

E Main Conclusions for the Alps

E1 Conclusions and Synthesis in View of Sustainable Mobility

The results presented by the authors of the different chapters allow conclusions to be drawn in view of the objectives of sustainable mobility and of the Alpine Convention's objectives in particular.

Starting from this, at the end of this chapter an integrated view of the conclusions will be attempted. Based on this synthesis some options for action will be sketched. The chapter finally refers to the main challenges for policy which are the subject of chapter E2.

Sustainable mobility

The main objectives of sustainable development such as equity between present and future generations have been adopted by Member States and the EU in the renewed EU Sustainable Development Strategy. These objectives may be applied under the focus of this report on sustainable transport and mobility.

In these terms sustainable transport and mobility would not endanger public health or ecosystems and would meet the needs for mobility consistent with the use of renewable resources below their rates of regeneration, respectively the use of non-renewable resources below the rates of development of renewable substitutes (cp. OECD 2000). It also includes the needs of economic development balanced with the other aspects of sustainability.

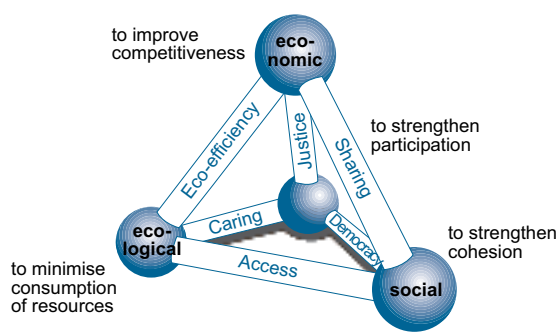


Fig. E1.1: Dimensions of sustainable development (Source: EUDB).

Mobility has been defined (see chapter A) as a basic social and economic human need, but this does not necessarily mean in every case physical transport of goods or persons. Basically it is possible to provide increasing mobility in terms of possible activities with less transport. Shortly said: main objective for sustainable mobility is mobility of citizen but not transport. Although an important need, mobility remains only one societal objective among others (SRU 2005).

Mobility in the Alps as well as in the whole of Europe has to face the well-known dilemma between the present economic dependency on a reliable transport system and its sometimes negative impacts on life quality and environmental quality. Long term developed transport supply and demand patterns need to be developed towards sustainable mobility structures. This will require the horizontal integration of reduced transport demands as a policy objective (EEA 2006).

The specifics of mountain regions when talking about traffic effects

Regarding transport conditions and traffic effects mountainous areas are very different from flatland areas. The morphological shape demands different constructions of traffic infrastructure like galleries, tunnels, bridges etc. Costs for construction and maintenance of infrastructure are often higher. Accessibility may temporarily be restricted by weather and road conditions as well as by natural hazards (e.g. avalanches, land slides, rock fall like on the Gotthard-route during summer 2006 etc.)

Mountains provide recreational and aesthetic landscapes and high biodiversity because they extend through different altitudinal zones. Large unfragmented areas are an endangered resource for recreation and sometimes represent the last retreat for animals with large habitat demands. This peculiar characteristics make the alpine space highly attractive for leisure activities and tourism.

Morphology also leads to the concentration of traffic flows on a limited number of routes, often in narrow valleys where human population density is also high. So the potential for conflicts between social life quality of inhabitants, economic requirements and ecology is often higher than in flatlands.

The relief and the narrowness of many valleys limit the air volume for reception of emissions and have amplifying effects on traffic noise. In addition the particular meteorological conditions like inversions and local wind systems impede the rarefaction and transportation of pollutants.

E1.1 The transport system

The transport system has been explored in this report in respect of the most important transport modes in the Alps – road and rail. Within this transport infrastructure (chapter A1) lies the basis for transport activities. These are freight transport (chapter A2) and passenger transport (chapter A3), both of which are divided into road and rail.

E1.1.1 Transport infrastructure

Road

Road density in the Alpine area corresponds at least to general European averages, so no further efforts are necessary to achieve conditions comparable to other areas of Europe. Local improvements may still be necessary to widen existing bottlenecks and ease burdens for people living close to roads with very high traffic loads. The improvement of the Alpine road infrastructure is needed above all to increase the safety standard especially in the tunnels. In general improve-

ments of infrastructure for easier interoperability between different transport modes and an intensified implementation of traffic management systems can offer efficient and smart solutions.

Road pricing still is affected by heterogeneity between countries but will be made easier with the implementation of the EU-Directive on the Eurovignette. Successful results of the Swiss LSVA in terms of modal shifts promise to encourage this approach. In future, mileage related tolls may have stronger effects on transport, on regional and long distance traffic equally. However it remains the question on which parts of the national road systems these tolls will apply to.

Railway

As with the road infrastructure, the railway density in the Alpine area also corresponds to EU averages. In the last decades the modal split has moved increasingly towards road transport.

Therefore the increases may be compensated for either by more effective use of the existing rail network, or by carefully selected upgrades or extensions of the railway infrastructure. Such measures are a precondition to compensate for the predicted increase in freight volumes and to offer more competitive services.

Insufficient interoperability between the different national railway infrastructures represents an important bottleneck of railway infrastructure. Optimisation of interoperability and of schedules may explore further potential for a successful increase in rail transport.

Development of transport infrastructure needs intensified consultation and participation

Infrastructures are a long term investment in terms of financial effort as well as in the effects in space and development. In many countries, responsibilities for infrastructure development are still shared between different organisations. Considering the long-lasting effects, consultation between the responsible authorities and efforts to achieve integrated solutions, already at strategic level, should be intensified.

Concerning the construction of large infrastructures, decision-making processes should be applied and local governance and participation promoted, which involve stakeholders at all levels. This could help in assessing the possible social consequences the infrastructure might produce at local level (see Dematteis & Governa 2002).

For example a possible strategy might be, to strengthen regional and local transport networks which are able to connect the local territory to the main infrastructure and to create favourable effects also in the long run, whose positive consequences will be felt at the local level.

E1.1.2 Freight transport

The amount of freight transport is increasing both on road and on rail, however road freight transport is growing at a higher rate.

Road freight transport

A detailed comparison of the main Alpine crossings in the last few years is difficult due to bypass effects following tunnel accidents and closures. But in general a significant increase in total road transport volumes is reported for most Alp crossing passes (see Fig. A2-6). The highest traffic load is on the Brenner pass. The share of long distance transport is estimated to be about 47% of the total road freight transport.

The reasons for the increasing share of road transport may be found in the way international transport is organised, serving complex production processes of pre-manufactured and singly delivered parts in tight time schedules.

Accidents in recent years have underlined that tunnel safety will be a key element for maintaining predictable road freight transport. Therefore improvements of safety measures for road tunnels are under way almost for all long road tunnels.

Rail freight transport

Against the backdrop of generally increasing freight transport (up to 24% in the period 1994–2004 in terms of transported tonnes) the highest share is transported across the St. Gotthard route. One remarkable observation is the successful shift towards rail freight transport in Switzerland thanks to measures promoting Swiss rail freight.

Some important requirements of rail freight transport comprise punctual delivery, short and reliable transport times or current information on the transport progress. In particular cross-border rail transport suffers from slow transport speed and delays due to technological differences such as rolling stock and signals.

The increase in the amount of rail freight transported will depend also on improvements to the infrastructure itself, in terms of electrification and performance.

The lack of interoperability between the different infrastructures and equipment limit the competitiveness of rail freight transport.

E1.1.3 Passenger transport

Passengers are transported increasingly by car. Some case studies show that use of car transport is significantly higher in rural regions compared to urban areas. Some support for this development may come from the preference of infrastructure investment for road extension in the last decades. But urban development featuring sub urbanisation around former centres has also triggered this development.

But also on long distance roads such as motorways a further increase in motorised individual transport could be observed.

The development of rail transport is hard to interpret for the Alpine area as only few data were available to analyse. In Switzerland increasing passenger numbers are reported, while the national railway company offers an attractive and frequent service. Besides the railway, bus companies and on-demand services can serve local demand.

In view of the expected growth of passenger volumes even the effects of the envisaged upgrade of transport infrastructure will not be a sufficient solution. Therefore serious efforts are needed to improve the attractiveness of public transport and to support alternative transport modes in the future.

E1.2 Economy, tourism and economic effects

As the most important drivers behind transport in the economic field for this report, the economy (chapter B2) and tourism (chapter B4) have been selected. The economic effects deriving from development of transport and of the drivers have been analysed in chapter C1.

In Europe the discussion of the interrelation of the economy and transport is about the positive effects of transport but also on the “two-way road principle”¹ and spatial distribution effects of transport infrastructure for the economy. Passenger transport growth has paralleled economic growth at EU average levels, but freight transport volume has grown disproportionate to the GDP and here road freight transport is continuously increasing its market share. Also as a general phenomenon, access to basic services depends mainly on car use and is presently supported by price structures. Therefore the definition of external and internal costs, and the calculation of benefits for the economy are needed to make further progress. In Europe price structures are increasingly below the level of external costs, but there are promising developments in transport pricing (SACTRA 1999, EEA 2004, EEA 2006).

E1.2.1 The economy

One of the objectives of the Alpine Convention is to promote regional economic development, enhancing job opportunities as well as supplying the goods and services necessary for economic, social and cultural well-being.

Polarised economic conditions in the Alpine area

Despite the commitment of the Alpine Convention both in rural and urban areas, the Alpine arc is characterised by remarkable polarities of its economic conditions. Hence, significant differences regarding the economic situation can be detected between the various Alpine countries, regions and lower administrative units. Many of the economically strongest regions are situated in or close to the Alps. In general the contrast between the central part and the eastern and western fringes of the Alps is striking. The distribution of the GDP is particularly adapted to show this finding. With a few exceptions (e.g. the surroundings of Wien and Graz) functioning like a bridge there is a clear division between the particularly high values of the more centrally located parts of the Alps (e.g. Bayern, Swiss foothills) and the lower parts on their peripheral western and eastern flanks.

However, there is a close economic interrelationship between the Alpine and non Alpine regions which is indicated by the high GDPs in the Italian part as a consequence of the economic centres included in the NUTS 3 level. Nevertheless, analyses on regional level showed the highly heterogeneous structure of the Alps even on the lowest spatial levels. In fact, prosperous municipalities often exist close to areas which are becoming depopulated.

Not surprisingly the economically weak regions with a low GDP are mostly also regions with a high unemployment rate. As a consequence the regions with the highest unemployment rate are situated on the peripheral western and eastern border of Alps (Rhône-Alpes, Provence-Alpes-Côte d’Azur, Burgenland) while those with lower unemployment rates are mostly located close to the centre of the Alps.

Role of transport for maintaining agriculture

A good reflection of the various economic conditions and situation in the Alps even on regional level is given by the agricultural sector which is of outstanding relevance for the whole region due to its multifunctional services. In fact, on the one side there are regions with a relatively stable agriculture or a moderate agricultural decrease (e.g. Alto Adige/Südtirol, Swiss and Austrian regions).

On the other side many regions register high farm abandonment rates (e.g. Slovenia, many regions in Italy and France). The exemplary situation of Alto Adige/Südtirol shows that an economically vital region featuring good transport infrastructure and access to jobs is one important prerequisite for a persistence of agriculture. This is confirmed by some authors who see a persistence of part-time-farms in regions where commuting to non-agricultural employment is feasible due to good accessibility to the local road network which permits commuting.

E1.2.2 Tourism

Tourism is an important economic branch in Alpine economy, even if only 9% of Alpine municipalities may be considered as tourism centres (cp. Fig. B4-1). These centres are often ski resorts. According to EU estimates about 80% of tourist journeys to the Alps are driven in private cars. Additional traffic originates from these tourist destinations due to day-trips undertaken by tourists.

A case study for Austria suggests that summer tourists in particular are dependent on individual motor transport during their holiday stays. Bearing in mind that winter tourism might alter due to climate change, special efforts need to be taken to develop measures which encourage the use of public or non-motorised transport in the summer season.

One main issue concerning the field of tourism related transport is the modal split of the journeys to and from the destinations. Both, the figures of the Brenner pass as well as those of the Austrian case study in chapter B4.5 indicate the related high pressures on the road system and subsequently on the Alpine population and environment.

¹ Transport infrastructure does not guarantee that the local or regional economy will benefit, because traffic operates in two directions and an improved accessibility may sometimes benefit one and damage another region or city.

In terms of tourism transport, three objectives are mentioned in the Alpine Convention:

- encouraging of measures to reduce dependence on motorised vehicles in tourist resorts [Tourism Protocol Art. 13 (1)],
- promotion of both public and private initiatives to improve access by public transport to resorts and tourist areas and encouraging of tourists to use these services [Tourism Protocol Art. 13 (2)],
- establishment and maintenance of traffic-calmed and traffic-free zones, establishment of car-free tourist destinations, measures of promoting the car free arrival and stay of holiday guests [Transport Protocol Art. 13 (2)].

For the future some questions may be of interest in particular, such as

- Have there been any changes in transport behaviour of tourists after the restructuring of tourist destinations since the mid-nineties?
- How much trans-Alpine tourism traffic is going to other destinations and how can the Alpine destinations influence this traffic?
- Which part of tourism traffic is due to local mobility of tourists when at their destination?

E1.2.3 Effects of transport on the economy

Good accessibility, efficient transport infrastructures and modern mobility concepts can induce employment and consumer well being (and GDP) convergence (Alpencors 2005). Therefore, innovative transport policies could support further economic improvement in the Alpine area.

Difficult assessment of the interrelation of transport and the economy

The economic effects of transport on the Alpine regional development are quite difficult to assess. Different elements contribute to determine the economic well-being of a region and it is complex to isolate single effects with certainty.

A relation between transport development, both in terms of infrastructures and services, and national economic growth as represented by GDP can be identified in regions with less infrastructure, while on the other hand other studies suggest that no correlation exists between transport infrastructure endowment and regional added value per capita. From market theory areas with better access to locations of raw materials and markets will, *ceteris paribus*, be more competitive than peripheral areas. However, this does not mean that good accessibility guarantees regional economic success and that a poor transport network implies poor economic performance. A transport improvement can successfully open an area to external competition with a negative effect on the local producers. Therefore the effects of transport on local economies can be both positive and negative.

Economic prosperity of a location is also composed by “soft factors” such as the existence or avoidance of environmental problems, efficient governance structures and the perceived quality of life by people at this location.

Transport infrastructures can also induce economic effects in a territory wider than the one they cross or link with. Since the main infrastructures crossing the Alps often have an EU-wide relevance, their economic effects can reach far beyond the EU borders and assume a strategic function, as is the case for the Trans-European-Traffic-Networks (TEN-T) EU policy.

An innovative and well-balanced transport policy can lead to substantial improvements in interregional trade and consumers' well being, not only according to an economic perspective (lower prices, wider choice of goods and services, faster connections, etc.), but also in terms of social and environmental benefits.

In Western Europe the growth rate of transport services and infrastructures has been slowing down in the last 30–40 years in comparison to economic growth (GDP), even though further development of both freight and passenger transport is expected in the Alpine Space over the next 30 years, according to EU Commission studies. In any case no clear signs of decoupling between economic and traffic growth have been achieved in the Alpine space to date.

External costs of transport

The strong development expected for trade (in monetary value) and transport (in quantity) will also produce undesired effects on local economies, society and the environment which can be expressed economically as the external costs of transport. As long as these external costs are not reflected in transport costs for the end consumers, their mobility behaviour and market choices will not undergo a substantial change. The assessment of these costs is the first step towards their internalisation in the price of goods and services: the studies made in this direction led to an assessment of the relative dimension of external transport costs as being 7.3% compared to GDP of EU15+2 in the year 2000 (INFRAS & IWW 2004).

Through the growing interest in economic tools in the EU and Alpine territory and the adoption of some levies (especially on road transport), a higher degree of internalisation of external environmental and infrastructure costs is still a primary objective to be reached in the Alpine countries.

E1.3 Population and effects on the social sphere

The social sphere is compounded of results from analysis of population development (B1), the effects on the social sphere, particularly the ageing of the Alpine population (chapter C2.2) and effects on human health through air pollution (see chapter C3.1) and noise (see chapter C3.2).

At the European level transport related health effects are reported owing to air pollution and also to greenhouse gas emissions which will indirectly contribute to health effects because of climate change (extreme weather can affect health, as can exposure to flooding and the spread of disease). For people living close to heavily used transport infrastructures, increasing health effects and impacts on

life quality are reported owing to road traffic injuries and noise. Also in urban areas transport related effects lead to increasing psychological and social impacts on health which finally result in a loss of life quality and mobility opportunities (PEP 2004, SRU 2005).

E1.3.1 Population

The population with its different motivational needs for mobility is without doubt the most important driving force for traffic development in and throughout the Alpine arc. All the demographic processes and the change in quality of life and customs influence the quantity and the kind of traffic.

Population growth in the Alps compared to EU-level

Some significant trends characterising the Alpine arc can be derived from the data presented in chapter B1. If compared to the European context the analysis shows a very dynamic population growth. The achieved growth rate of 7.8% exceeds the average rate of the EU-15 (3.2%) and the national values of the Alpine states (Tab. E1-1), too.

However Map B1-1 confirms that this growth, contrary to one of the objectives of article 1 of the Alpine Convention, is not equally distributed over the Alpine arc. Comprehensive studies have detected increasing disparities for the inner Alpine territories (Favry et al. 2004). The modern infrastructure services and the changed personal needs, driving the migration process, have led to a polarisation of booming and depopulated areas in urban and peripheral centres and also in major and minor valleys.

Country	Population change [%]
Austria	2.7
France	4.9
Germany	1.5
Italy	1.8
Liechtenstein	13.1
Slovenia	0.4
Switzerland	5.7
EU-15	3.2
Alpine Convention Area*	7.8

Tab. E1-1: Population growth, comparison between Europe and Alps (1994–2004); data refer to 1991–2001 (see Tab. B1-1); national and European data refer to 1994 and 2004 (Source: Eurostat, <http://epp.eurostat.ec.europa.eu>).

Spatial patterns of population development

The influence of the neighbouring metropolises (Milano, Torino, München, Wien, Lyon) on municipalities located on the Alpine border is growing and further growth is to be expected. These regions are characterized by their relatively good accessibility. Gradually these municipalities become suburbs of these metropolises. The intense expansion of traffic activities and the implementation of high-speed railways will probably support the establishment of commuter centres in the inner Alps.

Municipalities in the peripheral areas of the inner Alps following the “tertiarisation” of jobs (particularly in tourism) will benefit from this growth potential. However, the municipalities of the southern Alpine arc are not the only areas to be negatively affected.

An Alpine wide analysis detected also an increasing urbanisation along the central traffic corridors in the great inner Alpine valleys. These areas are characterised by strong dynamics. Due to their good accessibility, particularly from outside the Alpine arc, these areas are favoured locations for living in and for economic activities. Some examples are the valleys of Inn, Adige, Rhône, Valle d’Aosta, Venosta and Pusteria.

E1.3.2 Effects on the social sphere

Spatial segregation of living and working

As a benefit, transport enables access to basic services like education, work, shopping and leisure activities, which are essential for economic and social activities.

Over the last decades individual motorised traffic has gained a leading role in transport and society has been transformed along the way. Shops have moved out of the town centres to shopping malls, workplaces and living places can be further apart, giving individuals a broader choice of where to live, where to work and where to spend their leisure time. This results in a separation of living, working and shopping locations. For some regions this may help to slow down a depopulation trend by giving the people the opportunity to commute.

An increasing number of elderly people will require attention

The present analysis was focused on the particular category of elderly people. Old people form a consistent percentage of the Alpine arc population, in particular in the Italian Alps and in the Principality of Monaco. The analysis of the distribution of the old age index confirms the strong tendency to shift toward older ages of the Italian population in particular. This is caused by the emigration of the young people and the declining birth rate. The municipalities which suffer more from over-aging are the most and the least populated ones.

Although the closer the proximity to the central chain of the Alps, the more the old-age index increases, no significant correlation has been detected between accessibility and the old-age index. In other words good accessibility alone does not guarantee a well-balanced social structure in the Alpine municipalities.

Children, elderly and disabled people are disadvantaged by individual car traffic

Together with this spatial segregation, the limited public transport supply in mountain areas leads to high car-dependence. Many individuals benefit from the possibilities gained mainly by private cars.

But some social groups, who do not have access to a car, benefit less or are even disadvantaged by individual motorised traffic. These groups are mainly children, elderly and disabled persons and all people who are unable to drive. The decline in public transport, together with the moving out of basic services from residential areas, reduces their life quality. As elderly people constitute an increasing percentage of the population, it is necessary to identify and meet their requirements.

Modal split differs between urban and rural areas (see chapter A3), with a significantly higher degree of public transport in urban areas. The present transport situation means an inequitable distribution of advantage between rural and urban citizens as well as between different generations.

In consideration of the increasing share of elderly people the assurance of mobility by an adequate public transport system for local as well as for long distance traffic will become more and more important.

Decline of public services

The low use of infrastructures and services due to depopulation in many peripheral mountain areas may constitute a further problem. The decline of shops and supply services within walking distance is a disadvantage not only for those people in peripheral areas who are not mobile but it also negatively affects the attractiveness of the municipalities themselves. The decline in public services in local centres is then reinforced by the decrease in population which also lowers service provision and weakens the local economy. This leads to a kind of vicious circle, as shown in Fig. E1-2.

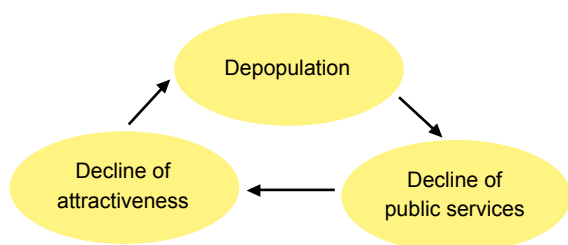


Fig. E1-2: Circle of demographic change and public services (Graphic: ifuplan).

As a consequence, in these municipalities quality of life diminishes. This creates an additional motivation for the local young people to leave. As the older people, who constitute a considerable and still growing part of society, are physically less mobile, alternative supply systems such as E-commerce and other home delivery services will become of greater significance for them in their everyday lives.

However, in order to maintain a well-balanced demographic structure and avoid the exclusion of any social or age group, adequate political and economic measures and cultural stimuli are needed for mountain areas. One way of solving these problems may lie at least partly in a better integration of transport and spatial planning.

The increase in programmes² and projects³ for the development of mountain regions which aim at improving the quality of life in less-favoured regions demonstrates how this issue of vital mountain regions has become of real political relevance.

Spatial effects on social life quality

Transport infrastructure can constitute not only a barrier for wildlife, but also for humans, by separating valleys or even communities. Also social life and social interactions near to much-frequented streets are less than in quiet residential areas. These effects sometimes lead, in a cumulative or synergistic manner together with air pollution and noise (see E1.3.3), to a decrease of life quality.

E1.3.3 Health risks from air pollution and traffic noise

Studies show that the same traffic load contributes to a concentration of nitrogen oxides in the ambient air in mountainous areas which is three times higher than in lowlands owing to meteorological particularities (EEA 2001). Because of the topography, the ambient air quality along steep valleys with high traffic loads is often as bad as in urban areas.

Apart from individual motorised traffic, transport and traffic in general (irrespective of whether public or private, transit or intra-Alpine, freight or persons) has several effects on humans. People living close to traffic infrastructure suffer from air pollution and noise, both of which can lead to health problems or even diseases like respiratory and allergy problems, sleep and concentration disturbance, heart diseases or psychological symptoms. The weakest section of the population – children, elderly and disabled people – are often the most affected group (cp. chapters C3.1, C3.2).

NO₂ immissions as an indicator of acidifying and eutrophying substances were in decline until the mid 1990s. However since 1995 immissions are no longer declining, but slightly increasing. Analyses of air quality show that the 2010 EU limit values for NO₂ are exceeded in annual means (up to 32% of stations) as well as for short term peaks (see chapters C3.1 and C3.2).

Ozone concentration increases particularly in high remote areas, frequently exceeding their EU limit values (2002/3/EC) under extreme conditions (up to 93% in 2003). These are less at urban traffic stations. Exposure to PM10 occurs in particular at urban and urban background stations and also significantly overruns the EU limit values (see chap. C3.1.3).

Beneath the higher pressures from air pollution, the inhabitants of traffic-loaded Alpine valleys also suffer from traffic noise, the distribution of which also differs here significantly from flatlands (see chapter C3.2.3).

As well as the indirect health effects of traffic via air pollution and noise direct health effects occur through traffic accidents.

2 E.g. EU-regulation N° 1698/2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD).

3 E.g.: IMALP – Implementation of sustainable agriculture and rural development in Alpine mountains (2003–2006).

E1.4 Land use change and environmental effects

Close interactions have been identified between land-use change and transport (chapter B3). Land use which determines where settlement areas are, is also steering effects on air quality (chapter C3.1) and noise (chapter C3.2).

In Europe, land use has been identified as an important driver for loss of natural habitats, change of landscape amenities and loss or degradation of recreation areas (EEA 2004).

The emission of air pollutants is declining in general, but in cities in particular air pollution remains problematic. The GHG emissions are still rising although technological improvements have been achieved but in many cases have been overcompensated for by transport increase (EEA 2004, 2006). In consequence in the mid-term effects of changing natural hazards owing to climate change may be expected.

It is expected that greater use of alternative biofuels and fuel development will contribute to emission reduction (EEA 2006), however this will not affect the question of land take for further transport infrastructure.

E1.4.1 Land use

Densely settled areas experience a trend towards greater increase of settlement and traffic infrastructure areas – “infrastructure and people attract further infrastructure”. The area resource is mainly drawn from cultivated area. Except for Italy, in most regions forest is increasing too, also mainly drawing on cultivated area. So there are two transformations of cultivated area: in densely settled regions it flows to further settlement and infrastructure, whereas in other regions it is more likely to flow to forest.

If one recalls former economic and social reasons for the extension of areas of human settlement into some Alpine regions, some central question arise:

- Can a stable population in the Alps be maintained for the whole Alpine area in future at any costs?
- Will this be a sustainable objective with regard to environmental and economic equity for other parts of the population?
- Do we perhaps have to accept population decline in some areas as an adaptation towards modern economic conditions?

The rate of loss of cultivated area per year is fairly low in the eastern and northern Alps (Austria, Germany, parts of Switzerland), whereas in the southern and western Alps (parts of Switzerland, France, Italy) it is much higher.

Interrelation of land use and population change

The concentration of settlements and different kinds of regional development (dynamic central regions versus marginal and peripheral regions) has a twofold impact on mobility needs: on the one hand there is not much political force to develop the traffic infrastructure of large peripheral areas, because of the demographic decline. Decreasing infrastruc-

ture and accessibility, along with decreasing possibilities to generate income in return drives people to move into more central areas. This in turn contradicts the objectives of the Alpine Convention [§2, 2(a)], which strive to secure the whole Alpine area as a living space for people.

On the other hand, growing population in certain (central) regions increases the need for traffic connections between those regions. The construction of high quality roads usually tries to meet those needs. This is contrary to the objectives of transport protocol [§1, 1(a)], which explicitly gives preference to railway connections over roads.

Transport development supports the polarisation of functions

The preferences are presently clearly set out to concentrate effective transportation facilities between the central regions. However, from a viewpoint committed to sustainability, such a polarisation of land-use development is not the target. Polarisation and functional separation of regions induces growing traffic, along with its associated problems for the environment, health, living quality, and social systems. According to the Alpine Convention Art. 2 § 2(b), the “harmonious development of the whole region”, specifically mentioned that the “avoidance of over- or under-use” should be supported.

The mutual dependency of infrastructure development and land use changes requires an integrated approach to regional development. To increase the accessibility of peripheral regions it is more important to develop possibilities for gaining income than to extend traffic infrastructure.

E1.4.2 Effects on air quality

Air pollution and the deposition of pollutants from traffic contribute to acidification and eutrophication in terrestrial and aquatic ecosystems. Ozone acts as a cytotoxin and can in higher concentration cause damage to crops and forest trees as well as to wild plants.

Summer ozone concentrations in the Alps have slowly increased since 1995, but in most areas not significantly. Ozone concentrations have frequently (up to 87% in the extreme summer 2003) exceeded the EU target values (AOT40) for the protection of vegetation at background stations in almost all Alpine countries (see Fig. C3-8). Owing to the process of ozone generation, remote areas are much more affected by high ozone concentrations than are areas close to traffic emissions.

Whereas immissions at motorways and in towns are caused by local and regional emissions, extensive remote areas of the Alpine regions are affected especially by ozone and deposition of acidifying and eutrophying substances formed outside the Alps.

- Art. 2 (2c) of the Alpine Convention contains general regulations for the prevention of air pollution. The objective is “to drastically reduce the emission of pollutants and pollution problems in the Alpine region, together with inputs of harmful substances from outside the region, to a level which is not harmful to man, animals and plants”.

More precise (qualitative) objectives directly oriented on traffic emissions are part of the Transport Protocol.

- Art. 7 (2) focuses on the step-by-step reduction of contaminant emissions of all traffic carriers. Art. 3 (1a) requires the limitation of the input of substances from the atmosphere to a level which avoids damage of ecological structures and natural material cycles.
- Special attention to transboundary air pollutants is given in the Protocol on Mountain Forests (Art. 2a). The reduction of the input of substances from the atmosphere will prevent forest damages.

The Alpine Convention objectives comply with the agreed objectives of the European legal framework, but are not as detailed.

With respect to incidences where present and future European limit and target values for NO₂, NO_x, PM10 and ozone are severely exceeded in parts of the Alpine region, further it has to be stated that measures will be necessary to fulfil the objectives of the Alpine Convention.

E1.4.3 Effects on noise

Noise – traffic noise in particular – has a serious impact on human health. It may cause – as described at the beginning of this chapter – several diseases and also has psychological effects (e.g. loss of concentration, nervousness, bad mood etc.). Besides this it also influences social life by disturbing communication and even social behaviour, e.g. reduced helpfulness. The social structure of residential areas is also affected by (traffic) noise, because residential areas which are known as quiet are more expensive than areas close to main traffic roads, airports or railways. There is less social life and fewer social interactions in noisy neighbourhoods than in quiet ones.

But (traffic) noise also has economic effects such as costs for health impairments and costs due to noise-induced losses of work efficiency. Further noise means a decline in value for real estate and houses and finally costs of noise abatement measures cause high additional expenditure.

The environmental effects of noise cause a loss of quality of quiet recreation areas and remote landscapes. The effects on fauna, and on birds in particular, are reported in scientific studies, but are not much considered as serious effects in transport planning.

Noise emission and noise propagation in mountainous regions is remarkably different from in lowland areas. This not generally known fact highlights the importance of this topic for the Alps. Therefore joint efforts by all member states are required to change the recent direction of ever-increasing traffic noise.

The relevant AC objectives of the Traffic protocol demand that measures are enforced for noise abatement (Art. 3d) and to reduce step by step the noise emissions of all transport systems [Art. 7, (2)].

Measures for noise abatement have been taken up in the member states at strategic and project level, however an

evaluation for the AC area is not feasible due to limited data availability. An achievement of step-wise reduction of noise emissions cannot be proved, as comparison of noise levels at the Alpine space is not feasible at the moment. But an increase in noise emission must be regarded as evident due to remarkable rise in traffic flows and the extension of transport infrastructures.

E1.5 Synthesis

Observation at expert level have identified different drivers which trigger the development of traffic which then causes desired and undesired effects.

- The main drivers identified in this report are the growth and the ageing of population, economic growth, and land use change with spatial development.
- Traffic will react to the drivers by modal shifts, technological developments and further infrastructure development.
- The effects of transport are expected to be felt on transport itself by congestion, prolongation of travel times and external costs. But it will also cause environmental changes, have economic effects and influence quality of life, in positive and negative ways.

For the future a further increase in transport as well as an increase of some of its drivers (e.g. tourism), is predicted. Without a substantial change in transport policies, negative effects will be severe, sometimes triggering self-amplifying cause-effect relations (such as the concentration of population and infrastructure).

Coming back to the model of drivers and transport underlying this report, it might give some indications where solutions can be found to maintain or even improve mobility. The question arises of how a decoupling can be identified systematically between these drivers and traffic as well as between traffic and its adverse effects.

- Dealing with the interrelation of drivers and transport some important strategies will lie in the decoupling of economic growth from traffic growth in particular through a fair pricing system internalising external costs, but also through incentives to support modal shift and the correction of existing subsidies which contradict the objectives for the Alpine area. The link between population development, land-use changes and transport requires serious recognition in the spatial development of regions and municipalities.
- The avoidance of adverse transport effects can take place at the level of infrastructures and of technology: Technological improvement of vehicles (cars, trucks, trains, etc.) can reduce emissions of air pollutants and noise, may further improve safety for passengers and might offer better intermodal transport possibilities. Infrastructures as well can be improved in terms of land take, fragmentation effects, noise abatement or upgrade of transport effectiveness.

Also at European level, and from an integrated consideration of transport the call exists to define strategies for a traffic turnaround, traffic abatement, modal shift and technical optimisation. For this objectives are needed in terms of traffic safety, air pollution, noise, life quality, nature and landscape conservation, and climate change. This may be conceptualised at project level through an Economic Impact Report, for identification of winners and losers of transport development, or by a Health Impact Report for stronger consideration of the effects of transport on health (SACTRA 1999, SRU2005, PEP 2004).

The long-term measures and trans-European policies promoted at the EU level should be coupled with economic policies developed at national and lower levels in the Alpine area. These additional measures should aim to improve regional development, either building or strengthening existing networks to ensure better connections to the main infrastructures crossing the Alpine space. The appropriate level of policies to provide possible solutions will be elaborated in more depth in the chapter E2.

It is most probable that there will not be one big and simple solution. But maybe small changes at the different levels of drivers and cause-effect chains will offer efficient solutions which in their combination will mean progress towards the objectives of the Alpine Convention.

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E2 The Main Challenges for the Future

This final part of the report adopts a different perspective from the previous ones: making use of all the foregoing descriptions and explanations it tries to formulate the key issues for future political action on the basis of the principles of Alpine and European policy that have been developed in the last decades.

For systematically identifying the main political challenges that result from the foregoing overall analysis, this final part of the report

- recalls the overall policy objectives and frame conditions any policy in this realm has to respect
- goes back to the basic service functions that Alpine transport is supposed to fulfil and identifies the specific challenges from the perspective of these functions
- compares these perspectives and gives examples for cross-cutting measures and policy packages
- identifies and describes the big challenges for Alpine transport in the next ten years

E2.1 Overall objectives and frame conditions

E2.1.1 Sustainable development of the Alps – the Alpine Convention obligations

In the Alpine Convention (framework treaty) the Contracting Parties commit themselves to developing an integrated policy for the conservation and protection of the Alps and the sustainable use of resources, observing

- the principle of prevention,
- the principle that the party responsible is liable for the damage and
- the principle of cooperation.

In doing so they will take into account in an equilibrated way the interests of all Alpine states, their Alpine regions and the European Community.

Concerning transport, the frame convention requires measures which aim to reduce nuisances and risks caused by intra-Alpine and cross-Alpine transport to a level that is “supportable for humans, animals and plants and their living space”, “among other measures through a stronger modal shift to the rail, especially for freight, mainly through the realisation of appropriate infrastructures and market-conform incentives, without discrimination on the basis of nationality”. The provisions in the sections concerning Population and Culture, Spatial Planning, Air Quality, Soil Protection, Nature Protection and Tourism also point in this direction.

The Transport protocol asks for a coordinated transport policy by the contracting parties concerning all modes of transport, aiming for “sustainable development of the living space and the economic activities of the population living in the Alpine territory”. In detailed provisions it calls for the requirements of

the environment, of society and of the economy to be taken into account. It stresses the importance of the railways and bans the construction of new major roads for cross-Alpine transport. Concerning other policies it requires the transport policy objectives to be taken into account.

The protocol on Spatial Planning and Sustainable Development puts the transport issue in the larger context of spatial development, equally emphasising the importance of an integrated approach, of improving public transport and – if necessary – limiting motorised road traffic.

The protocol on Tourism also deals with transport issues, asking for support for measures to limit motorised transport in tourist resorts and for initiatives that boost the provision and the use of public transport for and by tourists.

European interests and EU policy objectives

The EU policy objectives are an important frame condition for a joint Alpine Transport Policy. The main cornerstones have been described in chapter D3.

E2.1.2 The embeddedness of the Alps in the European and the global economy

More generally than in the sense of the above legal frameworks, it has to be taken into account that due to national, European and global economic integration, the Alps are ever more strongly embedded in a larger context that sets limits to independent developments in the Alps.

As part of the European transport system, the Alpine transport system has to fulfil a series of important functions. It provides essential connections for the European economies and more specifically for the Alpine countries. This means also that technical and organisational interoperability of the road and rail systems has to be guaranteed. Moreover, the Alpine transport system is to a large extent dependent on technology development at international level.

Finally, most aspects of the Alpine economy are exposed to international competition. Hypothetical additional costs for businesses due to Alpine-specific sustainable mobility policies would have to be limited, or compensated for, by other competitive advantages such as attractive environment, better image, higher quality offers in the tourism industry, etc.

E2.2 Providing services in the framework of sustainable development

In order to identify the political challenges that result from the manifold and multi-layered picture that this report has drawn, it is helpful to ask the basic question: Which fundamental service functions is Alpine transport supposed to fulfil or to contribute to?

Five basic service functions related to the Alpine transport system can be distinguished in this context. Two of them mainly serve interests from outside the Alps:

- Ensuring freight transit and
- Ensuring passenger transit.

Two others correspond to intrinsic interests of the Alpine population:

- Ensuring access to services, goods and jobs for the Alpine population and
- Ensuring access to services and goods for the Alpine economy.

The last one combines external and internal interests:

- Ensuring long-range accessibility and local mobility for Alpine tourism.

The question is, how can these service functions be fulfilled in the framework of sustainable development, carefully taking into account the particularly sensitive Alpine environment?

E2.2.1 Ensuring freight transit

With increasing European integration freight transit through the Alps has become more and more important – for the whole European economy. However, the strong increase in the number of transiting trucks over the last decades has led to protests and intense political debates. (See chapters A1, A2, D6, E1.1.2)

Points to be considered

Most Alpine freight transit occurs on the road and causes more nuisance to nature, the landscape and the population of the Alps than does the equivalent freight transit on the railway.

Freight transit is expected to continue to grow considerably in the next decades – however, not to the same extent on all corridors. A further increase in road freight transport meets strong opposition in the concerned corridors and the transport protocol bans new major roads for cross-Alpine transit. Decreasing noxious gaseous emissions by trucks on the big corridors due to technical progress and stricter norms do not diminish other environmental impacts or public opposition.

Differences in road prices and traffic regulations between the Alpine countries as well as bottlenecks lead to considerable detours in long-range truck itineraries.

The economic potential of rail connections over long distances is far from being exploited. Freight transit on the rail is growing, but more slowly than on the road (with exceptions in Switzerland). Present competitive disadvantages of the rail include:

- lack of flexibility and coordination between the historical national railway companies and rail systems,
- insufficient reliability of present services,
- old, steep railway lines,
- lack of multimodal terminals, for example in some areas of Italy;
- strongly road-based logistics systems, inter-modal switching hindered by low degree of container use
- High costs of simple truck-transport systems (highway on the rail)

Four new base tunnels across the Alps are being built or planned in order to considerably increase rail transit capacity in both north-south and east-west directions. Two of them are under construction in Switzerland (Lötschberg, completion 2007/08; Gotthard, completion 2015/16,). Two more (Brenner, Lyon-Torino) are in the preparation phase for starting the construction of the main tunnels.

Specific challenges are..

- improving the rail transit infrastructure to allow for low operational costs, short travel times and high capacity on all main corridors,
- adjusting road and rail pricing in such a way that
 - » rail has a good competitive chance,
 - » freight flows are reasonably distributed between corridors, avoiding detour traffic, and
 - » the impact of road freight traffic remains below reasonable and jointly agreed limits,
- promoting multi-modal transport by
 - » providing appropriate terminal infrastructure and international connections,
 - » encouraging containerisation, and
 - » encouraging SMEs to use modern logistics systems,
- curbing the transport intensity of European economies by
 - » internalising external costs of the different modes,
 - » using up-to-date logistics, and
 - » reducing material flows and accelerating the shift towards service economies,
- developing alternatives to Alpine transit using marine routes.

E2.2.2 Ensuring passenger transit

Passenger transit through the Alps is essential for the European economy as well as for cultural exchange and social cohesion in Europe. Tourism traditionally makes up a large part of Alpine passenger transit. With the integration of European economies, cross-boundary and therefore cross-Alpine business travel, apart from tourism, increases in importance. Moreover, with the tertiarisation of European economies, business travel becomes even more important. The improvement of road and rail passenger connections has helped considerably to facilitate European integration (see chapters A1, A3, B4, E1.2.2).

Points to be considered

Most passenger transit occurs on the road and causes more nuisances than benefits to the Alpine population.

Peak loads exceed capacities on road and rail.

Present cross-border railway links are not well coordinated between national railway companies.

Specific challenges

- To improve technical interoperability and coordination between rail companies and to enhance competition between international passenger train companies
- To increase frequencies of public transport and improve upstream and downstream connections
- To improve the rail infrastructure for higher speed and higher capacity
- To improve international tariff and booking systems
- To smoothen peak loads
- To eliminate road bottlenecks in heavily populated areas

E2.2.3 Ensuring access to services, goods and jobs for the Alpine population

Ensuring and maintaining a certain degree of accessibility to services, goods and jobs is essential for living in the Alps. As well as transport, local provision of services and goods, education and labour market policies, urban planning, increased use of Information and Computing Technology (ICT) and local initiatives can all contribute to providing this access. Integrated approaches need to take into account the evolving needs of different parts of the population (see chapters B1, C2, D7, E1.3).

Points to be considered

Several factors have considerably improved the access of the Alpine population to services, goods and jobs over the last 50 years:

- the improvement of the road infrastructure
- the greatly increased ownership of private cars
- the internal migration to larger settlements

At the same time other factors have contributed to a sharp increase in the demand for such accessibilities:

- the decline of traditional Alpine economies and ways of life along with the increasing spread of urban lifestyles
- rising levels of education
- increasing specialisation in the labour market
- structural changes of urban functions in the EU as well as in the Alpine area

For those who do not own a private car, accessibility has often decreased because of the withdrawal of local public services, the decline of local trade and the decline of public transport.

In many peripheral areas decreasing population as well as ever tighter public budgets increase the pressure to cut spending on public infrastructure. The increasing risk of more frequent and stronger natural hazards and extreme weather events, as a possible consequence of climate change, affects the costs of transport infrastructure.

Marked differences in the local provision of services and goods between different areas with similar population densities show that considerable improvements might be possible through policies at different levels. The potential of ICT is far from being fully exploited.

In peripheral areas, improving the transport infrastructure without ensuring a sufficient level of local attractions (services, jobs etc.) has often resulted in economic and demographic decline.

Public transport services differ strongly between Alpine regions. Cross-border services in particular are often neglected. Railway connections linking destinations within the Alps are generally less well developed than those linking to the peri-Alpine centres.

Internal migration in the Alps has partially led to extended suburbanisation. The opportunities for considerably lowering the need for individual motorised transport in this relocation process have not been fully exploited. Best practice examples show that appropriate urban planning could make a difference.

Specific challenges are..

- improving the local availability of public and private services, also by a greater use of ICT,
- defining transparent and reliable accessibility standards for different categories of territories,
- lowering the need for individual motorised transport by appropriate urban planning,
- strengthening public transport in the Alps by improving
 - » the accessibility of peripheral areas,
 - » the mobility in agglomerations,
 - » the local cross-border connections,
 - » the connections between Alpine cities, and
- strengthening the exchange of experiences and joint learning processes across the whole Alpine bow in order to enhance the development of appropriate new models for living in the Alps.

Many of the challenges listed under “Ensuring passenger transit” are linked to challenges mentioned under E2.2.3 and could be mentioned here too.

E2.2.4 Ensuring access to services and goods for the Alpine economy

The accessibility needs of the Alpine economy are shifting as structural change progresses. Bulk transport of heavy goods is still important for the wood, mining and construction industries. But the increasingly important small, often high-tech industries and, even more so, the service sector have other needs: rapid and reliable transport of smaller freight and of passengers. ICT has an increasingly important role.

To ensure spatial access to services, goods and the labour market for the Alpine economy remains an essential objective of Alpine policies (see chapters B2, C1, A2, D6, E1.2).

Points to be considered

Intra-Alpine freight transport (including transport with its source or destination in the Alps, as defined by the Transport protocol; see introduction part A), with its associated negative impacts, makes up the largest part of freight transport in the Alps.

The share of intra-Alpine freight transport that goes by rail varies considerably between countries and does not only depend on the industries' freight structure: Switzerland has succeeded in maintaining a relatively strong role for rail.

Since the creation of the internal market, cross-border freight and passenger transport has considerably gained in importance also for the local economy. Whereas the road network has been able to meet this demand, the rail network is lagging behind.

Increasing specialisation leads to larger and increasingly cross-border labour market areas. Public passenger transport is not always keeping up with this development.

Compared to other regions in Europe, the physical accessibility by road of most parts of the Alps is rather good today. Better intra-Alpine rail and bus connections along the Alpine bow could facilitate the integration of Alpine economies.

Specific challenges are..

- encouraging structural change towards less material-intensive industries,
- improving freight connections on the railways, making use of the transit infrastructure,
- encouraging and facilitating increased use of ICT as a substitute for passenger transport and reaching a wider audience and
- improving public passenger transport connections on short, medium and long distances.

E2.2.5 Ensuring long-range accessibility and local mobility for Alpine tourism

Tourism is an important sector for the Alpine economy and the Alpine labour market. On important corridors and in large parts of the Alps, tourism accounts for a large proportion of passenger transport. Peak loads on weekends in holiday times regularly lead to congestions and severe delays for cars and trucks on the road, and to overcrowded trains. Therefore, looking for alternatives in this sector is an important issue (see chapters A3, B4, D7.2, E1.2.2).

Points to be considered

The overwhelming majority of tourists travel by car. This is particularly true for the summer season.

Many tourist destinations are located in remote areas and are poorly connected to public transport systems.

For many tourists, flexible mobility at their destination is a major reason for taking the car for the whole journey.

Ever shorter duration of stay leads to increased traffic.

Climate change will most likely bring some transformations in the tourism sector.

The increasing number of non-European visitors usually arrives by plane. Good public transport can be an argument for attracting them.

Best practice examples show that good sustainable mobility offers can be very successful.

Specific challenges are..

- guaranteeing easy accessibility of tourism destinations in the Alps by public transport from all European origins,
- ensuring mobility of tourists at their destination in the Alps with attractive public transport,
- developing offers, incentives and information systems for effectively promoting sustainable mobility, and
- levelling out peak traffic loads by staggering holidays in Europe and promoting appropriate offers in Alpine tourism.

E2.3 The need for integrated approaches

Looking at these challenges altogether, and formulating specific measures and programmes to meet them, two main observations emerge:

- The challenges emerging from the individual perspectives are in most cases complementary. Measures and programmes aiming at one service function would mostly have positive effects on the others.
- Physical transport is not the only solution for providing these services. Therefore, transport policy is not the only policy addressed by these challenges; other policies can and have to contribute. They are essential for reducing or containing the negative impacts of the transport system.

Considering transport issues from the perspective of sustainable development leads to asking for more integrated approaches compared to traditional transport policy. Integrating different territory-related policies at different levels becomes essential for success.

Three examples of measures may illustrate this:

- Investing in rail infrastructure and improving the international interoperability of railways will help to facilitate freight and passenger transit through the Alps and will reduce the traffic load on the road transit corridors.
- Enhancing access to broadband connections and improving people's ability to use the Internet will facilitate access to services both for individuals and for companies in remote areas.
- Urban planning, providing basic services within walking distance and allowing for easy access to public transport for large parts of the population would reduce the need to use private car and boost the local economy.

There are no single answers to these challenges. The variety of approaches that have been adopted in the Alpine countries and regions show that different combinations of measures are possible. However, they also show that efforts and success vary largely and there is a huge potential for mutual learning through cooperation and exchange.

In order to develop satisfactory and economically viable solutions, appropriate policy packages combining different kinds of users, investments and regulations, incentives and educational efforts are needed. Simple restrictive measures in one territory may cause problems in neighbouring ones.

Horizontal and vertical cooperation in a system of multi-level international governance thus becomes essential for tackling the transport problems in the Alps. An important task for the Alpine Convention will be to help develop appropriate instruments and cooperation networks.

E2.4 Towards a common Alpine transport policy for the next ten years

Combined policy approaches for reconciling seemingly contradictory demands

Alpine transport policy has to conciliate:

- the requests for accessibility at various scales and in various fields, such as long-range freight, intra-Alpine freight, tourist attractiveness, everyday life....
- the difficulty of mobilising funds for very large public infrastructure investments
- and the need to take into consideration the specific Alpine environment, the need to reduce all kinds of negative impacts of transport.

Different approaches will have to contribute to the solution of this problem:

- the promotion of less harmful modes of transport for passengers and goods
- the reduction of the structural needs for transport – fulfilling the requested services in another way
- the more efficient organisation of transport

A series of obstacles

Policies for sustainable transport and mobility in the Alps will have to propose innovative solutions for overcoming difficult obstacles. Some examples:

- the need to update the Alpine railway system in a difficult topographical context is leading to build four new tunnels and some new railway lines,
- the cost of such big investments, which requires the organisation of specific and considerable funding, using innovative methods such as PPP (Public Private Partnership), RPLP (Capacity-linked levy on heavy goods vehicles) at the very moment when there is high pressure on public finances and limited European funds,
- the large variety of national situations and interests, especially concerning freight transport:
 - » high road traffic growth rates on some corridors (Brenner, Ventimiglia) in particular,
 - » low share of the rail traffic on the corridors Austria/Italy and France/Italy, compared to a much higher share in Switzerland, and
 - » some Alpine countries directly linked to big European axes, others in a more peripheral situation;
- the objective difference between a country like Italy, for whom passing through the Alps is strategic, and countries like Austria or Switzerland, confronted with an important transit flow.

The five main challenges

For the next ten or fifteen years, Alpine countries will have to face the following five main challenges:

- **To develop a coherent inter-modal policy aiming at reducing road freight traffic.** It will have to include the implementation of big new rail infrastructures as well as pricing and regulation measures taking account of environmental and other external costs.
- **To ensure the safety of transport in the Alps, for each mode, both for the infrastructures and the services.**
- **To improve public passenger transport across and within the Alps.** Inter-City connections, urban transport, cross-border links, access to rural areas – all are necessary for reducing congestion and pollution while ensuring a high level of personal mobility. Best practice examples show how high levels can be attained.
- **To promote sustainable mobility in the Alpine Area, with specific policies for tourism mobility.** Best practice examples show the considerable potential for business and for the quality of life of the local populations, for example through cooperation between public transport companies, local authorities and tourism operators.
- **To develop integrated spatial planning policies, considering the strategic objective of reducing the structural needs of transport.** They will have to enhance the local provision of services and goods by various means. Better coordination of settlement patterns and infrastructures should also facilitate the accessibility and the efficiency of public transport.

Cooperation is essential for success

These challenges invite Alpine countries to develop specific and concrete cooperation, both between themselves and with the European Union:

- No real progress will be made without a general agreement between Alpine countries on concrete actions concerning these issues on the scale of the whole Alpine space.
- Important measures of an Alpine transport policy will have to use European policy instruments – such as the Eurovignette – and to take account of European principles – such as the principle of free circulation and the protection of the environment.
- An Alpine transport policy has to be linked to the European policy framework aiming at interoperability for increasing the capacity, quality and reliability of the rail system.
- Because of the inter-relation between the different Alpine corridors any regulation policy in one place has an impact on others. This is an important issue to be considered when discussing proposals such as tradable transit certificates.
- Cooperation needs commitment: in view of the step-by-step completion of the four new base tunnels between 2007 and 2020, a precise calendar for the implementation of an overall Alpine freight transport regime is very important. The Swiss constitution requires reducing truck transit by 50% two years after the completion of the new Lötschberg connection – only some few years ahead. In order to adapt their planning, transport operators need to know coming restrictions precisely and well in advance.