre), P.O. Box 1031, NL – 3000 BA Rotterdam; Phone. +31 10 282 57 05; E-mail: e.r.powell@avv.rws.minvenvw.nl. Rotterdam.

Ministry of Transport and Communications of Finland (2000)
Taxes and User Charges on Heavy Vehicles in Europe, Publications of the Ministry of Transport and Communication 23/2000, Helsinki. Contact: Lassi Hilska, Director of Goods Transport Unit. Available from ISBN 951-723-302-7
Abstract: This study gives an overview of the taxes and charges that are levied on heavy goods vehicles in road freight transport in the various European countries. The main categories of taxes and charges included in the study are vehicle taxes, infrastructure user charges, road tolls and fuel-related duties. Comparisons of the current level of taxes and charges are made using standard vehicle types. The material for the study was collected from the various ministries and expert organisations of Germany, UK, France, Belgium, Luxembourg, Austria, Switzerland, Portugal, Spain, Greece, Latvia, Lithuania, Sweden, Norway, Denmark and Finland. The report describes the situation at the beginning of the year 2000.

Neuenschwander René, Suter Stefan, Walter Felix and Kramer David (1998)
The economic effects of including external costs of road freight transport in infrastructure user charges, in: European Commission, DG for Economic and Financial Affairs, European Economy, Reports and Studies, Getting Environmental Policy right, The rational design of European environmental policy from an economic perspective, No. 1, 1998. Contact: René Neuenschwander, ECOPLAN, Phone: +41 31 356 61 61; Fax: +41 31 356 61 60; E-mail: neuenschwander@ecoplan.ch; http://www.ecoplan.ch.

Quinet Emile (2001)
Meeting the challenge of competing European doctrines. Paper for UNITE workshop “Towards an evidence-based charging policy for transport infrastructure”, 17-18 September 2001. Paris.

Rothengatter Werner (2001)
Alternative viewpoints on the combined use of accounts and marginal costs. Paper for UNITE workshop “Towards an evidence-based charging policy for transport infrastructure”, 17-18 September 2001. Paris.

T&E – European Federation for Transport and Environment (2000)
Bringing the Eurovignette into the Electronic Age: The need to change Directive 1999/62/EC to allow kilometre charging for heavy goods vehicles, Available from: European Federation for Transport and Environment, Bd. De Waterloo 34, BE – 1000 Brussels, Phone: +32 2 502 99 09; Fax: +32 2 502 99 08; E-mail: info@t-e.nu; http://www.t-e.nu.

UIC – Union Internationale des Chemins de Fer and Roy Rana (1998)
Infrastructure Cost Recovery under Allocative Efficient Pricing, UIC/CER Economic Expert Study: Final study report. Paris.

4.3.2 Austria

Author of this section: ICCR

Most studies on road pricing in Austria are, in one way or another, connected to the expert working group on road pricing that was set up by the Ministry of Transport in the early 1990s. The objective of this expert group was to select a technical solution and set the distance related charges for a system to be introduced in 1998. Political and technical problems led to a delay in the implementation that is now scheduled for the year 2003. The full version of the studies commissioned by the expert group is not publicly

available but the main results have been published in a consensus report (see "Distance Related Charging System for the Austrian Primary Road Network" below).

Internal and Producer Costs of Transalpine Freight Transport

Winkelbauer, Stefan (1998)
Internal and Producer Costs of Transalpine Freight Transport, Annex I within PETS (Pricing European Transport Systems), Research Project within the RTD Programme in the field of transport, 4th Framework Programme of the EU.

Contact: Dr. Wilfried Schönbäck, Institute of Public Finance and Infrastructure Policy, Vienna University of Technology, Karlsgasse 11/2, A-1040 Wien; Phone: +43 1 588 01 267 19; Fax: +43 1 588 01 267 99; E-mail: wilfried.schoenbaeck@tuwien.ac.at

Details: Available from: ECOPLAN, http://www.ecoplan.ch

The purpose of Annex I was to collect existing estimates of internal costs of trans-Alpine road and rail freight transport and to try to generalise their results. It deals with operating costs, infrastructure costs and infrastructure revenues.

The cost structure (fixed/variable costs; equipment, personnel, fuel, maintenance, tolls etc.) and basic cost indicators (unit costs by vehicle-km and tonne-km) of road freight transport are estimated, based on several sources from different countries. Cost components that depend on road pricing policy (tolls, taxes) are shown separately.

For the Austrian part of the Brenner corridor, a road cost account has been carried out in 1992 and revised in 1996. The corridor is defined as the route through Austria from Kufstein to Brenner, with a length of 109 km. The replacement value of the motorways between Kufstein and Brenner is calculated as € 601 million for 1995, The annual infrastructure producer costs are € 66 million/year in 1995. Taking into account traffic volumes, vehicle weights and capacity needs, infrastructure producer costs are divided between freight transport (€ 31 million) and passenger transport (€ 35 million). According to existing studies, the share of freight transport on infrastructure producer costs is 25 % on Gotthard corridor and 47 % on Brenner corridor. This difference may be owing to different shares of HGV on vehicle-km and to different weight limits.

For the Brenner corridor, a rail cost account has been carried out in 1992 and revised in 1997. The replacement of value of the railway route between Kufstein and Brenner has been calculated as € 565 million for 1995. Total infrastructure producer costs are divided between freight transport (€ 23 million) and passenger transport (€ 16 million) what amounts to total infrastructure producer cost of € 39 million. Both values would be 79 % and 68 %, respectively, lower than those for the Gotthard corridor.

Lorry Toll and Road Pricing – Profit for Economy and Ecology

Aghte, Heike *et al.* (2000)
Lkw-Maut und Strassengebühren – Profit für Wirtschaft und Umwelt, Wien, Verkehrsclub Österreich.

Contact: Dr. Willi Nowak, VCÖ-Verkehrsclub Österreich, Bräuhausgasse 7-9, A-1050 Wien; Phone: +43 1 893 26 97; Fax: +43 1 893 24 31; E-Mail: vcoe@vcoe.at

Details: Report available from: http://www.vcoe.at/publikationen

Since Austria joined the European Union, the prices for the operation of heavy lorries has been reduced ever further. The amount of road pricing was reduced from € 5,800 in 1994 to € 1,235 in 1997 on average.

There are two arguments that create political pressure to improve the break-even of lorry traffic by introducing an activity-related toll for heavy lorries:

- Heavy lorries use the roads more intensively than single cars do. The introduction of a activity-related toll for heavy lorries will go against the uneven distribution of costs.
- In Austria, the profits of the Autobahnen- und Schnellstrassen Finanzierungs-AG (ASFINAG) do not suffice to finance its duties. Thus, the lorry toll should serve the funding of the trunk roads infrastructure.

The road taxes for lorries vary up to € 3,000 in the different EU countries. Only four member states (Italy, France, Spain and Portugal) use road pricing in large parts of their motorway infrastructure. These differences create unfair price advantages for freight operators in the different countries against foreign competitors that are, however, EU member states.

The introduction of an electronic road pricing for lorries could be part of a solution for the above mentioned problems as this system is based upon a territorial principle. Furthermore, such a electronic pricing method also allows for more flexibility regarding the optimisation of price policy for road traffic and is also taking into account the principle of subsidiarity. Additionally, this pricing method could improve the economic efficiency as the fees are coupled with environmental, infrastructure and scarcity costs.

Distance Related Charging System for the Austrian Primary Road Network

Bundesministerium für Wirtschaftliche Angelegenheiten (1997)
Fahrleistungsabhängige Bemautung der österreichischen Autobahnen und Schnellstrassen, Bericht der Expertengruppe, Wien, Bundesministerium für Wirtschaftliche Angelegenheiten.

Contact: Dr. Gerold Estermann, Bundesministerium für Wissenschaft, Abteilung VI/4, Stubenring 1, A-1010 Wien; Phone: +43 1 71100 5863; Fax: +43 1 714 2721; E-mail: gerold.estermann@bstv.bmv.gv.at

Details: Part of a series of studies undertaken for the Austrian Ministry of Economic Affairs. There are several other detailed studies under this series which are not publicly available. However, for further information contact directly Mr. Estermann from the Ministry.

In 1997, an expert group for a distance related charging system was established with participants from several ministries as well as from different interest groups. The aim was to evaluate the consequences of a distance related charging system for the Austrian primary road network. This was discussed in relation to the National Road Pricing Regulation in 1996:

- the financial issues concerning primary road networks are considered as important;
- an important transport policy aim is the achievement of a fairer pricing system and a polluter pays principle for using roads;
- only a network wide charging system can secure the aims of the Maastricht criteria;
- the distance related charging system was to be evaluated also for individual transport;
- a network wide charging system can assure an even distribution of burdens between the different regions and user groups: and
- there is a European wide trend towards more charging systems, more telematics in road traffic, and more market oriented operators which have an influence on Austrians road pricing system.

The aims of a future oriented transport financing system were to be taken into account as well as the implications on the parties involved, e.g. economy, commuters, abutting owner etc.

Scenarios were developed for different technical specifications of charging systems (e.g. electronic or manual).

Freight Operator Survey on the Effects of Road Pricing in Austria

Wirtschaftskammer Österreich (1997)
Road-Pricing – Fragebogenaktion, Wien, Wirtschaftskammer Österreich.

Contact: Peter Tschirner, Wirtschaftskammer Österreich, Abteilung für Verkehrspolitik, Wiedner Hauptstrasse 63, A-1045 Wien; Phone: +43 1 501 05 4003; E-mail: peter.tschirner@wko.at

Details: Available from http://www.wko.at/vp/

The Austrian Chamber of Commerce asked its members via questionnaires about the possible effects of a distance related charging system ('road pricing') on all Austrian primary roads. The questionnaire was answered by about 740 people.

The aim of the survey was to find what the economic effects are of a charging system of about S 2,- for every lorry kilometre on primary roads in Austria. Possible effects are sales as well s the size of the distribution area and increases in prices. On the procurement side there are questions about higher acquisition prices or if road pricing has effects on the structure of suppliers. Another set of questions emerges regarding the relocation of company premises or if there are – when a company has more plants - regional changes in the production and distribution of goods.

Important outcomes:

- with expected additional freight costs of about 10-20 % companies believe that additional costs are to be covered by themselves – this is not only the case when goods are distributed by a company but also when companies need freight companies to carry their goods;
- road pricing overly affects long distance transport, thus, companies which concentrate more on regional markets will be less effected by road pricing;
- companies in fringe areas worry about a disproportionate economic burden and therefore disadvantages on the market; and
- a distance related charging system has also effects on the location policy of companies, thus, specific regions will have disadvantages compared to others.

4.3.3 France

Author of this section: NESTEAR

Pricing is also a very important topic in France but one must recall that France is a country where motorway tolls exist for a long time. The motorway tolls have made possible the construction of the French motorways system that has been implemented lately as compared to Germany of Italy. Now this motorway network is almost completed and the access of the Frejus tunnel with a motorway is realised since last year.

The existence of a tolling system gives a different perspective as regards Eurovignette. Focus in France is more put on taxation of energy and trucks as well as on charging system for rail.

For the taxation analysis a report has been published by CGPC (Imputation des charges d'infrastructures routières pour l'année 97 – Dec 99 – Christian Brossier – André.)

This report is largely based on the estimation made in the French national account for road transport which evaluates the environmental impact for road (Compte satellite du transport of the Commission des Comptes de Transport de la Nation which published yearly a report on the transport situation).

The rail pricing is also under discussion in France with strong involvement of RFF, the new infrastructure manager, RFF published in May 1998 a document for consultation "Quelle politique tarifaire pour l'usage des infrastructures ferroviaires? " A research has been recently published on rail pricing issue of infrastructure within the French national research programme called PREDIT: "Les péages d'infrastructure ferroviaire en Europe – CERMA March 1999.

Following the exploitation of the two major Alpine road tunnels (Mont Blanc and Frejus), profits were expected for the two societies in charge of the operation: but these societies have since then been involved in the financing of the development of the motorway network and, in particular, in the construction of costly segments in the Alpine regions; therefore their involvement in rail investments cannot be envisaged for the time being. However, as mentioned before, the 1998 report on Alpine policy do consider cross financing between modes and contribution of road to rail investment, through taxation This position opens new perspective for trans-Alpine projects and international co-operations. This topic; will be a major subject for ALP-NET and the door open to new solutions in transport policy.

For rail infrastructure, RFF is in charge of investments. RFF cannot be involved in projects if a minimum financial return is not guaranteed, in order not to increase financial charges and the volume of the existing debt: under this minimum, subsidies or other sources have to be found and be included in the general financing plan of the project.

In conclusion, the pricing and financing context of Alpine policy in France is certainly under influence of the general financing procedures for infrastructure which differ significantly from a country to an other. However, some innovative solutions are explored with first applications for Alpine projects so that specific set up for financing are also envisaged for Alpine crossing, giving more opportunities for international co-ordination.

4.3.4 Germany

Author of this section: IWW

Government Commission for the private financing of transport infrastructure

In September 2000 the Commission of the German Government for the private funding of transport infrastructure has delivered their final report. The report promotes the involvement of private capital in the costs for planning, building and operation of road infrastructure and suggests a cost-based motorway toll. This would be ca. 13 Euro-cents per HGV km HGVs aver 12 t allowable gross weight. For rail infrastructure the Commission strongly promotes the separation of tracks and operation and the installation of a state-owned infrastructure operator.

Action of the Federal Government towards the implementation of a motorway toll for HGVs in Germany

Based on the EC directive 62/1999 the Federal Government has decided to install a heavy-duty tax for goods vehicles over 12 t allowable gross weight in 2003. The level of the tax depends on the distance travelled, the number of axles and the Emission category. Although the technical concept has not yet been

developed in detail it is clear that the system will be based on electronic charge collection. The tax is raised only on motorways. The so-called SVA will replace the Euro-vignette and possibly parts of the diesel tax. Currently, a consortium of PROGNOS (Basle) and IWW (University Karlsruhe) are revising the traditional infrastructure cost scheme in order to base the SVA charges on recent scientific knowledge.

Demands for an environmental-orientated heavy vehicle tax for road freight transport

In July 2000, the Federal Environment Agency (UBA) gave the mandate to IWW (University Karlsruhe) and to the lawyer society Schmidt-Wottrich, Jungnickel & Partners (Berlin) to investigate the economic and legal consequences of the planned heavy duty tax. The report was finalised in April 2001 and will be published in July 2001.

Private Funding

Actual state of private funding in Germany

Private Funding of road infrastructure projects in Germany is generally possible in two different ways

1. Private pre-financing:

Because of decisions of the federal government in the years 1992, 1994 and 1998 there are 27 projects of federal trunk roads which are pre-financed by the private sector with total volume of approx. 4.8 billion DM. The federation is obliged to repurchase the road step by step from the private investors. The federation bears the total costs of re-financing costs. The refinancing starts basically one year after the road has been opened for traffic by payment in 15 yearly rates. Because of the high additional costs in form of interest rate payments this kind of private pre-financing will not be extended any further.

2. Concession model according to the Law about the private funding of trunk roads (Fernstrassenbauprivatfinanzierungsgesetz):

With the Concession model, it is possible to realize infrastructure projects that could not have been realized without the use of private funds for many years. Because of the fact that the private investor can refinance himself with the toll revenues, this concept makes an additional infrastructure investment possible. In Germany, there are at the moment 11 feasibility studies for federal projects. 6 studies have already been completed, two of these 6 projects seem not to be suitable for the concession model. Beyond this, there are two community-projects (Lübeck and Rostock), where a concession contract has already been signed.

Publications

Uechtritz, Deutsch et al.
Stellungnahme zu ausgewählten Problemen der Privatisierung von Verkehrsinfrastrukturen.

4.3.5 Italy

Author of this section: DITS

Overview

There are no national plans related to the introduction of Alpine pricing/tolling.

New Rail link between Turin and Lyon – Report of the working group on Economy and Financing

Commissione Intergovernativa italo-francese per la nuova linea ferroviaria Torino – Lione (2000)
Nuovo collegamento ferroviario Torino – Lione. Rapporto del gruppo di lavoro Economia e Finanza.

Contact: Mr. Eugenio Borgia
Function: President of the working group on Economy and Financing
Address: c/o DITS, Via Eudossiana 18 – 00184 Rome
Phone/Fax: +39 06 44585089
E-mail: eugenio.borgia@uniroma1.it

In this document the main characteristics of demand and supply for the Lyon – Turin corridor are presented. Finally, the results of a socio-economical analysis on the new proposed railway and on the existing line are stressed. The Report refers to and sums up a large number of studies carried out by the internal Alpetunnel Working Groups. Among these it is worthwhile to mention here "Financing of transport infrastructure great projects" and "Study on fares evolution (until 2010) of the different transport modes".

Reasons and conditions for private capitals involvement in the new "Sud Gottardo" railway line

A.C.G. – Associazione Linea Ferroviaria di Alta Capacità Lugano-Milano (1998)
Motivazioni e condizioni per il coinvolgimento dei capitali privati nel finanziamento della nuova linea ferroviaria "Sud Gottardo". Studio realizzato da CERTeT – Università Bocconi, Milano e Università della Svizzera Italiana e Lugano. Disponibile presso CERTeT – Università Bocconi.

This study points out the necessity of a right investment risk allocation, with a special regard to political and trading risk. The necessity of a fare increase and a revision of the mechanism according to which profits are allocated to the different line sections are here stressed. Another element that profitability of railway transportation infrastructures across the Alps cannot leave aside is the adoption of policy measures that could favour the demand displacement from the road mode to the railway one.

Financial review of the N.E.A.T. project.

Coopers & Lybrand (1995). London. Available c/o CERTeT – Università Bocconi.

This document stresses that financing of new transportation infrastructures across the Alps is necessarily tied to fare increase and, above all, to a different tariff conception that makes each line fare dependent on the section construction cost and no longer on its length. It is moreover stated that fare allocation should follow criteria that take into account each section peculiarities.

4.3.6 Slovenia

Author of this section: MARIBOR

Road Transport Charges

NEI Netherlands

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Details: PHARE Multicountry programme
Available from: Ministry of Transportation of Republic of Slovenia

The study deals with the systems of road user charges in all 13 Phare countries. It compare them with systems applied in the EU. The aim was also to develop a single, harmonised model.

The result of study are analysis and recommendations for the approximation of the systems and definition of an appropriate road transport charging system for each Phare country.

4.3.7 Switzerland

Author of this section: ECOPLAN

Overview

In Switzerland, research about pricing and financing is dominated by studies on the Mileage-related Heavy Vehicle Tax (MRHVT), on external costs and pricing schemes in general and on acceptability of pricing schemes. There is a bulk of research work on the impacts of the MRHVT (ex ante) on traffic, the environment and the regional economy. Such studies have been carried out for the national level as well as for different Swiss cantons. The MRHVT is the most important backbone for the financing of the New trans-Alpine Rail Link described in detail in the policy part of this deliverable. After the introduction of MRHVT, propositions for a special (additional) Alpine transit passage charge are not high on the research agenda any more.

There are various scientific suggestions for improving the pricing schemes, mainly for passenger road transport. Road pricing is currently an issue, but rarely ever for Alpine crossings, despite the heavy seasonal congestion at the Gotthard tunnel.

For rail, a track charge system has been introduced at comparably low levels. However, there is not much research about this.

Switzerland was and still is very active in the fields of the assessment of external costs and the incorporation into transport accounts (transport ministry and a number of research institutes), partly in the framework of the EU programmes already described in the corresponding sections of this paper. Some interesting studies have been done on the issue of acceptability of pricing.

The most recent research activities and publications stem from the Swiss National Research Program 41 on Transport and the Environment, Interactions Switzerland/Europe (http://www.nfp41.ch). The most important studies with respect to the issues treated in this Thematic Network are presented below.

Fair Pricing and Fair Competition

Suter Stefan (2000)
Wettbewerb, Kostenwahrheit und Finanzierung im Verkehr. Ansätze, Auswirkungen und Akzeptanz. Teilsynthese des Moduls D. NFP41-Synthese S4. Bern.

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Details: National Research Programme 41 Transport and Environment, Interactions Switzerland/Europe, http://www.nfp41.ch, Synthesis S4.
Available from: EDMZ, CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.694.d

This part synthesis summarises the economic NRP41 studies (mainly from Module D) and provides an up-to-date picture of the key issues of transport economics within the controversial area of pricing policies, funding, and the regulation of competition. "Getting the prices right" and deregulation do not guarantee success, but if implemented diligently they can develop enormous potential for influencing market forces with regard to sustainability.

The analysis of costs and benefits of transport has revealed some new facts, such as large regional differences in cost burdens, high benefits from transport, still increasing external costs, and illogical effects of subsidy redistribution. The advantages, and the controversial aspects, of proposed strategies such as "fair and efficient pricing", road pricing, or the deregulation of the railways, are critically evaluated with reference to many international studies.

Studies on acceptance were also evaluated. They showed that it is exactly these market-oriented strategies that will have a struggle in finding majority public acceptance.

Towards Fair and Efficient Pricing

Maibach Markus, Schreyer Christoph, Banfi Silvia, Iten Rolf, De Haan Peter (2000)
Faire und effiziente Preise im Verkehr. NFP41-D3. Bern.

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Details: National Research Programme 41 Transport and Environment, Interactions Switzerland/Europe, http://www.nfp41.ch, Report D3.
Available from: EDMZ, CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.629.d

The external costs resulting from road traffic accidents and pollution, not covered by road taxes and other transport-related taxes, amount to a charge on our society of about CHF 10 billion (EUR 6.5 billion) per year, and this burden is likely to increase over time.

"Fair and Efficient Pricing" is the title under which the authors suggest ways to establish the true costs, and to develop a new pricing system that is related to the originators of damaging effects.

Action is most urgently required in the field of private road traffic: Here, the authors suggest a restructuring of the road tax system. In the long term (starting in 2005), a tax based on distance travelled could be introduced which would be similar to the tax charged for heavy goods vehicles. A charge of CHF 5,00 (EUR 3,25) per 100 kilometres would cover today's known external costs, and a supplementary charge could be made in urban areas. In return, the fuel tax could be restructured as a CO_2 tax, and reduced. Rail transport would also have to improve the level of its external cost coverage.

Environmental damage could be reduced through implementation of this pricing reform. For example, CO_2 emissions could be reduced by 5 to 10 per cent, and other hazardous substances reduced by about 15

per cent. However, in some areas (e.g. emission technology, noise pollution, etc.) regulations as well as technical and voluntary action would still be required in order to comply with the legal requirements for the protection of the environment, and international agreements concerning the global climate.

Road Pricing in Switzerland: Acceptance and Feasibility of possible Approaches according to surveys and international experiences

Güller Peter, Neuenschwander René, Rapp Matthias, Maibach Markus (2000)
Road Pricing in der Schweiz. Akzeptanz und Machbarkeit möglicher Ansätze im Spiegel von Umfragen und internationaler Erfahrung. NFP41-D11. Bern.

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Details: National Research Programme 41 Transport and Environment, Interactions Switzerland/Europe, http://www.nfp41.ch, Report D11.
Available from: EDMZ, CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.665.d

The PRIMA project, developed within the EU research framework, but also with strong emphasis on Switzerland, addresses the question whether road pricing is accepted by the public as a means of relieving congestion and damage to the environment. Whereas the MRHVT has successfully been introduced in Switzerland, there is no shortage of suggestions for pricing private cars.

Collecting charges and managing payment procedures should no longer present problems with regard to technology or data privacy. For complex systems that include differentiation of road prices by time, location, type of vehicle, etc., interoperability within Europe must – however – be a prerequisite. This means that systems aiming to influence travel behaviour are a thing of the distant future.

Charges for area access are a major exception, which can be developed from car parking charges and from the allocation of access quotas for whole sites, as presently being planned for Zurich.

However, extensive acceptance surveys and interviews carried out as part of the PRIMA project indicate that the public in Switzerland, as well as in other countries, view road pricing as a direct means of guiding travel behaviour with scepticism and rejection. Yet road pricing is accepted to a certain degree if it is used to finance infrastructure and, in particular, for further development of public transport systems and other environment-friendly measures. An excellent public transport system is generally seen as an important prerequisite for the introduction of road pricing.

A clear majority in the Swiss regions of Bern and Zurich welcome the application of the polluter pays principle. In Geneva, on the other hand, surveys show that opinions regarding various acceptance factors are somewhere between the Bern/Zurich position and that of neighbouring Lyon in France.

It has been suggested that road pricing in Switzerland should be developed primarily to deal with the problems faced by urban regions, by means of access fees for areas with high traffic volumes (area licensing), and through charges for newly built roads. The latter could possibly be part of a system of providing concession to private contractors tot construct and operate the roads. Examples (within Switzerland): the city of Bern, shopping centres in Zurich and the Zurich Lake Tunnel.

However, new road projects must be politically acceptable as such, as the road pricing plans for Bern (Schanzentunnel) and Geneva (Traversée de la Rade) have shown. A private investor will only be interested in the construction and operation of new roads if the project's acceptance is assured, and if basic finance is offered by the state.

External Costs: Significant Regional Differences

Ott Walter, Seiler Benno, Kälin Roland (2000)
Externe Kosten im Verkehr: Regionale Verteilungswirkungen. NFP41-D4. Bern.

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Details: National Research Programme 41 Transport and Environment, Interactions Switzerland/Europe, http://www.nfp41.ch, Report D4.
Available from: EDMZ, CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.636.d

The costs of transport not covered by transport-related taxes can differ significantly in the various regions of Switzerland. For the first time, we now have some fundamental facts regarding these variations.

The deficits incurred by public transport are carried by all taxpayers, albeit with regional differences, and a heavier burden on the more affluent central regions. The mountain regions suffer more than the central regions from environmental damage and particularly from the expected global warming and damage to forests. This results in uneven burdens, with the mountain regions covering annual costs of up to CHF 4'000 (EUR 2’600) per capita. Urban areas also pay above average because of high air pollution and other factors. Some regions cover costs four times higher than in other regions (between CHF 900 (EUR 585) and CHF 4,000 per annum and capita).

The authors demonstrate how these variations could be reduced, and financed through restructuring of the road taxation system, for example.

New structures for the financing of tomorrow’s transport

Blöchliger Hansjörg, Herrmann Sabine, Kux Stephan, Heitmann Seraina (2000)
Finanzierung des Verkehrs von morgen. NFP41-D9. Bern.

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Details: National Research Programme 41 Transport and Environment, Interactions Switzerland/Europe, http://www.nfp41.ch, Report D9.
Available from: EDMZ, CH-3003 Bern; http://www.admin.ch/edmz; Order number 801.637.d

Every year the Federal Government, the cantons and the communities spend nearly CHF 30 billion (EUR 19.5 billion) on private and public transport. This study clarifies and analyses these complex financial flows and demonstrates how all these various subsidies actually undermine the economic and responsible utilisation of resources. Redistribution of resources through road financing alone has reached such a level that some cantons profit by CHF 200 (EUR 130) per capita, whereas others lose the same amount, although this redistribution is quite unintentional and unregulated.

The authors suggest a reform package with the objective of restructuring these unfathomable flows of finance, and increasing their efficiency. Measures suggested include transferral of motorways operations to independent organisations; simplifying the Federal subsidy system, and increasing support to the cities for their public transport responsibilities and treating investments in public transport the same way as operating deficits. Combined urban transport authorities are proposed to be responsible for transport-related revenues and expenses within one region.

Environmental Pricing - Theory and Practice

Suter Stefan and Walter Felix (2001)
Environmental Pricing - Theory and Practice. The Swiss Policy of Heavy Vehicle Taxation. In: Journal of Transport Economics and Policy, Volume 35, Part 3, September 2001, pp. 381-397.

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In the transport sector, environmentally based pricing schemes are still quite uncommon. The obvious lag can be explained by technical implementation problems as well as the limited acceptance of advanced pricing schemes in transport. This paper deals with one of the rare examples where an implementation of the principle of internalising external costs did not fail: the Swiss Heavy Vehicle Fee. After a description of the fee the paper analyses to what extent it fits theoretical concepts and pricing principles. The factors that have been important for the political success of the HVF are discussed, and some conclusions are drawn from the Swiss experience of how to make environmental pricing work.

Monetary Valuation of the External Effects of Transport: the State-of-the-Art in Switzerland

Walter Felix, Neuenschwander René, Sommer Heini, Suter Stefan (2000)
Monetary Valuation of the External Effects of Transport: the State-of-the-Art in Switzerland. In: Schweizerische Zeitschrift für Politische Wissenschaften SZPW, Volume 6, Issue 3, Autumn 2000, p. 134 - 145.

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Details: Part of a debate conducted in the above mentioned journal on the pros and cons of monetary valuation of the environmental impact of transport.
Available from: ECOPLAN, http://www.ecoplan.ch

This paper aims to set the stage for a debate, to be conducted in the Swiss Journal of Political Sciences, on the pros and cons of the monetary valuation of the environmental impact of transport. It demonstrates in succinct form that a welfare-maximising policy requires an intervention to correct for external effects. This in turn makes a monetary valuation of external effects necessary. A few methodological problems are outlined and exemplified by a study of the health impact of air pollution. Switzerland has carried out a number of studies on the external effects of transport. Although existing estimates vary widely, current values are high enough to justify political steps in various areas, and they are useful not only for taxation-related issues, but also for assessing the cost-benefit ratio of infrastructure projects and policy instruments.

Health Costs due to Road Traffic-related Air Pollution: Economic Evaluation

ECOPLAN (1999)
Health Costs due to Road Traffic-related Air Pollution: Economic Evaluation. Report prepared on behalf of the tri-lateral research team of Austria, France and Switzerland. Bern.

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Details: Report elaborated in preparation to the Transport, Environment and Health Session of the WHO Ministerial Conference on Environment and Health held in June 1999 in London.
Available from: ECOPLAN, http://www.ecoplan.ch or from the Eidgenössische Drucksachen- und Materialzentrale (EDMZ), http://www.admin.ch/edmz, Order number 801.532.e

In addition to its positive impact on the growth and prosperity of the national economy and its importance for satisfying our individual needs for mobility, road transport also has adverse effects: accidents, noise, air pollution, harm to health, crop failure, etc. In the last 10 to 20 years an increasing awareness may be observed for these negative effects of transport. Congestion, air pollution and noise affect more and more people. Their impact on health and welfare, the damage to buildings and the natural environment are considerable, just like the material and intangible costs caused by them.

These costs are mainly external costs, which means that they are not covered by the polluters (the motorists) but that they are imposed on everybody.

With the present study, an important part of the external traffic-related costs, namely the negative impacts of road traffic-related air pollution on human health, is evaluated and quantified in monetary terms. The research project is based on an interdisciplinary co-operation in the fields of air pollution, epidemiology and economy. To give an overview of the overall project, short summaries of the technical reports on air pollution and epidemiology are included in this report.

For the monetary valuation of the air pollution related health effects, the willingness-to-pay is used as the main approach. This method assesses the health costs based on the willingness-to-pay for a decrease in mortality and morbidity related risk. Thereby, the material costs (loss of production/consumption and treatment costs) as well as the intangible costs (pain, suffering, fear of disease and death, grief, etc.) are considered.

According to the countries' specific needs, an alternative partial assessment approach is conducted based on the loss of production or consumption. Because of its limitation to the material costs only, the results of this partial assessment approach are lower as in the case of the willingness-to-pay approach.

Based on the willingness-to-pay approach, in 1996 the total air pollution in Austria, France and Switzerland causes a high level of health costs. The total air pollution related health costs of all three countries amount to some 49’700 million EUR, of which some 26'700 million EUR are attributable to road traffic-related air pollution. In Austria (6’690 million EUR) and Switzerland (4'170 million EUR) the total air pollution related health costs reach a similar level. Due to the much larger population, the French costs amount to some 38'860 million EUR. Considering these results, the following main recommendations can be drawn:

- The magnitude of assessed health costs indicates a need for action: not only making statements about the need for reducing air pollution but defining objectives and setting a concrete time schedule for their realisation is necessary.
- The polluter pays principle has to be applied to the domain of road traffic.
- Air pollution related health costs have to be included in cost-benefit analysis of road infrastructure projects and of policy measures and actions which are directed against a further increase in traffic flows.

In the economic domain, the following further steps should be developed:

- empirical surveys of the willingness-to-pay for a reduction in air pollution related mortality and morbidity,
- improvement of the long-term morbidity assessment,
- empirical studies of the age structure of the victims due to air pollution,

- evaluation of the cost of absence from work related to different health outcomes,
- development of policy measures and their implementation and periodic monitoring and readjustment of the policy measures, investigation of the time lag between exposure and health outcome on the one hand and the corresponding decrease in mortality and morbidity due to a exposure reduction, on the other hand.

Other Research Activities and Publications in Switzerland

ECOPLAN (1998)
LSVA, 40-Tonnen-Limite und NEAT-Achse Lötschberg-Simplon: Wirtschaftliche Auswirkungen auf den Kanton Wallis, Schlussbericht. Bern. Contact: René Neuenschwander, ECOPLAN; Phone: +41 31 356 61 61; Fax: +41 31 356 61 60; E-mail: neuenschwander@ecoplan.ch, http://www.ecoplan.ch; Available from: http://www.ecoplan.ch.

ECOPLAN (1996)
Monetarisierung der verkehrsbedingten externen Gesundheitskosten, Synthesebericht. Bern. Contact: Dr. H. Sommer, ECOPLAN; Phone: +41 41 870 90 60; Fax: +41 41 872 10 63; E-mail: sommer@ecoplan.ch, http://www.ecoplan.ch; Available from: http://www.ecoplan.ch.

ECOPLAN (1998)
Externe Lärmkosten des Verkehrs, Vorstudie I und II. Bern. Contact: Contact: Dr. H. Sommer, ECOPLAN; Phone: +41 41 870 90 60; Fax: +41 41 872 10 63; E-mail: sommer@ecoplan.ch, http://www.ecoplan.ch; Available from: http://www.ecoplan.ch.

ECOPLAN (1998)
Externalitäten im Verkehr – methodische Grundlagen. Forschungsauftrag 19/95 auf Antrag der Vereinigung Schweizerischer Strassenfachleute (VSS). Bern. Contact: René Neuenschwander, ECOPLAN; Phone: +41 31 356 61 61; Fax: +41 31 356 61 60; E-mail: neuenschwander@ecoplan.ch, http://www.ecoplan.ch; Available from: Vereinigung Schweizerischer Strassenfachleute (VSS), Seefeldstrasse 9, CH-8008 Zürich.

ECOPLAN (1998)
Externalitäten im Verkehr – Leitfaden für die Verkehrsplanung. Forschungsauftrag 19/95 auf Antrag der Vereinigung Schweizerischer Strassenfachleute (VSS). Bern. Contact: René Neuenschwander, ECOPLAN; Phone: +41 31 356 61 61; Fax: +41 31 356 61 60; E-mail: neuenschwander@ecoplan.ch, http://www.ecoplan.ch; Available from: Vereinigung Schweizerischer Strassenfachleute (VSS), Seefeldstrasse 9, CH-8008 Zürich.

Bureau of Transport Studies (2000)
Fair and efficient. The Distance-related heavy Vehicle Fee (HVF) in Switzerland. GVF-Bericht 1/2000, Contact: Bureau for Transport Studies, Kochergasse 10, CH-3003 Bern; Phone: +41 31 322 55 55; E-mail: gvf@gs-uvek.admin.ch, http://www.admin.ch/gvf Available from: Eidgenössische Drucksachen- und Materialzentrale (EDMZ), http://www.admin.ch/edmz, Order number 801.580.e, or the Swiss Customs Authority, CH-3003 Bern, Phone: +41 31 323 70 95; E-mail: ozd.lsva@inet.ezv.admin.ch; http://www.zoll.admin.ch.

4.3.8 Liechtenstein

Author of this section: ECOPLAN

Overview

Most research activities are carried out in very close co-operation with Switzerland whereas only very few projects are directly initiated and financed by Liechtenstein alone. Liechtenstein contributes to the costs of research projects either directly on the level of specific projects or by bearing its part of the general budget (according to the number of students from Liechtenstein).

As in Switzerland, the focus of research about pricing and financing in the transport sector has in recent years been on the MRHVT. The most important projects in this context is presented below.

Introduction of a MRHVT in Liechtenstein

Gantner Manfred (1999)
Einführung einer leistungsabhängigen Schwerverkehrsabgababe im Fürstentum Liechtenstein. Studie des Instituts für Finanzwissenschaft an der Universität Innsbruck. Innsbruck.

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Details: Report elaborated by the Institut für Finanzwissenschaft of the University of Innsbruck.
Available from: Beatrice Hilti, Stabsstelle EWR, http://www.liechtenstein.li
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The focus of this study is on the economic impacts of the MRHVT in Liechtenstein. The most important advantages of the introduction of the Swiss system in Liechtenstein are as follows:

- the expected increase in transport efficiency;
- the avoidance of noise emissions and air pollution;
- the incentive to invest into cleaner technology and the possibility to use revenues in order to improve transport safety and public transport

5. Other relevant research issues

This chapter was initially intended to provide an opportunity to raise issues of trans-Alpine transport that are outside the scope of the project's terms of reference. Finally, it was decided to list three issues that were often mentioned in the discussions.

5.1 Co-ordination of infrastructure planning

The international co-ordination in the planning of new infrastructure (like Brenner, Mont Cenis etc.) has been addressed implicitly in the chapter on methods (methods to evaluate such projects). As there are heavy investments and financial risks involved and the European Commission (TEN!) as well as all the Alpine countries have an interest in co-ordinating these plans, there could be room for improved co-ordination and for a better exchange of information between researchers and the other actors. To a small degree, this issue could be included in the "method" workshop.

5.2 Environmental monitoring

Usually transport experts mainly think about transport data and less about the environmental impacts of transport. In most countries, a monitoring of key environmental data is in place. These data are not always linked to transport databases. Furthermore, the data are not always harmonised at an international level. Since the environmental problems are (together with infrastructure and financial constraints) among the main underlying problems in Alpine transport, it should be explored whether and how a better co-ordination of environmental monitoring could be achieved.

5.3 Safety in tunnels

After several heavy vehicle accidents in Alpine tunnels (Mont-Blanc, Tauern, Gotthard), the safety precautions have been reviewed by most countries. Improvements in the safety of tunnels are planned. The rules for the equipment, the load of dangerous goods and the training of the actors involved have also been discussed. There might be a need for further co-operation in this field.

6. The first ALP-NET Workshop

Author of this section: ICCR

ALP-NET looks into the challenges and opportunities facing policy and research on trans-Alpine transport. In view of important upcoming policy decisions, ALP-NET was established to synthesise, concert and co-ordinate ongoing-work and to deliberate open questions.

The first ALP-NET workshop comprised four round table discussions addressing the following issues:

The first session focused on the recent policy developments in the Alpine area, laying particular emphasis on the land transport agreement between Switzerland and the EU, the ongoing negotiations between Austria and the EU and the development of the Common Transport Policy.

The second session dealt with the potential of intermodal and combined transport for solving the environmental and capacity problems in trans-Alpine transport. It also addressed the issues of technical, operational and legal differences between the national trans-Alpine networks, the problems associated with border crossings and strategies and problems of intermodal operators.

The third session considered the possibilities and challenges associated with the introduction of transport infrastructure pricing and the possibilities for cross financing. It reviewed the state of the art and revealed the problems and the needs for further co-ordination in this area.

The final session of the workshop addressed the question of data requirements and availability in the Alpine areas. The discussions focused on the currently conducted data surveys by the various Alpine countries and EUROSTAT.

Below we summarise the roundtable discussions and subsequently draw conclusions.

6.1 Summary Roundtable Discussions

6.1.1 Policy Developments in Alpine Transport and the Decision Making Context

Chair: Alain Rathery, ECMT

Alain Rathery of the European Conference of Ministers of Transport (ECMT), and the Chairman of this session, gave a brief introduction about the current political context of trans-Alpine transport, reminding participants that we are here confronted with various levels of intervention. At the national level, the four major themes are related to the recent land transport agreement between Switzerland and the EU, the Austrian Ecopoint System, the re-opening of the Mont-Blanc tunnel and the expected German tax on heavy goods vehicles. Yet, the problems faced by trans-Alpine transport cannot be resolved alone through national strategies, especially if these are not co-ordinated and in view of enlargement. Even though there is no specific Alpine transport policy at European level, several of the proposals of the new CTP are particularly relevant for trans-Alpine transport, especially in the context of existing bilateral agreements and transport protocols (like that of the Alpine Convention).

John Hugh Rees of the European Commission, DG TREN presented the new White Paper *European Transport Policy for 2010: Time to Decide*. From the 1992 White paper onwards, the objective of the Common Transport Policy (CTP) has been the completion of the Common Market and the establishment of a sustainable transport system. In order to achieve both those objectives a decoupling of economic growth and the growth of transport should be achieved. In the past, efforts to achieve such a decoupling have failed, not least because of the failure to achieve the liberalisation of the transport market and market integration in a harmonious way. Instead, traffic volumes have tended to grow much faster than either the economy or investment in transport infrastructure. Congestion and environmental degradation have been the result. Currently there is an imbalance of modes with road transport occupying a major share of the market. The current growth rates of 10% for road transport and 30% for air transport will be unsustainable in the near future. Now one third of the CO_2 emissions in Europe can be attributed to the transport sector; of this, 82% are produced by road transport. Should the current trends continue, the European Union would run the risk of losing its competitiveness.

In order to overcome these problems, a re-balancing of the modal shares to the levels of 1998 by 2010 is intended– to achieve this a set of 60 measures is proposed. A new orientation in infrastructure charging towards a harmonisation of road pricing, allowing the internalisation of external costs and the use of revenues for investment in infrastructure that is environmentally friendly (i.e. rail or in environmentally sensitive areas) is at the core of the Commission proposals. Additionally, the Commission will launch a new programme for the development of multimodal transport called MARCO-POLO and will increase efforts to improve the link between the aviation sector and the European high speed rail networks. For the Commission proposals to bear fruit, it is important that the Member States work towards integration and implement the proposed measures. If this is not realised, then the abandonment of the free-market strategy that has guided the development of the CTP until today cannot be excluded.

Jean Arnold Vinois of the European Commission, DG TREN, gave a presentation on the development of rail transport in Europe. The development of rail transport is considered key to the development of the trans-Alpine transport and for overcoming the problems faced by the latter. The policy of the European Commission aims at avoiding a decline in the modal share of railway transport. This it expects to achieve through first, the better integration of rail transport in the internal market through primarily the liberalisation of the railway market; second the optimisation of infrastructure use and the modernisation of railway services (also in order to support the development of multimodal transport); and third, investment in railway infrastructure.

With regard to the liberalisation of the railway market, one major step was taken in the year 2000 with the passing of specific legislation for the opening of the markets for national rail freight services from the year 2003 onwards. This rail infrastructure package consists of three directives – 2001/12, 2001/13 and 2001/14 – and it is expected that it will lead to an improved efficiency of service by sufficiently opening the markets to competition. IKEA was mentioned as an example of a company that has set up its own rail company with a license in Sweden that allows it to operate in all EU countries. IKEA plans to tender the railway service to a specialised company and carry out 40% of its transports by rail by 2006.

The focus will now be on the quality of railway services and on settling the problems of safety. The establishment of a dedicated freight network is expected to help optimise rail infrastructure use as a first step. Subsequently, rail services should be improved more generally. This, in turn, is expected to contribute to the improvement of the quality of combined transport, as it is the weaknesses of the railways (especially regarding punctuality) that are at the heart of the problems faced by combined transport (according to a PACT study). In order to further support such developments, the Commission will launch the MARCO POLO programme in 2002. Currently there is a lack of reliable data on quality indications for railways. An observatory could be helpful for this purpose.

In the future, more emphasis will be laid on charging a fairer price for transport by integrating external costs. In addition, there will be a new run on financing transport infrastructure in order to eliminate bottlenecks. In the new White Paper on the Common Transport Policy, it is proposed to raise the percentage of EU co-financing from 10% to 20%. The list of European priority projects will be revised and new guidelines for the establishment of the trans-European transport networks will be published in 2004.

Noël Lebel of the "Mission des Alpes" of the French Ministry of Transport provided an overview of the current policy context of trans-Alpine transport including the Alpine Convention and its transport protocols, the EU-Swiss agreement on land transport, the Austrian Ecopoint system and the European legislation on charges for heavy goods vehicles. Also of importance are the recently enacted French memorandum for Alpine transport and the new 2001 White Paper of the European Commission on the Common Transport Policy. The effects of some of the more recent agreements are yet to be seen, especially since some of them have not yet been implemented (e.g. Alpine Convention).

Mr. Lebel presented some figures on the development of traffic on the main crossings of the Alps. The volume of traffic on these crossings has multiplied four times during the last 30 years. Across the western part of the Alps between the Vintimille and the Gotthard crossings, nearly 80 million tonnes of goods were transported in 1998. It is expected that this number could increase to 170 millions in 2020 if the current trends continue. In Switzerland, the modal split is much more favourable for railway transport than in France and Austria. There is a serious need for new initiatives and for an improvement of co-ordination between the countries to avoid a mere shifting of traffic from one crossing to another. At the French-Italian summit in January 2001, it was agreed to sign a bilateral agreement on new rail links and to co-ordinate various details of planned rail projects. With Switzerland, there is an understanding to move towards the harmonisation of policies and on improving the utilisation of the rail capacities on the Dijon-Vallorbe-Lausanne-Simplon route. On the southern side of the Alps greater safety for transport infrastructure regarding protection from avalanches, landslides etc. is an important issue. The options of

using maritime transport between Italy and France as an alternative to land transport should be seriously considered. Regarding multimodality the quality of combined transport will be crucial. Switzerland plays a major role in establishing new multimodal schemes across the Alps. In the light of the re-opening of the Mt. Blanc road tunnel, France and Italy need to agree on new rail links as an alternative to road transport. The Italian situation is quite different from the French situation because nearly 80% of all Italian exports and imports are currently moved by land transport across the Alps.

Concerning the French crossings of the Alps, the emphasis is now on the planned re-opening of the Mt. Blanc road tunnel. A decision on this matter will be taken by the French-Italian summit at the end of November 2001. After the re-opening of the Mt. Blanc, there will be a new system to improve the safety and air quality in the tunnel. The number of trucks will be limited to 220 per hour for each direction. This will guarantee a sufficient distance between the trucks. Technically, the system will work by stopping all trucks 20km before the entry to the tunnel and letting them "trickle out" one by one in certain intervals. France plans a substantial increase in road tolls for the Mt. Blanc tunnel following the reopening.

Andreas Weissen of CIPRA International stressed the environmental impacts of transport in the Alpine regions. Now the pollution caused by road transport is a serious danger for the health of the Alpine population and the environment. Among other factors, this is due to the special characteristics of the Alpine valleys. Due to meteorological reasons, the atmospheric pollution during night time is six times higher than during the day. Noise emissions in valleys are several times worse than in flat areas. The European Union, the Alpine Convention and the OECD Environmentally Sustainable Transport Programme (OECD EST) focus to a great extend on establishing an environmentally friendly transport system. Yet the growth of road freight transport in the Alpine regions (+60% during the decade) has been three times as high as the economic growth in the region during the same period of time (+20%). The World Health Organisation (WHO) estimates that in France more than 17,000 people die as a consequence of air pollution each year (Switzerland 1762 people, Austria 2411 people).

In order to overcome these problems, a policy package is needed that builds on full cost liability, night time / weekend bans on lorry traffic, bans for dangerous goods freight and the improvement of the railway offer – all in the context of regional economic development and activities (rather than alone with respect to transit needs for international traffic). Several of the measures proposed by the new White Paper of the European Commission on the Common Transport Policy for 2010 point in the right direction. However, the key question is whether and how the proposed measures will be adopted and turned into binding legislation. The implementation of the 1998 White Paper on *Fair and Efficient Pricing* is, according to the 2001 White Paper, still incomplete. Statements of intent are clearly not sufficient. What is needed is the strengthening of regional economies to reduce the demand for transport, the introduction of fair prices, the harmonisation of driving restrictions across countries, restrictions on dangerous goods transports and the improvement of the quality of rail transport. ALP-NET should address the need for reliable data on transport activities and their environmental impacts, albeit should focus on underling what is lacking in existing databases (and not alone on reviewing what already exists). Especially useful would be comparable date on the air quality along the different transport corridors in the Alps.

Ueli Balmer of the Swiss office for spatial development explained the historical background of the high modal share of railway transport in Switzerland. Until 1980, the modal share of rail in trans-Alpine freight transport was above 90% due to the inadequate road connections. Since the opening of the Gotthard road tunnel the share of road transport has increased. Consequently, the Swiss population decided in a referendum to reduce the number of trucks in trans-Alpine transport from currently 1.3 million per year to 650,000 per year. This goal should be achieved mostly by a modal shift from road to rail.

An important step towards this reduction is the recent introduction of the Swiss road pricing system for heavy goods vehicles (Mileage Related Heavy Vehicle Tax - MRHVT). The MRHVT is distance-related

and has to be paid by all freight vehicles above 3.5 tons for using any part of the Swiss road network. The fees in this new system are on average five times higher than in the previous system (before the year 2001) and they are related to the level of emissions a vehicle produces. Parallel to the introduction of the MRHVT, Switzerland also started to raise the weight limits for trucks, first to 34 tons and eventually in 2005 to 40 tons. Two thirds of the total revenues of the road pricing system (750 Mio. SFR per year) will be channelled through the federal government for improvements of the Swiss rail system. The remaining third will be absorbed by the Cantons.

The introduction of the MRHVT as a part of the land transport agreement between Switzerland and the EU became possible because of the specific interests of the actors involved. The European Union was eager to see the weight limit increased to 40 tons, the Swiss government was interested in the economic advantages of an agreement with the EU and the Swiss population wanted to protect the environment. The important factors to gaining public support for the MRHVT were the "polluter pays" principle, the use of the revenues for rail transport, the overall political situation and the fact that it covers the full road network and not just the motorways.

A first assessment of the new system shows some positive effects yet it is already now obvious that alone the MRHVT system will not be enough to achieve the desired reduction in road transport.

Eugenio Borgia of the French-Italian Commission for the Lyon-Turin rail project stressed the complexity of the problems in trans-Alpine transport. Many of the important problems are currently not addressed sufficiently and it is in this respect that ALP-NET should aim to make a contribution. There has to be a common understanding about the nature of the problems and the contents of the policies to be employed. The decisions taken will rely on political judgement and as such are a reflection of values. In this constellation, the role of the technician or researcher is to specify the possible options and the advantages / disadvantages of each.

In the case of the assessment of the Lyon-Turin rail project, which contains a base tunnel of 53km at the centre, there were very specific objectives: to avoid a situation in which the demand for rail transport can not be met and thus the traffic is transferred to road transport; to eliminate congestions at the Alpine border crossings; but also to avoid unnecessarily large investments which are not efficient.

Any assessment of a transport infrastructure project must take into account the overall context as given by the geographical location, the time of planning / construction and the actors and areas of influence; the long delays between the first steps in planning and the completion of the project and the environmental sensitivity of the project.

A good methodology for the assessment of the external effects of the project is vital. Those include the ecological dimension, the cultural / aesthetical considerations and the socio-economic impacts. Not all effects can or need be translated into monetary costs. Greater transparency and clarity in the presentation of the results of an assessment and the consequences of the possible choices would help to distinguish the political positions of the various actors and would provide a clearer picture about the advantages and disadvantages to certain groups. This would also help in finding adequate compensations for those disadvantaged by new transport infrastructure projects.

Points raised in the discussion

6. *The question of public acceptability* – **Renate Zauner** of the Initiative Transport Europe doubted the adequacy of the public debates surrounding the re-opening of the Mt. Blanc tunnel. In response, **Noël Lebel** noted that so far six consultation meetings with the local population have been held. The French government is aware of the opposition of the local population to the re-opening. However, in their view, the local population and their representatives wrongly identify the problem as being solely one related to the Mt. Blanc tunnel and trucks: the 2000 lorries crossing the Mt. Blanc area per

day have to be seen in relation to the 60,000 tourist passenger cars crossing the same area per day. In the winter, one of the main sources of air pollution in the valleys is heating oil. Another problem is that France can and will not move unilaterally on the question of the re-opening – there has to be an agreement with Italy. There are regular consultations between the two countries but now there seems to be differences in the perception of the urgency of the matter.

7. *The problem of the Austrian Ecopoint system* – **Renate Zauner** criticised the representatives of the European Commission for not addressing this issue. **Jean Arnold Vinois** replied that the responsible persons in the Commission, like Mr. Van Vreckem, would be better suited to answer this question. Unfortunately, he could not participate at the workshop due to a last-minute meeting taking place that day on the Ecopoint system with the Austrian government. **Alain Rathery** had already noted at the onset of the meeting that a representative of the Austrian government was invited to participate at the workshop but could unfortunately not take up the invitation (probably for the same reason).

8. *The new French policy regarding restrictions on trucks using the Mt*. Blanc tunnel -- **Philippe Tardieu** of NEA asked Mr. Lebel for a clarification on the figure of 220 trucks per hour through the Mt. Blanc tunnel. Is this figure higher or lower than the number of trucks before the tunnel was closed? **Ludwig Schmutzhard** of the Tyrol Regional Government asked whether the limit in the number of trucks was only planned for the Mt. Blanc or also for the Fréjus. Will this measure decrease the emissions of NOX only inside the tunnel or also on the roads leading up to the tunnel? Will the overall number of trucks per year be reduced by this measure? **Noël Lebel** answered that what is especially new about the new system is the differentiation of tariffs depending on the level of emissions from the vehicles. The new limits on the number of trucks in the tunnel are primarily a measure of safety and will guarantee a distance between lorries of at least 150-200m. In addition to the new limit of 220 trucks per hour in each direction, there will also be a global limit of the number of trucks that will be allowed to pass through the tunnel each year. These measures will limit the NOx emissions in the tunnel, but they are not expected to have a major effect outside the tunnel.

9. *The role of maritime transport in coping with the problems of trans-Alpine transport* – **Philippe Tardieu** made a comment on the IKEA example presented by Mr. Vinois. Rather than shifting all cargo only from road to rail, maritime shuttles could also be used efficiently. However, this would require an even higher degree of intermodality. **Jean Arnold Vinois** agreed.

10. *The definition of an 'environmentally sensitive area' and the role of monitoring* – **Michèle Lepelletier** of the European Commission asked Mr. Weissen of CIPRA about his definition of such an area. In his answer, **Andreas Weissen** stressed that the Alpine areas are not at all homogenous with regard to their sensitivity to specific impacts. Further studies would be needed for a precise assessment of this issue. **Françoise Dubas** of the Swiss agency for the environment pointed out the need to introduce a monitoring system of the impact of transport on the environment in the Alps (in general and also in connection with the specific policy measures of the new White Paper on CTP). She recommended using ALP-NET to co-ordinate the efforts to build up such a system, which should be trans-national thus helping move away from the narrow definition of interests along sectoral or national lines. Policies are generally much more easily acceptable by the public if they can be shown to be environmentally friendly. It would be interesting to find out from the European Commission whether there are any plans on establishing such a monitoring system.

11. The feasibility and real implementation potential of the road pricing proposals of the new White Paper on CTP especially regarding passenger cars – **Heike Aghte**, of the European Initiative for the introduction of distance-related road vehicle charging, stressed the contradiction between the policies on road pricing suggested by the EU White Papers and measures actually taken. Currently it is planned to pass a new framework directive on transport infrastructure charging for passenger and freight transport. In theory, this is a good idea but in practice, it is unlikely that the charging of passenger cars will be politically feasible in the short term. The linkage of passenger and freight charg-

ing will only lead to a delay in the introduction of the latter. In order to avoid this problem there should be a two tier strategy; first, a simple amendment to the existing charging principles of the EU for heavy goods vehicles should be made to allow for the inclusion of external costs and later, in a second step, a new framework directive including passenger transport could be passed. The Alpine regions could serve as a first positive example of such a new charging system, however it should be remembered that for such pricing systems to have a real effect, they must ultimately be implemented everywhere and not only in specific regions or sections.

12. *The spatial distribution of impacts from trans-Alpine transport and the possible unavoidability of absolute limits* – **Ludwig Schmutzhard** of the government of Tyrol voiced his concerns over the recent developments in France and Switzerland. If France is going to reduce the number of heavy goods vehicles by 400,000 – 500,000 per year and Switzerland by 650,000 per year where does that leave Tyrol? Already now, 80% of the air pollution in the Austrian Inntal is caused by transport and more than half of this figure is from heavy goods vehicles. In the light of these developments there will have to be an absolute limit in the number of lorries per year.
13. The definition of measurable performance indicators, in particular the choice of 1998 as the reference year regarding modal split – **Ludwig Schmutzhard** of the Government of Tyrol voiced his disagreement with the goal of the new White Paper on the Common Transport Policy to bring the modal split back to 1998 levels because the current modal split (at least in Austria) is actually much more favourable to rail than it was in 1998.

6.1.2 Influencing the Modal Split: The Potential of Intermodal and Combined Transport

Chair: Christian Reynaud, NESTEAR

Antonio Musso of the University of Rome "La Sapienza" gave an introductory presentation on the development and problems of trans-Alpine intermodal transport. During the last decades, there has been a strong increase in the volume of trans-Alpine transport. This growth has been almost entirely due to an increase in road transport while the volume of rail transport has been stagnating. The share of intermodal and combined transport across the Alps has been largely constant during the past years. The main problems of intermodal and combined transport are technical problems including issues of interoperability; the capacity optimisation of the existing systems; the treatment of combined/intermodal transport in transport models; organisational and operational problems and the design and evaluation of the political process for supporting the development of combined/intermodal transport.

It is important to note that currently approximately 50% of all combined/intermodal transport in Europe is carried out across the Alps. One of the crucial factors for the use of combined/intermodal transport is the price of the service as compared to other modes of transport. On the other hand, road is often prioritised because of being providing a more flexible service and displaying shorter delays. Thus, it will be important to improve the reliability of the railways.

In his introductory remarks the Chairman, **Christian Reynaud** of NESTEAR emphasised the importance of the Alpine regions for the development of intermodal transport. He also noted that the further development of intermodal transport could not be achieved without taking better account of the role of ports

(and of maritime transport more generally). The quality aspects of an intermodal transport chain must not be neglected.

K. Ebeling of the European Intermodal Association praised Switzerland as a good example for the successful development of an intermodal transport network. Austria is supporting the rolling road (accompanied transport) across the Alps through subsidies and has committed itself to the further development of this system. In terms of efficiency, this does not make sense. When the Brenner base tunnel is built it will not be possible to run the rolling road through the tunnel. The emphasis will then be on unimodal rail transport if alternatives are not considered early on. It is doubtful whether an increase of 50% in the price of road transport, which would be needed to make the current intermodal services economically viable, is actually realistic. The main problems are the interoperability between the existing systems and organisational problems. The MARCO POLO programme of the European Union is a positive initiative but there will be serious problems with the confidentiality of commercial secrets. An ongoing study of the UIC deals with the problems of border crossings for the European railways. This study should be considered by the ALP-NET project.

Erwin Wieland of the Swiss Federal Office of Transport emphasised that most of the problems in trans-Alpine intermodal transport can only be solved through co-operation between the Alpine countries. The current Swiss measures for the support of rail and intermodal transport have to be seen against the background of a dramatic increase in road freight transport and the recent national and international policy initiatives and agreements aimed at reversing this trend (Alpine Convention, EU-Switzerland Land Transport Agreement, Swiss legislation on reduction of road freight transport). The construction of new railway infrastructure and the reform of the Swiss railways play a major role in this respect. The railway reform largely follows the developments of the European Union legislation on this subject. Other measures include the new distance related heavy vehicle charging system, restrictions on road transport (night and weekend bans), improvements of interoperability and improvements at border crossings. The success of those measures is constantly monitored and the first report is expected towards the middle of 2002. From the government perspective, it is important to provide a non-discriminatory framework and the financing for infrastructure projects and the networking between the actors. Eventually, however, the market will decide which routes to use and how to allocate the resources in the transport sector. Additional supply of combined transport services in Switzerland is regularly tendered by the Swiss government but the choice of routes is left to the operators. In the future, it would be desirable to agree on a common regulatory framework for trans-Alpine transport in all Alpine countries. The monitoring of the interrelations between transport across the different trans-Alpine crossings is absolutely vital. Finally, on a personal note, Mr. Wieland pointed out that it is important to realise for the railway companies that their main competitor is not another railway company but rather the road transport operators.

Stefan Tostmann of the European Commission (DG TREN, Unit for Intermodality and Logistics) spoke about the primary conditions for achieving a modal shift. First, the infrastructure for intermodal transport has to be in place and, second, the train services have to become competitive as compared to road transport. The obstacles for a further development of intermodal transport are the lack of reliability (50% of all intermodal transports are late), the interoperability of rail services and the insufficient construction of new terminals. Intermodal transport consists of a complex chain of actions and it is not always the railways that are to blame for problems. Possible solutions for the current problems include an increase in the efficiency of border crossing operations, improvements of existing terminals and an increase in their number and improvements in the organisation of the rolling road. The level of services will also have to be improved by better planning procedures, the introduction of corridor quality teams, the reduction of peak loads and by having lead carriers as managers of certain corridors. An important study commissioned by

the UIRR on the quality of combined transport has just been completed in the framework of the PACT programme. A grant from the European Commission (of the amount of 900.000 EURO) was given to the new company "LOKOMOTION" which is soon going to operate combined transport services all the way from Munich to Verona.

Soren Rasmussen of the IRU rejected the idea that road transport operators were not willing to embrace a well functioning combined transport system as an alternative to unimodal road transport. During the first half of the 1990s, the share of combined transport between Denmark and Italy and between Sweden and Italy was up to 50%. Today this share is much lower due to the lack of quality of combined transport. The members of the IRU are quite aware that they will not be able to cope much longer with the enormous growth rates of road transport. At some point, they will have to use the rail infrastructure to carry out their business. This is also one of the reasons why they founded the UIRR. What the members of the IRU do not believe in is the notion of decoupling and the central planning approaches to the transport sector. The reason why combined transport is currently unattractive is connected to the complexity of the system (at least eight different actors involved). This leads to low quality as characterised by huge delays on the railway leg of the journey (up to 24 hours). Currently the road operators are not reimbursed if a train makes only 200km per day. In many places, there is also a lack of terminal capacity, like e.g. Verona. As long as there is no confidence of the road operators in the system, they will be reluctant to use it. It is hard to imagine that the existing state owned railways will be able to create this kind of confidence as long as they continue to abuse their dominant positions. The rolling highways across the Alps are currently highly subsidised by the Swiss and Austrian governments. While the Swiss system is transparent by directly subsidising the tickets, the Austrian system is complex and not at all transparent. The IRU welcomes the new proposals of the European Commission to support combined transport by making the road leg more attractive (44 tons weight limit, exclusion from night bans, tax incentives). In terms of weight efficiency, unaccompanied transport is to be preferred as compared to accompanied transport. The current plans to raise the price of unaccompanied combined transport from Italy to Austria by 10% are unacceptable for the members of the IRU.

Eugenio Muzio of CEMAT provided a written statement for the workshop. Mr. Muzio In trans-Alpine transport the countries are guiding the modal choices of the operators. This is partly done by the provision of a certain transport infrastructure and the limits to its use. If the objective is to meet the demand for trans-Alpine transport, it is important to consider the supply side early on. The rail transport system should be designed in a way to be able to absorb the expected higher future demand in addition to providing its current level of services. Appropriate policies at the level of the European Union should ensure a better integration of road and rail services. Furthermore, it would be important to expand the interoperability of land transport in Europe.

Eric Peetermans of the UIC presented the work of the combined transport group in the International Union of Railways (UIC) that was established in 1994 to promote combined transport among member railway undertakings. The main purpose of this group is the work with its 21 members on the technical, operational, commercial and legal aspects of combined transport. The growth of intermodal transport will largely depend on the conditions for access to the European rail infrastructure network and the quality of the services offered. Furthermore, there should be a long-term allocation of capacities and rail corridors and investments in rail infrastructure to increase capacity and remove bottlenecks. Improvements can only be achieved by close co-operation between all actors in the integrated transport chain. The entrance of new players to the market of intermodal transport has to be facilitated and further investments in locomotives and personnel are needed.

Points raised in the discussion

1. *The suitability of base tunnels for rolling road transport* – **Johann Herdina** of the Brenner Base Tunnel Company disagreed with Mr. Ebeling that the Brenner base tunnel would not be suited for rolling road transport. **Christian Reynaud** of NESTEAR mentioned the problems of safety in long road tunnels of more than 20-30km.
2. *Accompanied vs. unaccompanied combined transport* – **Alain Rathery** cautioned against placing too much emphasis on the rolling road systems. In fact, the unaccompanied combined transport is much more important and it currently faces big problems; the railways are simply not efficient enough and cannot guarantee a sufficient quality of service. ALP-NET should contribute to understanding the choices and their consequences.
3. *The effects of higher weight limits for trucks* – **Christian Reynaud** inquired into the experiences of Switzerland with the introduction of higher weight limits for lorries. **Ueli Balmer** of the Swiss Office for Spatial developments reported that only 30% of the available permits for heavy goods vehicles up to 40 tons had been used during the first nine months of the year 2001. It seems that the increase of the allowable maximum weight to 34 tons is sufficient for many operators. **Soren Rasmussen** doubted that the quotas for the European Union countries had not been fully used during the first half of this year. According to his information, Germany and Scandinavia had used up their permits. **Walter Züst** of the Swiss Federal Office for Spatial Development confirmed the general information provided by Mr. Balmer. Only 23% of the 40-ton quota for EU trucks had been used between January and August 2001. **Alain Rathery** of the ECMT questioned whether the weight of a lorry was actually the most important factor or whether volume should be considered as well.
4. *Co-operation between road and rail* – **Philippe Benninger** of the Swiss Federal Office for Roads spoke about the need for road transport to co-operate with rail. Road transport has a future but it is also clear that there are not enough roads to cover the increase in traffic. For this reason considerable volumes will have to be shifted to rail. **Eugenio Borgia** of the French-Italian commission for Lyon Turin pointed out a crucial difference between road and rail. While road transport can be directly useful from any part of Europe rail transport is generally intermodal transport and only functions well as a part of a network. The only exception may be long tunnels where rail transport is to be preferred to road transport even if it is just a point-to-point connection and not a network.
5. *Regional co-operation* – **Ludwig Schmutzhard** of the government of Tyrol stressed the need for an intense exchange of information. The conditions for trans-Alpine countries have to be harmonised across countries because any traffic that is diverted away from one country by certain measures will inevitably end up using a crossing in a different country.
6. *The limits of combined transport for overcoming the problems of trans-Alpine traffic: limits to trips or alternative routes?* – **Heike Aghte,** of the European Initiative for the introduction of distance related road vehicle charging, demanded to limit the total number of trips by road across the Alps. The modal shift that is achievable improving the rail infrastructure will not be sufficient to solve the problems. In addition, there has to be a reduction in the total volume of transport across the Alps. **Christian Reynaud** pointed out that this might cause serious problems for Italy which depends on the Alpine crossings for its foreign trade. **Eugenio Borgia** suggested exploring alternatives to trans-Alpine transport for the Italian foreign trade. **Tamas Fleischer** of the Hungarian Academy of Sciences pointed out that drastic measures for reducing the flow of transport across the Alps are likely to increase the transit traffic through Hungary. Several routes through Hungary are viable alternatives for transport operations currently using the eastern crossings of the Alps.
7. *How flexible can railways be?* – **Maurizio Rotondo** of AISCAT mentioned the inflexibility of the railways. The users of the rail service are very flexible and demand this flexibility from the transport operators too. The changes in the railways will have to be quite dramatic to achieve any real improvements in terms of flexibility. The harmonisation of legal norms is equally important as the

technical harmonisation. In addition, there is an urgent need to improve the interoperability of various systems, not only in rail transport. The European Union has to become more active to harmonise various areas of the transport system like for example the interoperability of road toll systems, the night time driving restrictions in various countries, etc.

8. *The interests of road operators* -- **Stefan Breuer** of the Swiss Federal Railways questioned the motives of the IRU for embracing accompanied combined transport. In his opinion, the reasons are the lower costs because of subsidies and the advantages in terms of driving time restrictions for the drivers. It is also not at all obvious that the record of road transport regarding reliability and punctuality is better than that of rail transport. **Soren Rasmussen** responded by clarifying that unaccompanied transport was to be preferred in principle but that there were distortions of the markets through subsidies. The reliability of road transport is proven by the ability to carry out just in time deliveries all the way across Europe. For delays, penalties are paid to the customers. **Johann Herdina** of the Brenner Base tunnel company added that "LOKOMOTION" would also pay penalties to customers for delays.

6.1.3 Pricing and Financing of Transport Infrastructure

Chair: John Hugh Rees, DG TREN

Felix Walter of ECOPLAN gave an introduction on the background of transport infrastructure pricing, the controversial issues and the most important studies carried out recently in this field. According to the CAPRI study there is a consensus that short run marginal social cost pricing (MCP) should form the basis of a pricing system to be introduced. Surprisingly enough the internalisation of external costs may not always lead to an increase in the price of road transport. Case studies for the Alpine area as carried out in the PETS study even suggest that in some scenarios the charges for road transport could decrease with the introduction of MCP. Depending on the scenarios used in the PETS and STEMM case studies there are changes in the volume of road freight transport between 0% and minus 22% for certain areas. The earmarking of funds from infrastructure pricing may increase the acceptability but it also creates inefficiencies.

The controversial issues surrounding the introduction of MCP are connected to the values of social marginal costs, the ability of a MCP system to recover the costs for infrastructure, the use of the revenues, the expected problems with the implementation, and the question whether the level of charges should be determined by purely "scientific" considerations of "real" costs or rather by political objectives.

The main issues in currently ongoing research projects are the calculation of social marginal and average costs for different European countries, the use of revenues and the issues connected to the acceptability and implementation of various systems. Across Europe, there is currently a wide range of different systems for charging and limiting road transport (Ecopoints, motorway charges, Swiss MRHVT, etc.). In the European Union, the Eurovignette Directive limits the maximum charges to the actual costs for infrastructure. Nonetheless, the new Swiss charges for road transport are not higher than the ones currently charged in Austria. The European Commission is working on a new framework directive on transport infrastructure pricing. It remains open, however, whether this will change only the tax structure or also the overall level of taxes from different modes of transport. There is room for further co-operation among researchers (impacts of pricing systems, feasibility, implementation, monitoring of effects), among policy makers (common approach for the Alps, harmonised introduction of taxes, monitoring and financing systems)

and between researchers and policy makers (effects of various taxation and financing schemes, monitoring of effects, implementation scenarios).

Esko Niskanen of VATT reported on three major ongoing research activities connected to the introduction of transport infrastructure charging in Europe. The UNITE project deals with the creation of transport accounts for all modes of transport (passenger and freight) for all Member States plus Switzerland, Norway and several Central and Eastern European Countries. These transport accounts will contain specific information on the social and infrastructure costs of each country and could form the basis of a common infrastructure charging system. The recently started IMPRINT-EUROPE project is a forum for discussion and dissemination of research results on transport infrastructure charging. The MC-ICAM project deals with the issue of the implementation of possible charging systems.

The chair of the third session**, John Hugh Rees** of the European Commission, stressed the need for practical and realistic solutions. The discussion should focus on the two key questions: how can pricing lead to a reduction of emissions in the short term and how can the revenues from pricing alleviate the problems of infrastructure financing in the long term? Practitioners are not interested in economic theory and the logic of marginal social costs but rather in practical advice on how to design a pricing system in order to achieve very concrete political goals.

Tom Howes of the European Commission gave a brief historical overview of the development of the ideas on infrastructure charging on the European level. The 1995 Green Paper and the 1998 White Paper on this subject were the first important steps towards the introduction of a common charging system for Europe. The approach of the European Commission is very pragmatic and not only concentrated on marginal cost pricing. Ongoing studies are currently developing a base for infrastructure and social costs. This is important however charges are then to be calculated. A new framework directive is planned that will apply the same charging principles to the whole transport sector in Europe. The revenues of such a system could be bigger than originally expected, mostly because of congestion charging (several billion Euro per year). This will improve the flows on the network and increase the average speed of transport. An open question to be solved is the one about the price elasticity of transport. This will be necessary in order to raise the prices to a sufficient level to achieve the desired effects. Some of the issues that are now discussed in theory will soon become relevant questions for policy making as well. The most important are the questions of cross financing from one mode to another, the introduction of variable charges for infrastructure use, and the definition of sensitive areas which could not only include mountainous areas like the Alps but also densely populated areas.

Gianni Carbonaro of the European Investment Bank (EIB) addressed the issue of transport infrastructure financing. Important for the assessment of infrastructure projects is an economic analysis (e.g. Cost-Benefit Analysis) as well as a test of the financial viability of a project. The interest of the EIB in the Alpine regions is mostly on the modernisation of the Brenner route. In 1994, a survey on the Alpine crossings was carried out. This study has been updated several times since then and the next major study is currently being carried out by Gruppo Clas. A preliminary assessment shows the general need for support of transport infrastructure financing in the Alpine regions. In the short term, there may still be excess capacity but the growth rates of transport suggest that capacity increases may be justified. It is essential to carry out studies that focus on full corridors rather than just on single projects. Externalities and the possibilities of cost recovery from pricing should be considered in the assessments. ALP-NET could contribute by providing a better understanding of the development of traffic, the environmental tradeoffs, the regulatory framework and the problems associated with the implementation of infrastructure policies.

Markus Liechti of Transport and Environment (T&E) spoke about the need to establish a sustainable transport system. This should be based on cost-benefit analysis for the construction of infrastructure projects and marginal social cost pricing for traffic on the network. Transport prices should be based on the internalisation of external costs the polluter pays principle; user pays charges and a pay-as-you-go system. Costs to be priced include air pollution, accidents, noise, congestion and maintenance costs of the transport infrastructure. For introducing such a system, it is important to consider reality and not some idea about perfect competition. Optimal solutions may include some rules and regulations especially in the area of transport safety. The optimal quality to be achieved by the transport system should be defined politically and only then should a decision be made on how to create the necessary conditions.

Ueli Balmer of the Swiss Office for Spatial Development stressed the importance of sensible rather than theoretical solutions. The calculation of the amounts to be charged for heavy goods vehicles in Switzerland originated from an assessment of the total costs of transport including noise, damage to buildings, infrastructure costs, health care, accidents and an annual flat compensation. The total costs were simply divided by the total amount of ton kilometres to arrive at a figure to be charged for each ton kilometre. The final amount to be paid depends on three factors: distance, weight and emissions. With the new system, the rate for the Gotthard route is still somewhat lower than the rates for the Fréjus and Brenner crossings. The main challenge for the future will be to introduce similar charging systems across Europe instead of just in the Alpine regions. In order for this to be possible, however, the current EU legislation on infrastructure charging will have to be changed. The new Swiss cross financing schemes for improving the quality of rail infrastructure are popular among the public but not among the road freight transport operators. The first visible effects of the heavy vehicle fee are a reduction in the number of vehicle kilometres from heavy goods vehicles along the lines predicted in advance by transport experts.

Henk Kramer of the Dutch Transport Operators Association emphasised the main goal of his organisation with regard to trans-Alpine transport: a smooth transit through the Alpine regions. Currently road transport across the Alps is restricted in many ways; quotas, tolls, taxes, etc. The Dutch transport operators accepted the "user pays" and the "polluter pays" principles already some time ago. However, the former is contradictory to cross subsidising rail transport with revenues from road transport. Any form of cross subsidies is unacceptable for the Dutch transport operators.

As a result of considerable investments by international road hauliers in Europe, the objectives of the Austrian Ecopoint system – to effect a decrease of NOx emissions by 60% -- will be nearly met in 2001. Other success stories include the reduction in noise emissions and the slow growth of the number of journeys on the Brenner route of only 8% during the period from 1991 to 2000. Compared to other routes in Europe, like for example the connection Rotterdam/Antwerp with nearly 30,000 lorries per day, the volume of heavy goods vehicles across the Brenner is rather low (less than 6,000 lorries per day). Furthermore, freight transport in transit through Austria is just a little over 10% of the total domestic and international transport in Austria.

Due to its low quality, accompanied combined transport is currently not a viable alternative to road transport. The main problems are the long waiting times at terminals, the bad quality of the accommodation for drivers and the economic inefficiency of the system. Even from an ecological point of view, the system is inefficient by carrying 15 tons of dead weight for each lorry. Unaccompanied transport is ecologically more efficient but the low quality of the railway services make it unattractive. Switzerland seems to think that long waiting times at customs are a good way of reducing the volume of road transport but this only leads to longer journeys across Austria and France, which is economically and ecologically inefficient. Several recent studies in Germany, Denmark and the Netherlands found no general advantage of rail and combined transport over road transport in terms of CO_2 emissions.

The European transport policy should be based on the following principles: A common charging system for external costs; no subsidies; no restrictions in the volume of traffic; the liberalisation of road transport; the use of revenues within the mode from which they were raised.

Points raised in the discussion

1. *The question of the base and method of price estimation* – several comments concerned clarifications on this issue, making clear that we are still some distance way from achieving consensus on this matter (whether scientific or political):
2. **Antonio Musso** of the University of Rome "La Sapienza" asked for more details about the basis of the new Swiss charging system. Are the fees based on actual accounts of transport costs? **Felix Walter** explained that the calculations were originally based on transport accounts but not strictly according to the principles of marginal social cost pricing. The final decisions were based on political negotiations with the EU and financing needs.
3. **Ludwig Schmutzhard** of the government of Tyrol pointed out a mistake in the Swiss calculation of the fees for heavy goods vehicles across the Brenner route. Journeys across the Brenner are in fact considerably cheaper than across the Gotthard. **Ueli Balmer** rejected the notion that there was a mistake in the Swiss calculations. Even if there was a discrepancy in the Austrian and the Swiss figures, the important fact remained the general trend towards a harmonisation of the charges for the major French, Swiss and Austrian road crossings.
4. **Thomas Spiegel** of the Austrian Ministry of Transport asked whether the decrease in taxes as a result of the introduction of marginal social cost pricing in the Alpine case study of the PETS project took account of the specific properties of the Alpine regions. Was the PETS calculation only based on the short stretch across the Alps or on the complete journey from origin to destination? **Felix Walter** confirmed that the PETS case study had taken some of the specific conditions of the Alps into account. The charges were estimated specifically for the Alpine part of a trans-Alpine trip: for a journey across Europe the case study would yield an increase in charges but for the stretch across the Alps there would be a decrease as compared to now. **Tom Howes** added that the PETS case study had presumed very high investments in transport infrastructure, which subsequently led to low marginal costs for the users.
5. **Renate Zauner** of the Initiative Transport Europe suggested the need for a common political strategy of the Alpine countries to raise the level of charges on all trans-Alpine crossings.

Comments related to the base of calculation

1. *The spatial application of a charging system* – **Heike Aghte** of the European Initiative for the introduction of distance related road vehicle charging asked whether the European Commission planned to introduce a charging system just for the motorway network or for the whole European road network. According to the answer by **Maria Papathanassiou,** the European Commission has not made a decision on this issue yet.
2. *How effective are charging systems* – **Maria Papathanassiou** admitted that the assessment of the impact of charging policies, including the Eurovignette Directive, often relies on a trial-and-error system. It is difficult to say whether even a doubling of the current charges would produce the desired effects in a certain area. Maybe ALP-NET could lead to a greater harmonisation of studies in this field.
3. *Short-term political decisions* – **Renate Zauner** of the Initiative Transport Europe asked the European Commission whether it intended to sue France for the higher charges in the Mt. Blanc tunnels should those be introduced. **Maria Papathanassiou** of the European Commission answered that the

Commission intended to check whether this should be done or not. **Richard Seeber** of the government of Tyrol asked about the plans of the European Commission regarding the tolls on the Brenner route. Will absolute limits be continued to be allowed in the future? This is also an issue not yet clarified. Yet, according to **Tom Howes**, Austria is currently not able to provide adequate data for the construction of transport accounts.

4. *Additional effects to be considered in charging systems* – **Françoise Dubas** of the Swiss agency for the environment asked about considering the utilisation of the nature and landscape in a common system for charging. How will the European Union proceed with the choice and harmonisation of environmental indicators to measure the impact of transport on the environment? **Markus Liechti** agreed with Ms. Dubas to consider the utilisation of countryside in transport charging systems. The specific properties of the Alpine regions should be taken into account. The Transport and Environment Reporting Mechanism (TERM) of the European Environment Agency could be used in an integrated monitoring system for the Alpine regions. The benefits of transport are well known and do not have to be explored any further.
5. *The role of the users / operators* -- **Maurizio Rotondo** of AISCAT noted that following the closing of the Mt. Blanc tunnel several years ago the usage of the railways in the area did not increase significantly. This is quite mysterious and illustrates the fact that the real origin and destination of the traffic are largely unknown. A solid analysis of the users of the trans-Alpine transport infrastructure is vital.
6. *On the use of revenues* -- A representative of **ASECAP** said that the motorway operators were not generally opposed to the ideas of cross financing. What they are criticising, however, is the lack of transparency in decision-making and the lack of clear concepts. There has to be a specific Alpine policy that follows a consistent path over a prolonged period of time. It is also important to specify guidelines regarding the use of revenues when private investment is involved.

6.1.4 Data, Methods, Modelling and Geographic Information Systems (GIS)

Chair: Carlo Lavalle, DG Joint Research Centres

Philippe Tardieu of NEA presented an overview of the field of methods, models, data and GIS for trans-Alpine transport. The key question is how to produce synergies and co-operation between the various levels of policy making (EU, national, local). A large number of projects on the European and national levels deal with the assessment of methods/models, the estimation of impacts of certain policies or the assessment of projects and programmes. Data on trans-Alpine transport can be found in the CAFT, TREX, TRAINS and NEAC studies as well as in the national statistical publications. Now the transport data in these studies is highly inconsistent. This is due to many factors including the use of different zoning systems. An attempt to establish an integrated approach was made by the ATIS project (Alpine Transport Information System) which was carried out in connection with setting up a full scale European Transport Information System (ETIS). Data on the environment is provided by the TERM (Transport and Environment Reporting Mechanism) system of the European Environment Agency. GIS systems are currently mostly used for the visualisation of data and the results of models. The future challenges for obtaining reliable data on trans-Alpine transport will be to

- explain the differences in transport demand forecasts (differences in basic data? differences in methods/models? differences in scenarios?);

- improve the availability, consistency and quality of data through international co-operation;
- establish an Alpine monitoring system in connection with the EU- Swiss land transport agreement and the Alpine Convention.

Michel Houée of the French Ministry of Transport explained the work of the Swiss/Austrian/French activities on data collection in the Alpine regions. These activities are known as the CAFT survey (Cross Alpine Freight Transport Survey). For designing a multimodal freight transport observation system, the data has to include information from rail operators and maritime observations. For the complete picture, it would be important to have more information about passenger transport where tourism plays a major role. To learn more about passenger behaviour roadside interviews could be conducted. The spatial accuracy of the surveys should be improved as done by the French transit survey to validate the transport models. EUROSTAT proposes to use the data that is collected on the basis of the EU directive on road transport statistics instead of the data from the CAFT survey. There are serious doubts whether the EUROSTAT data is useful for this purpose. The ATIS could become a forerunner and example for an ETIS to be eventually established.

Walter Züst of the Swiss Federal Office for Spatial Development presented some details about the Swiss experience with the collection of data on transport. Switzerland carries out extensive data surveys based on interviews every five years. Since 1999, these surveys are carried out in co-operation with France and Austria and therefore produce results that are largely consistent across the countries. In the in-between years, smaller surveys are conducted to allow for a good estimation of the trends. Apart from those surveys, the most important sources for transport data are the household transport behaviour survey of the Swiss Statistical Office ("Mikrozensus"), the information provided by border crossing and customs offices, the automatic traffic counting systems, the road freight transport survey of the statistical office, a pilot study on combined container transport and the data collected for charging the heavy vehicle fee. The Swiss railway undertakings have excellent data but they are unwilling to provide all the details below the NUTS 2 level. Unfortunately, this NUTS 2 data is too aggregated to be really useful. Other shortcomings of the currently available data are the lack of information on the "real" origin and destination of goods (only transhipment places are usually known), the content and weight of containers, the costs and prices of specific transport operations. Furthermore, it would be necessary to include passenger transport in the detailed surveys and to agree on a common definition for the net weight of goods in road and rail transport. Improvements could be made with respect to the methodology and frequency of the surveys, the technical definitions and the accessibility of existing data. GIS systems are currently only used as a tool for the presentation of data. The establishment of an ATIS is an interesting topic and should include some thoughts about the models to be used from such a system.

Gianpaolo Basoli of the Italian Ministry of Transport presented the architecture of the Italian database containing the national transport accounts. This database will eventually contain macroeconomic, infrastructure, traffic flow and other relevant data. For an assessment of the transport system, it is not sufficient to look at single corridors but instead O-D matrices have to be used. In the Italian case, such a matrix was constructed during the preparations for the Lyon-Turin rail project. The new Italian transport master plan is based on a detailed network description using a GIS tool. Trans-Alpine transport is highly relevant for Italy as more than 70% of the Italian foreign trade are moved by land transport across the Alps. The remaining 30% are mostly carried by short sea shipping.

Thomas Spiegel of the Austrian Ministry of Transport pointed out that the data situation in the Alpine regions is excellent in comparison to other regions. Unfortunately, the demand for information is even

higher than the current supply. The large number of studies on trans-Alpine transport is sometimes a mixed blessing as many of them produce inconsistent and sometimes even contradictory results. The Cross Alpine Freight Transport Survey (CAFT survey), which is carried out in regular intervals in co-operation with France and Switzerland, is based on samples of roadside interviews. The quality of the CAFT survey is partly due to the limited number of crossings through the Alps, which facilitates the collection of data. Remarkable in this respect is also the high percentage of the total volume of EU freight transport which is moved across the few Alpine crossings. The Alpine Transport Information System (ATIS) should ideally consist of yearly updated freight flows on the basis of the CAFT survey, data on passenger transport, network data and data on the environmental impacts of transport. Such a system could feed different kinds of models that would all be based on the same network information and a set of common assumptions. The CAFT survey could be improved by increasing the frequency, improving the harmonisation between countries, better information on combined transport, new partners and guidelines that are more formal. The synergies between existing data collection systems should be better exploited through harmonisation and co-ordination. Passenger transport plays a major role in the Alpine regions and should not be neglected when thinking about data collection. ALP-NET could support the ongoing processes by enlarging the existing network of expertise and co-operation; improving the visibility and acceptance of existing data collection and models; formulating concepts and strategies for data collection; and by developing guidelines for data collection. The usefulness of ALP-NET will depend on the continuity of work which should not only take place during the workshops.

Josefine Oberhausen of EUROSTAT gave a presentation on the activities of her institution with regards to road freight transport. EUROSTAT collects information on road motor vehicles (age, weight, km per year, etc.) and their journeys (type, place of loading/unloading, etc.) and the goods transported (type of goods, weight, etc.). The legal basis for these activities is the EU Regulation 1172/98 which requires micro-data to be collected at the end of each quarter. The data collection is carried out by the Member States based on questionnaires filled in by a sample of vehicle owners. All vehicle operators inside and outside the country of registration are monitored. Even though there are common methodological guidelines, data is still collected differently in different countries and many optional variables are not supplied to EUROSTAT. At the moment the quality of the data is not yet satisfactory and the rules for the dissemination of data have yet to be clarified with the Member States. The main shortcoming of the EUROSTAT data with respect to its usefulness for trans-Alpine transport is the lack of routing information. In the future, there should be more co-ordination in data collection activities across countries and institutions and the definitions should be harmonised.

Jan Francke of the Transport Research Centre of the Dutch Ministry of Transport presented the Dutch system for the evaluation transport policy. Starting from the transport policy objectives (safety, efficiency, etc.) certain problems (congestion, accidents, etc.) are identified. In a second step, the options for specific policy measures (e.g. pricing) are assessed. After the implementation of the policy measures their effect on transport demand and transport supply is observed. In a feedback loop there is then the possibility to assess the changes in the originally identified problem.

Andreas Küchel of the German Ministry of Transport stressed the political nature of data, methods and modelling issues. Even the collection of data is not just a technical question but it is in fact highly political. This has to be explicitly taken into account when discussing about this topic. There has to be a political consensus on scenarios before they can be used in modelling. The political actors must first define the desired result and on that basis the path for achieving such a situation traced backwards to the current situation.

Points raised in the discussion

1. *The question of the availability of the data* – **Renate Zauner** of the Initiative Transport Europe asked about the availability of the 1999 data from the CAFT survey for France. According to **Michel Houée,** a summary of the data has already been published and the details will become publicly available within the next few months. The French part of the study also includes data for the Pyrenees. Hopefully there will be a common publication of the Swiss, the Austrian and the French study to cover the whole Alpine region.
2. *Is the data covered by the surveys adequate?* – **Eugenio Borgia** of the French-Italian Commission for the Lyon-Turin rail project pointed out that besides the standard data requirements covered in existing surveys, we should be looking into what other data there might be needed. One related issue in this respect is the question of monetarisation of external costs which is relevant for pricing policies. What external costs are to be covered? What should (if any) be the basis of calculation? The representative of **ASECAP** also pointed out that it would be important to consider in this connection the use of revenues. **Françoise Dubas** of the Swiss agency for the environment asked about the monitoring of the impacts of transport on the environment. **Michel Houée** said that suitable data partly already exists in France but it is currently not incorporated with the collection and processing of transport data. A group on quantifying the environmental impacts of transport has been set up in the French Ministry of transport.
3. *Is the country coverage adequate?* – **Andreas Weissen** of CIPRA asked about the inclusion of Slovenia in the CAFT surveys. **Thomas Spiegel** clarified that the CAFT data is only collected for the main north-south Alpine crossings ("Alpenhauptkamm") and not for the Austrian-Slovenian border regions. **Walter Züst** added that the border crossing between Austria and Italy at Tarvisio is included in the CAFT surveys even though it is not considered one of the main north-south crossings. A representative of **ALPETUNNEL** pointed out the studies undertaken by his company for the Lyon-Turin rail project.
4. *The harmonisation of data collection and reporting* – **Michel Houée** stressed the importance of harmonised data collection across countries in order to avoid differences in the input to transport models. **Anna Panagopoulou** of the European Commission stressed the importance of the harmonisation of data. In this respect, the research undertaken in the 4th and 5th Framework Programmes of the European Union has to be taken into account. ALP-NET should provide a framework for coordinating the ongoing activities including the Swiss observatory and the developments surrounding the establishment of ETIS.

6.2 Conclusions to be Drawn

In what follows, we document the main conclusions to be drawn from the first ALP-NET workshop with reference to the topics of the different sessions and in anticipation of the thematic workshops to be organised by ALP-NET in the coming year.

6.2.1 Policy Developments in Alpine Transport and the Decision Making Context

1.5. No single policy instrument is sufficient on its own to overcome the problems faced by trans-Alpine transport. Thus whilst both combined transport and pricing promise to ameliorate the situation with regard to modal split, congestion and environmental externalities, their application needs to be combined and possibly also co-ordinated, spatially as well as temporally. The same is true for each policy instrument separately.

2.6. Temporal co-ordination involves considering the phasing of policies in such a way so as to deal with immediate and short-term problems to the maximum extent possible (besides resolving problems in the longer-term). This also applies to the political decisions that are or should be upcoming in the near future regarding how to deal with the higher charges being proposed by the French government on the Italian-French crossing and the possible extension of the Austrian Ecopoint system until that time that a European charging system is realised.

3.7. Spatial co-ordination involves a higher degree of collaboration among Alpine countries and regions so as to avoid the ”Not in my Back Yard (NIMBY)” syndrome whereby unilateral or bilateral decisions lead to an amelioration of the situation in a specific country or over one particular crossing but to no positive results, or indeed a worsening of the situation in another country or at another crossing. Such co-ordination should also consider the transport situation of specific countries – for instance, the higher current ‘dependency’ of Italy on the Alpine crossings for the transfer of goods.

4.8. It is also important to consider the limits of the current policy proposals with regard to coping with the problems of Alpine transport. Combined transport and pricing promise to ameliorate the situation, yet they might not suffice even when combined and implemented in a comprehensive way. Both Switzerland and France have defined targets about the desired amount of traffic through their crossings and hope to achieve these through a set of measures, with pricing, rail development and combined transport at the core. Yet the question must be raised as to what happens if these targets cannot be met with the available policy options. What additional measures will (then) be necessary? The discussion suggested that additional measures could include

- the imposition of absolute limits (on the total amount of the transport volume across the Alps, or with regard to night and weekend bans);
- the extension of pricing measures for heavy vehicles to cover the full European road network (rather than just the motorway network) and the increase of road pricing charges;
- the extension of pricing measures to apply also to passenger cars;

- the consideration of alternative routes either with regard to both road and rail across other countries (for instance through Austria or Slovenia/Hungary) or with regard to maritime transport. The latter would need to consider the role of the ports, in particular the Italian and Dutch ports.

5 9. According to the new White Paper on European Transport Policy, environmentally sensitive areas, like the Alps, might require the implementation of policy measures that go over and beyond those that apply to other regions. In order to justify such additional actions, it will be important to move towards a better definition of what comprises an environmentally sensitive area. This is in part a scientific exercise, but it is also a political one, as the definition of an environmentally sensitive area might involve the setting of standards and thresholds as well as decisions as to the monetary values of environmental effects, which will have to be agreed by all Alpine countries and regions and still be negotiated with other important stakeholders. Subsequently monitoring will be necessary to follow up on the success (or failure) of policies.

6 10. The question of public acceptability remains a difficult one for European and national policy-makers, especially in the Alpine regions. On the one hand, it is argued that the introduction of, say, pricing is more likely to be met with acceptance if environmental effects are accounted for sufficiently and revenues can be used to invest in environmentally friendly modes of transport. On the other hand, such proposals are often not enough to conciliate local populations facing serious problems in terms of health or quality of life at present. Such would seem to be the situation currently faced with regard the re-opening of the Mt. Blanc road tunnel. Better information policies and wider consultation practices are clearly procedures that need to be given greater attention in this respect in the future.

7 11. Policies are more likely to be successful in terms of implementation if they are accepted by the public but also by stakeholders – in this case road operators, railways and ports. This is no easy task as stakeholders will seek to defend their interests and in that might not be open to new or innovative solutions that could include sacrifices or losses on their part, at least in the short-term, or alternatively gains for those they consider their competitors. This would still appear to be the case of road operators on the one hand and railway companies on the other. There is a need for the better involvement of stakeholders in the policy process – including a better understanding of their needs – yet if the policy outcomes are to yield wins for all involved or at least minimise the risks and losses for some, then stakeholders will have to accept rules of participation in policy discussions which move beyond confrontation towards consensus and compromise.

6.2.2 Influencing the Modal Split: The Potential of Intermodal and Combined Transport

1 12. The main problems of intermodal and combined transport are technical and organisational problems including

- The interoperability of rail services;
- The capacity optimisation of the existing systems;
- The lack of reliability which concerns primarily the railways;
- The insufficient construction of new terminals;
- Problems in efficiency of border crossing operations;
- The organisation of the rolling road and in this connection the role of base tunnels.

- The instalment of a supportive regulatory framework for the development of combined and intermodal transport, which also allows for the financing of relevant infrastructure projects (railway, terminals, etc.)

  The discussion of the potential of development of combined transport should technically distinguish between accompanied and unaccompanied transport.

~~2.~~13. Another major problem with regard the development of combined and intermodal transport concerns the notorious confrontational type of relation between rail and road.

~~3.~~14. Improving the quality and flexibility of the intermodal chain will be the only way to convince users and, in particular, shippers and road operators that combined transport is an alternative to road transport.

6.2.3 Pricing and Financing of Transport Infrastructure

~~1.~~15. Whether at the theoretical or more pragmatic and political level, there still exists no consensus on the method and the database to be used for defining the level and the structure of taxes and prices. This applies especially to

- the valuation of environmental externalities – in general but in particular in environmentally sensitive areas where additional effects might have to be taken into account

but also concerns

- the degree of harmonisation of pricing structures and levels as well as charging technologies among the Alpine regions, but also between Alpine and non-Alpine regions
- the incorporation of financing needs (for fixed costs of the infrastructure, but also for a possible cross-financing for other modes) into the pricing scheme.
- the modelling of the impacts of pricing on route and mode choice

  A new framework directive is expected to clarify matters. This is an opportunity for Alpine countries to explore their room for manoeuvre during the preparatory stage of this directive as well as during the implementation period. It is also an opportunity to strengthen the co-operation among policy-makers of the Alpine area and to get closer to a common pricing and financing strategy.

~~2.~~16. How the revenues of pricing are to be used; whether these will be channelled to general revenues or not, and the possibility of cross-subsidising across modes, remain likewise open questions.

17. As a basis for these important tasks of co-operation and decision-making, the scientific community should improve the estimation models for the impact of various pricing and financing schemes and hereby improve the knowledge on pros and cons of various schemes, including step-by-step implementation scenarios. A monitoring of the effects of recent events (closing of Mont-Blanc and Gotthard, introduction of the new regime in Switzerland) should be used to calibrate and improve existing models.

6.2.4 Data, Methods, Modelling and Geographic Information Systems (GIS)

~~1.~~18. The more pressing problems regarding Alpine transport concern data, less so methods, modelling and GIS. This does not mean, however, that issues relating to methods, modelling and GIS are not specific to Alpine transport.

~~2.~~19. In connection with the existing surveys (especially CAFT and EUROSTAT), there are two main problems. The first concerns the lack of harmonisation in data collection and reporting – this concerns especially the EUROSTAT surveys. The second problem concerns data availability within Alpine countries and to independent researchers – insofar as CAFT is concerned, a serious problem is the failure to integrate Italy into the survey.

~~3.~~20. More generally, what needs to be explored is the scope of the data – thus it is important to inquire not only into what is covered by existing datasets but also what is not covered now, but should be in the future. Two issues arose as relevant in this respect: environmental data / monitoring and information on passenger transport. The former concerns also methods and modelling as much as data.

~~4.~~21. The country coverage in Alpine-specific data surveys might no longer be adequate in view of enlargement. Thus, it is important to consider including not only the North-South traffic but also the East-West transport as it affects the Alpine crossings. In this connection, Slovenia and possibly Hungary would have to be covered by the datasets.

~~5.~~22. Origin-destination matrixes (thus also integrating ports) and considering the Alpine transport area as a part of a wider transport system rather than a set of crossings or regions in terms of data coverage and collection procedures would be important for identifying policy measures for the future.

List of Abbreviations

ACG	Gottardo High Capacity Association (Italy)
AIPA	Authority for IT in the Public Administration (Italy).
AISCAT	Italian Association of Motorway and Tunnel Concessionaire Companies (Italy)
ANAS	National Highway Administration (Italy)
ANPA	National Agency for Environment Protection (Italy)
APAS	Actions de Préparation, d'Accompagnement et du Suivi
ARGE ALP	Consortium of the Alpine Countries
ASECAP	Association of European companies holding licenses to run tollways and toll-collection infrastructures
ASFINAG	Autobahnen- und Schnellstrassen Finanzierungs AG
ASTRA	Assessment of Transport Strategies
ATA	Alpine Transit Tax (Switzerland)
ATE	Association for Transport and Environment (Switzerland)
BAG	Bundesamt für Güterverkehr (Federal office for freight transport, Germany)
BALT	Bilateral Agreement on Land Transport (between the EU and Switzerland)
BASt	Bundesanstalt für Straßenwesen (Federal Highway Research Institute, Germany)
BBR	Bundesamt für Bauwesen und Raumordnung (Federal office for building and regional planning, Germany)
BBT	Brenner Basistunnel (Italy)
BfN	Bundesamt für Naturschutz (Federal Agency for Nature Conservation; Germany)
BISStra	Bundesinformationssystem Straße (Federal road information system, Germany)
BKG	Federal Agency for Cartography and Geodesy (Germany)
BMI	Bundesministerium des Inneren (Federal Ministry of the Interior, Germany)
BMU	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety)
BMVBW	Bundesministerium für Verkehr, Bau- und Wohnungswesen (Ministry of Transport, Building and Housing)
BMVIT	Austrian Federal Ministry for Transport, Innovation and Technology
BUVIS	Austrian Federal Transport Information System
BVWP	Austrian Federal Transport Infrastructure Plan
BVWP	Bundesverkehrswegeplan (German Federal Transport Infrastructure Plan)
CAFT	Cross Alpine Freight Transport Survey
CDA	Center for Alpine Documentation (Italy)
CEEC	Central and East European Countries
CEMAT	Combined European Management And Transportation (Italy)
CER	Community of European Railways
CERTeT	Research Centre for Regional Transport and Tourist Economy (Italy)
CIPRA	International Commission for the Protection of the Alps
CONFETRA	Italian Association of Transportation and Logistics (Italy)
CTP	Common Transport Policy (EU)

DARS	Družba za Avtoceste v Republiki Sloveniji (Motorway Company of the Republic of Slovenia)
DDGI	Deutscher Dachverband für Geoinformation e.V. (German Umbrella association for geoinformation systems)
DETEC	Federal Department of Environment, Transport, Energy and Communications (Switzerland)
DPR	Presidential Law (Italy)
ECMT	European Conference of Ministers of Transport
EEA	European Economic Area
EEA	European Environment Agency
EEB	European Environmental Bureau
EFRE	European fund for regional development
EIA	Environmental Impact Assessment
ERTMS	European Rail Traffic Management System
ESCOT	Economic assessment of Sustainability policies Of Transport
ESDP	European Spatial Development Perspective
EST	Environmentally Sustainable Transport (OECD)
ETIS	European Transport Policy Information System
EUR	Euro (Currency)
FS	Italian State Railways (Italy)
FTIP	Federal Transport Infrastructure Plan
GIS	Geographic Information Systems
GVF	Dienst für Gesamtverkehrsfragen (→Bureau for Transport Studies, Switzerland)
GVFG	Gemeindeverkehrsfinanzierungsgesetz (Germany)
HGV	Heavy Goods Vehicle
ICAS	Interacademic Commission for Alpine Studies (Switzerland)
IMAGI	Interministerieller Ausschuss für Geoinformationswesen (Inter-ministerial committee for geoinformation systems; Germany)
InFreDat	Intermodal Freight Transport Data
IRU	International Road Union
ISCAS	International Scientific Committee for Alpine Studies (Europe)
ISTAT	National Statistical Institute (Italy)
ISTIEE	Institute for the European Transportation and Economical Studies
KBA	Kraftfahrt-Bundesamt (Federal Vehicle Administration, Germany)
KOGIS	Coordinating office for geographic information and geographic information systems (Switzerland)
LSVA	Leistungsabhängige Schwerverkehrsabgabe (→MRHVT)
MOTC	Ministry of Transport and Communications (Slovenia)
MRHVT	Mileage-related Heavy Vehicle Tax (Switzerland)
NARL	New trans-Alpine Rail Link (Switzerland)
NEAT	Neue Eisenbahn Alpentransversale (→NARL)
NGO	Non-governmental organization
NRP	National Research Programmes (Switzerland)
O/D	Origin/Destination
ÖBB	Austrian Federal Railways

OECD	Organisation for Economic Co-operation and Development
ÖKOMBI	Austrian Society for Combined Transport
OKStra	Objektkatalog für das Straßen- und Verkehrssystem (Object catalogue for the road and transport system, Germany)
PACT	Pilot Action for Combined Transport (EU)
PETS	Pricing European Transport Systems
PTFP	Public Transport Financing Package (Switzerland
RAC	High Capacity Networks (Italy)
RTD	Research and Technology Development
SACTRA	Standing Advisory Committee on Trunk Road Assessment (UK)
SBB/CFF	Swiss Federal Railways
SCTP	Swiss Co-ordinated Transport Policy
SEA	Strategic Environmental Assessment
SEIA	Strategic Environmental Impact Assessment
SGKV	Studiengesellschaft für den kombinierten Verkehr e.V. (Studies society for combined transport, Germany)
SICT	Swiss Integral Concept of Transport
SITAF	Frejus Road Tunnel Highway Company (Italy)
SNIT	National Integrate Transport System (Italy)
STEMM	Strategic European Multimodal Modelling
T&E	Transport & Environment
TAFT	Trans-Alpine freight transport
TEN	Trans-European Network (EU)
TEN-T	Trans-European Transport Network (EU)
TERFF	Trans-European Railway Freight Freeway (EU)
TINA	Transport Infrastructure Needs Assessment (EU)
TMS	Traffic Message channel
UBA	Umweltbundesamt (Federal Environment Agency, Germany)
UIC	International Union of Railways
UIRR	International Union of Combined Road-Rail Transport Companies
UMTS	Universal Mobile Telecommunications System
UVP	Umweltverträglichkeitsprüfung (→ EIA)
VAT	Value Added Tax
VIA	Environmental Impact Assessment (Italy)
VUGIS	Verkehrs- und Geoinformationssystem (Transport and geoinformation system)
WKÖ	Austrian Chamber of Commerce

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