Prospects for transport and mobility in the Alps

Ruggero Schleicher-Tappeser

Abstract

Transport has always played a central role in the development of the Alpine space. Consequently, the first 'Report on the State of the Alps' of the Alpine Convention focuses on this issue. Relying on sources of all Alpine countries, it systematically adopts a perspective of sustainable development. The conclusions identify the societal functions of transport and formulate policy challenges. From the difficult writing process of this report some lessons can be drawn for future editions. Looking towards the future, this paper then identifies six major trends, goes more into detail concerning the challenge of climate change for Alpine transport and finally presents three scenarios.

Keywords: mobility, transport, Alpine Convention, sustainable development, climate change, scenarios

Transport in the Alps – a long history

Transport has always played a crucial role in the development of the Alpine space. Under Roman government an efficient road system not only allowed for Alpine transit, but also connected the Alpine settlements; most valleys, especially on the southern side seem to have been intensely cultivated and integrated into a larger economy. After the end of the Roman Empire, connections were interrupted and Alpine civilisation declined. At the height of the Middle Ages, the Alps experienced a second period of prosperity – not least due to international trade along Alpine transit routes. Afterwards however, Alpine economies increasingly lagged behind because the narrow valleys and slow transport hindered the adoption of agricultural and urban innovations. The construction of railways since the middle of the 19th century dramatically changed the situation. Alpine cities took advantage of better connections; industry began to play a major role. Rural areas, once rather isolated, painfully integrated into the market economy: strong depopulation, at first in the western Alps, was the consequence. With the diffusion of the car since the beginning of the 20th century and the development of a performing road infrastructure, this process has strongly accelerated. The reintegration of the Alps into the European economy was facilitated by the central geographic position and the exceptional landscape of this mountain range. The railway and then the car have catapulted large parts of the Alps from isolation into the middle of Europe with good access to large and wealthy markets. Simultaneously, against the backdrop of the dirty and conflict-ridden process of industrialisation in the large cities, the Alps were "rediscovered" as an antipode to these developments, as the realm of beautiful nature, freedom, and traditional lifestyles. The romantic image of the Alps, which developed primarily in northern Europe, started to transform the self-perception of the Alpine population

as well as the Alpine reality: Tourism developed and became an essential element of the Alpine economy. (Matthieu 1998, Bätzing 2003, or Schleicher-Tappeser 2007)

Today, in the context of a further acceleration of transport and the European integration, the Alps have become "smaller". Transit, once a welcome source of income for the Alpine economy, has become a burden. Mainly road traffic – transit as well as internal – increasingly compromises the quality of life and nature. For two thousand years transport policy in the Alps has been determined by alpine and non-alpine, by regional, national and European interests. Today, global concern for climate change adds another dimension that urgently calls for significant policy changes. The co-operation of all Alpine countries has become more important than ever. The Alpine Convention, an international treaty for the sustainable development of the Alps, tries to establish a framework for dealing with the issue of Alpine transport in a broad and appropriate context.

The first report on the state of the Alps: Transport and Mobility

In October 2006, the "Alpine Conference" – i.e. the Environmental Ministers of the contracting parties of the Alpine Convention – essentially agreed on the draft of the "Report on the State of the Alps" concerning Transport and Mobility. It took another half a year to edit the final English version, which was published in summer 2007 (Alpine Convention 2007).

This report was the first of its kind to be prepared by the Alpine Convention. Groups of authors provided by Italy, Austria, France and Germany were given less than one year to prepare the draft for the ministers. Coordination was provided by the Permanent Secretariat, while the whole process was supervised by an ad-hoc working group of national representatives, supported by the long-established Working Group Transport. As the issue of the report is one of the hottest and most complicated ones in Alpine politics, different perspectives and interests of the Alpine countries had to be carefully balanced while resources were extremely limited in view of the ambition to provide a good summary of hard facts stemming from eight different countries.

In any case, the report can be considered as an important step forward on this issue. It is most remarkable in three respects:

- It is the first detailed official, all-alpine overview on transport issues
- It systematically presents the transport system, its functions and related policies within a wider perspective of sustainable development
- In the conclusions the contracting parties adopt a comprehensive approach, identifying the main functions and formulating the main challenges

The structure of the report corresponds to this approach. While a first part describes the Alpine transport system, a second section investigates the driving forces of mobility and transport, such as population development, the economy, changes in land use and tourism. Part three focuses on selected effects in the three main dimensions of sustainable development, and a subsequent, fourth section provides a

comprehensive overview of the relevant transport policies at national and European levels. The final and conclusive part presents a synthesis of the findings and formulates the main challenges for the future, outlining a shared vision of the contracting parties for the years ahead.

Specifics and problems of Alpine transport

The report highlights the fact that transport in the Alps is characterised by a series of specifics which require special attention of national and European transport and mobility policies.

Most alpine transport is concentrated within a limited number of narrow corridors, which correspond to the main valleys where also most of the Alp's 13 million inhabitants live. Competition for land use on the bottom of the valleys is significant. The most frequented cross-alpine transit corridor, the Brenner corridor, is simultaneously the most populated one, measuring nearly twice the length of any other. Noise propagation in narrow valleys differs from that in the plains and leads to a much higher disturbance for the neighbouring inhabitants. Air exchange patterns in mountain valleys often lead to high concentrations of pollutants at the bottom, especially in winter time. Therefore, the impact of transport corridors in the Alps is much higher than in other areas. Another particularity of Alpine transport is the high cost of the infrastructure. For centuries big efforts have been made to build roads, rails, bridges and tunnels under difficult conditions. Infrastructure density per inhabitant now corresponds to European averages and provides fairly good accessibility for most inhabitants. However, differences between the various alpine countries are considerable.

The most discussed, Alpine transport issue is freight transit. Freight transport is growing rapidly – predominantly in the eastern Alps. The total freight transport crossing the Alps grew by 44% from 1994 to 2004. Whereas the French crossing points registered an increase of only 6%, the Swiss crossings grew by 48% over the same period. The Austrian increase was of 69%, establishing the Austrian share of total crossing at 57% (19% in the Swiss and 24% in the French part of the Alpine ridge). Road transport is dominating this development: during these ten years it increased by 56%, thereby raising the road share of total freight transport from 62% to 67%. Only in the Swiss part the rail dominates with 64%, whereas at French crossing points rail made up for only 14%.

However, freight is not the only problem. On the Brenner route, freight accounts for nearly 10,000 trucks daily on the most intense days in the middle of the week – rather constantly throughout the year. Passenger transport on the same route reaches peaks of 45,000 cars per day in august. Strong seasonal variations (below 15,000 in November) show the strong impact of tourism.

Agreed conclusions of the report

Perhaps the most innovative aspect of the report is that, in their conclusions, the Alpine states have explicitly agreed on an understanding of the role of transport,

which some years ago would not have been consensual: Transport and Mobility are not an aim for themselves, but they have to provide specific services in the framework of sustainable development. The final chapter distinguishes between five basic service functions of the Alpine transport system, considering Alpine and extra-Alpine interests:

- Ensuring freight transit
- Ensuring passenger transit
- Ensuring access to services, goods and jobs for the Alpine population
- Ensuring access to services and goods for the Alpine economy
- Ensuring long-range accessibility and local mobility for Alpine tourism

For each of these functions the report identifies specific aspects to be considered and recognises a series of distinct challenges, including transport and non-transport issues. In summary, the report states that physical transport is not the only solution for providing these services and calls for a broader approach than that of traditional transport policy: integrating different territory-related policies at different levels is considered essential for success.

Finally, the contracting parties agreed on five main challenges:

- To develop a coherent inter-modal policy aiming at reducing road freight traffic
- To ensure the safety of transport in the Alps, for each mode, both for the infrastructure and the services
- To improve public passenger transport across and within the Alps
- To promote sustainable mobility in the Alpine Area, with specific policies for tourism mobility
- To develop integrated, spatial planning policies, considering the strategic objective of reducing the structural needs of transport

Although the report makes no specific policy recommendations, it stresses the need for improved co-operation between the Alpine countries, also by means of using EU policy instruments, at the end. Reminding of the strong interdependencies, it calls for agreements upon concrete actions and reliable commitments.

In fact, interdependencies between countries in Alpine transport are considerable, both at the pan-alpine and at the cross-border level: All cross-alpine corridors concern more than one country. International railway connections require intense cooperation not only concerning infrastructure, but also on the operational level between national railway companies. Balancing the traffic between different transit corridors and modes of transport requires appropriately coordinated tariff policies and regulations. More specifically, in order to facilitate public transport access to Alpine tourism destinations, limited and local measures are not sufficient – efforts must include improved door-to-door connections at an international level. And finally, in many Alpine border areas – such as Italian-French border on the Mediterranean, the Rhine valley, the Geneva area, the lower Inn valley, the Salzburg area or the Trieste area – intense local cross-border traffic, strongly relying on private cars, calls for better cooperation in cross-border public transport. Three of the five main challenges identified in the report – coherent intermodal policy, public passenger

transport and tourism mobility – require international cooperation to a very high degree. Against this backdrop, this first comprehensive official report on transport and mobility in the Alps was overdue.

Difficulties to be overcome

From the methodological point of view, this first attempt to provide an official and comprehensive status report on Alpine transport and mobility offers a series of lessons. First of all, there were considerable difficulties in gathering and harmonising appropriate data. E.g. for passenger transport comparable figures are widely missing. In order to get an international Alpine overview, while being able to distinguish between regional specificities, much more effort in the research and recalculation of data is necessary. Moreover, as transport is a hot issue, concerning which Alpine countries have different perspectives and differing interests, sufficient time for discussion is needed for the development of shared interpretations. Mutual learning requires comparisons and benchmarking, but usually only the champions like to be compared in detail. OECD reports show the benefits such comparisons can bring. A stronger coordination role of the Permanent Secretariat, as well as sufficient central resources, could facilitate the process and improve the quality of such reports considerably. In order to provide harmonised pan-Alpine data that really brings an added value to Alpine policy making, an adequately endowed observatory, collaborating with European institutions, would be highly desirable.

Exploring possible futures: the main trends

When discussing possible developments of transport and mobility in the Alps during the next twenty years, the following overall trends seem to be essential.

Trend 1: Increasing attractiveness of Alpine fringes and concentration of the population in the major valleys

The last decades have seen a considerable, internal migration in the Alps: much of the population has moved to agglomerations in the major valleys – more than 50% now live in urban areas. The northern fringes of the Alps in Switzerland and Germany, as well as the entire southern slope, have increasingly attracted people, leading to an overall population growth. Most probably these trends will be reinforced by global warming.

Trend 2: Declining symbolic importance of the Alps

While easily accessible parts of the mountain range become increasingly attractive as living space, the symbolic importance of the Alps as romantic counterpart to industrialised cities is declining. The Alps as natural resort and cultural landscape certainly remain important in the public perception, but the unique symbolic and mythical

meaning they had, seems to be replaced by a more pragmatic appreciation. So does the once outstanding political importance.

Trend 3: Rising infrastructure costs due to natural risks

Climate change is leading to an increase of natural hazards. This trend also affects transport. The already high costs of Alpine infrastructure will tend to rise further. Additional investments will be necessary to secure transit routes and access.

Trend 4: Revision of territorial policies – differentiated accessibility

The above trends may strengthen voices that question the maintenance of extended public infrastructure in peripheral areas. Until recently at least, this was no issue in Switzerland, Austria and Germany. Territorial policies might begin to consider concepts involving explicitly differentiated accessibility standards.

Trend 5: Intensification of global and European transport flows

At the same time, European and global transport flows will probably intensify further. Improved railway links including high-speed corridors will continue to accelerate connections across the continent and between agglomerations. The big centres surrounding the Alps will be able to interconnect more intensely. The new baseline tunnels will change the geography of the wider Alpine space. Especially East-West freight flows will continue to increase.

Trend 6: Increasing awareness for climate change

The beginning impact of global warming and the initial awareness that this is real, that early adaptation is needed and that big efforts to curb carbon emissions are inevitable, will be a more powerful driving force for change than all previous environmental debates. Warming in the Alps is at least two times stronger than on a global average – impacts can be felt earlier than elsewhere. On the one hand, this could result in rather sudden pressure from the Alpine population for determined policy changes. On the other hand, investors, residents in the surrounding plains and tourists could rather soon anticipate snowless winters and the growing attractiveness of mountain climates in a warming world during the summer.

The climate challenge

The increase of transport and the growing share of road transport – in the Alps as overall in Europe – sharply contradict the need for the reduction of negative impacts upon global climate. According to EU commitments, overall greenhouse gas (GHG) emissions will have to decrease by 30% until 2020 compared to 1990 levels. In the first half of this 30-year period, between 1990 and 2005, instead of declining,

climate damaging emissions from transport in the EU15 grew by 26% (EEA 2007). Given the long lead times for investments and technological change – the lifespan of a car is about eleven years, building the Gotthard tunnel requires more than 15 years – it seems extremely difficult for the transport sector to deliver a 44% reduction in the rest of this period. This means that the political pressure for changes in the transport sector will become very strong. The share of the transport sector is considerable: in 2005 transportation made up for 21% of total GHG emissions in the EU15.

Despite missing figures for the Alpine area, the growth of Alpine freight transit referred to above (+44% between 1994 and 2004) indicates that the situation in the Alps is even worse than the EU15 average. However, data from the European Environment Agency (EEA 2007) show that the development varies considerably from country to country. The extraordinary growth of transport emissions in Austria (+91%, compared to +7% in Switzerland) can be partly explained by the growing exchange with the new accession countries and Eastern Europe after 1990, as well as by particularly low fuel taxes, which attract fuel tourism and detour routes in Alpine transit (Lange and Ruffini 2006). The per capita GHG emissions from transport alone (2.9 tons CO_2 eq. for Austria, 2.2 for Italy, 2.1 for Switzerland, 2.0 for Germany and 1.9 for France; calculations on the basis of EEA 2007 and corresponding country profiles) exceed the total long-term acceptable emissions per inhabitant (2 tons CO_2 eq., see Merkel 2007).

Carbon efficiencies of the different transport modes have not changed significantly during the past 20 years. Freight transport produces over five times more GHG emissions by road than by rail; for passenger transport the ratio is about one to three (EEA 2004). Shifting modes is therefore essential. Travelling by plane consumes more than three times as much energy as travelling by car (EEA 2003); climate damage is even worse (according to the IPCC another factor 2 to 4). Efforts for expanding airborne tourism are thus not appropriate.

Three scenarios

The manner in which the trends discussed above will shape the Alpine space will depend considerably upon the importance attached to international cooperation on specifically Alpine issues. In the context of an enlarged Europe, of increasing international conflicts, and of the historical challenge to rapidly wean our civilisation from dependence on fossil fuels, specifically Alpine issues may slip down further on the priority list of governments. The following scenarios reflect different degrees of cooperation.

Scenario 1: The Alps as model region

Governments, business and society undertake strong and early efforts to cope with climate change. A joint development of specifically alpine solutions allows reaching rapid innovations. Climate change adaptation and mitigation strategies are widely

recognised as exemplary. The transport and mobility challenges formulated in the first Report on the State of the Alps are the basis of early action. Governments at all levels strengthen appropriate cooperation bodies.

Cooperation on transit corridors has improved rapidly. An Alpine-wide system of tradable transit certificates leads to a considerable modal shift to the rail well beyond the Alpine space. The Alps are attractive for inhabitants and tourists. Population has increased. Public transport has been considerably improved. Tourism mainly relies on guests coming with public transport from all over Europe. Large parts of the Alps remain inhabitable. There are distinct areas depending less on rapid mobility, explicitly promoting another rhythm of life.

Early and coordinated action avoids costly and disruptive adaptation experienced in other places. Solutions developed in the Alps are being transferred elsewhere. Alpine business has gained further competitive advantages.

Scenario 2: Network of metropolises

The circum-Alpine large cities increasingly interact forming a strong network. High-speed trains connect these poles. Performing rail transit corridors respond to European needs and reduce environmental impacts.

Each of these poles cultivates his backyard in the Alps for recreation, water resources and commuting residents. There is no emphasis on specific co-operation for the Alpine core area. Population grows strongly at lower altitudes along the Alpine fringes. Upgraded local pubic transport infrastructure is clearly oriented to the metropolitan poles. The push for energy-efficient life in urban areas leads to a loss of Alpine specifics.

Scenario 3: Neglecting the Alps

Politics increasingly focus on national interests and urban areas. There is no priority and no shared view concerning the Alps. International rail corridors are still hampered by lacking cooperation. Funding for Alpine infrastructure is declining and focused on main connections. Depopulation in peripheral areas has accelerated.

There are two kinds of well-off "islands" in the Alps: on one hand performing urban resorts, on the other hand innovative and sustainable quiet destinations. Alpine fringes and agglomerations are experiencing strong population growth.

Expensive carbon-based passenger and freight transport and growing infrastructure costs increasingly become a problem in several Alpine countries, others have adapted in time. European cross-Alpine traffic runs into serious infrastructure and cost problems by 2020.

Conclusions

"Managing the future" of transport and mobility in the Alps involves many policy fields and will have far-reaching consequences for the Alpine space. International

co-operation at this old crossroad of European cultures and transport flows could be an opportunity for the delivery of outstanding contributions in answering urgent global challenges. The larger Alpine space has an enormous potential for developing innovative solutions – will this potential be used?

References

Alpine Convention 2007, *Report on the State of the Alps: Transport and Mobility*, Innsbruck

Bätzing, W. 2003, *Die Alpen*, München

European Environmental Agency 2003, *Indicator fact sheet TERM 2002 27 EU*, Copenhagen

European Environmental Agency 2004, *Indicator fact sheet TERM 2003 27 EEA 31*, Copenhagen

European Environmental Agency 2007, *Greenhouse gas emission trends and projections in Europe 2007*, Copenhagen

Lange, S. & F. Ruffini 2006, *Gemeinsam für eine nachhaltige Verkehrsstrategie im Alpenraum in MONITRAF Verkehr durch die Alpen*, Bern

Matthieu, J. 1998, *Geschichte der Alpen*, Wien

Merkel, A. 2007, *Rede von Bundeskanzlerin Merkel auf der Jahreskonferenz des Rates für Nachhaltige Entwicklung*, Berlin

Schleicher-Tappeser, R. 2007, *The Alpine Space as a sustainable business location in Cities and Regions Facing up to Change Hagbarth*, Bollschweil