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# CROSSING THE ALPINE BARRIER IN SWITZERLAND

**Present situation, political and technical measures and future plans**

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## The Main Message in Brief

1. **Road transport cannot go on growing like it did in the past.**
2. **Switzerland promotes a transport policy of combined freight transport rail/road/water/air**
3. **Switzerland, therefore, has decided to build the necessary rail capacity with two new Alpine tunnels for 2005-2010.**
4. **In the mean time, capacity for combined transport shall be increased by interim measures.**

# Introduction

The Alpine chain separates northern and southern Europe as a natural and historic deterrent. Overcoming this barrier was and is a worthwhile task. Traditionally, Switzerland owes its exceptional position as a through traffic country to the Alps. This pivotal function can be traced back as far as the 13th century. At that time, transport by pack animal through the St. Gotthard pass provided the shortest possible link between the North and the South. Since then, alas, much has changed. However, the strategic importance of the Alpine routes remains.

# 1 . Development of Transport in the Past

## 1.1 Development of freight transport in Europe

In the last 25 years, traffic has grown terrificly in Europe. Between 1965 until the mid eighties freight traffic in Europe has grown from 700 to 1'200 billion tonne-kilometres.

However, demand developped very differently from carrier to carrier (see figure 1)

- **Rail:** stagnation (index 1986: 102; 1965=100);
- **Road:** strong growth (index 1986: 245);
- **Inland waterways:** stagnation (index 1986: 116);
- **Pipelines:** until 1980 strong growth, since then: decrease (index 1986: 314)
- **Aviation:** strong growth in air freight;
- **Shipping:** strong growth.

This lead to the following modal split in European freight traffic based on tonne-kilometres (see figure 2):

| | 1965 | 1986 |
|---|---|---|
| Rail | 33% | 19% |
| Road | 48% | 63% |
| Inland waterways | 14% | 9% |
| Pipelines | 5% | 9% |
| Total | 100% | 100% |

Pipelines were able to increase their share in a phenomenal way thanks to the strong growth of oil consumption. At the same time the railways lost a considerable part of their share, while road transport increased its part very strongly. This development is based on tonne-kilometres and limited to land transport.

In the European context, however, maritime transport plays a major rôle: Between the ECMT countries, about **a third** of all goods are carried by maritime transport (based on tonnes).

## 1.2 Traffic crossing the Alps

From the Swiss point of view, the traffic crossing the Alps is in the centre of interest: This is the traffic between northern and southern Europe (to Italy) which crosses the Alps between the Brenner pass in Austria and Mont Cenis/Modane in France. It involves not only millions of people moving to southern European vacation resorts in the travel season, but especially freight traffic.

Since 1965 this freight traffic has grown from 20 million tonnes to 65 million tonnes in 1988. Almost the entire increase was absorbed by road transport (see figure 3).

However, the development in freight transport across the Alps was very different from country to country concerned (see figure 4). Switzerland has managed to keep the part of road transport reasonably low: 80 per cent of all goods transported through Switzerland are carried by rail. This figure compares very favourably with

France and Austria where rail has a share of only around 20 per cent. The reasons why Switzerland was spared the well-known avalanche of road through traffic, are known to everybody:
- Far-sighted railway policy;
- The weight limit of 28 tonnes;
- The ban on traffic by night and on Sundays.

However, the distribution of European freight traffic has to be kept in mind. An estimated 1'000 million tonnes of international freight traffic moved between all the western European countries in 1988. Only 7 per cent of this traffic crossed the Alps. 45 per cent of all European freight traffic is transported in the triangle between northern France, the BENELUX countries and the Federal Republic of Germany.

### 1.3 Main Factors Influencing this Development

The following factors have influenced this development in freight traffic:
- Basic changes in the production and the distribution structure; substitution of heavy and cheap by light and high-quality goods.
- Production for real-time needs: the so-called "just-in-time" - production which means elimination of buffer or intermediate storage.
- Extension of the motorway system in Europe leading to marked reduction in transport times.
- Transport prices have become cheaper relativ to general inflation.
- Transport, particularly freight traffic, does not cover all the costs it incurs. Apart from costs for the use of roads, there are considerable external or social costs carried by the society as a whole; they include:
  . Costs by emission of polutants and noise;
  . Costs for accidents not covered by insurance (e.g. subsidies to hospitals);
  . Dammages caused by vibration.

# 2. Future Trends in Transport Development

## 2.1 Basic Trends

The future basic conditions of the economy and in society should not differ a lot from the past. The following general trend can be expected if no specific change in policy occurs:

- Railways: Slight gain in quantity, yet further relative decrease in its share.
- Inland waterways: stagnation or decrease.
- Road: strong growth.
- Air freight: strong growth.
- Maritime transport: decrease.
- Pipeline: stagnation.

However, there are three major areas of concern which will influenc the future development of transport: Environmental problems, congestion on roads and the European transport policies.

## 2.2 Increasing Awareness of Environmental Problems

Environmental consciousness is very likely to grow in the next years an decades. Of major concern are the emissions of carbon-oxide, nitric oxyde heavy metals and the green house effect (the ozone hole). One has to realize that every combustion produces carbon-dioxyde. The experts all agree that climatic changes are most likely to occur; the not quite sure when. These experts call this problem "a gigantic global race against time". Perhaps we shall have to exchange all combustion engines within the next ten twenty years.

## 2.3 Congested Infrastructure Capacities

In the last three years, road freight transport has grown in West Germany and in the other EC countries by over 12 per cent per year!

How long can this continue? A very crude index for the increasing shortage of infrastructure capacity is shown in figure 5: Road traffic density expressed in metres of road lane per registered vehicle. Although traffic by foreign vehicles is not taken into account, the difference in density between 1970 and 1985 is striking.

There is a clear scissor movement between traffic volume and infrastructure investment in road transport: In the 15 major countries in western Europe, there was an increase by 30 per cent in traffic during the last 15 years, yet a decrease of infrastructure investment by 30 per cent (see figure 6)!

At the same time it becomes more and more difficult to construct new transport infrastructure: both on the road as on the rail side. We have terrific difficulties construction a newly planned fast railway line through Switzerland: Thousands file legal objection with the authorities. The same phenomenon is observed in most European countries.

In other words: Extremely serious bottlenecks are very likely to occur in all the more densely populated areas in Europe:
- in the BENELUX countries;
- in FRG;
- accross the Alps;
- practically in and around all agglomerations.

These prospects are rather bleak, for even if investments were stepped up considerably in the next decade, the infrastructure capacity needed could not built in time. "Just-in-time" - production could very easily become a "just-NOT-in-time" production. The European traffic embolism will become reality.

## 2.4 Technical Development in Transport

If one considers the electronic development that has taken place in the world of products, today's transport system does not appear as integrated and automated as possible. Basically, we use a system of the same characteristics as in the 19th century.

However, technical developments are likely to take place also in the transport sector in the near future. Major issues comprise:

- Continuing containerisation
- Development of highly automated freight transfer systems road/rail/ship
- Elctronic mailing for all transport documents
- High speeds for railways making it competitive with air traffic up to 700 kms
- Radio data systems (RDS) for better use of roads (computerised information about the best itineraries)
- Better adaption of vehicles to environmental requirements.

## 3. European Transport Policy

The creation of the Single Market sometime after the end of the year 1992 will bring about several improvements to competition both between and within the different carriers.

The development can be summarised with three labels:

- Liberalisation;
- Harmonisation;
- Lacking integration.

Liberalisation and harmonisation issues are treated by other speakers at this conference. I, therefore, concentrate on the third aspect.

### 3.1 Lacking Integrality of EC Transport Policy

In spite of the elements of unification, there are areas surrounding transport policy where the EC are behind the overall way of looking at things.

Firstly, the EC does not have European, **Community-wide infrastructure** policy and planning. Even if the Commission can allocate important financial means to infrastructure projects, this does not

replace an overall concept. Presently, the entire infrastructure planning remains a domain of the member states without the possibility of enforced co-ordination.

Secondly, there is a lacking link between EC transport policy and **town and country planning.** Regional policy of the EC cannot be considered as an development policy as it concentrates too much on assisting economically retarded regions. Development policy deserving that name must include consideration about the origin and avoidance of traffic flows. It must relate to the "Lebensraum" and to its structures.

Thirdly, there is no integration of **environmental considerations** into EC transport policy. The EC environmental policy is relatively recent. Growing awareness of environmental aspects within the EC, the creation of solid legal bases as well as corresponding ruling by the European Court of Justice improve the prospects of an harmonisation of environmental standards on a high level. Yet, an European transport policy sparing the environment still has to be developped. It has to be stressed, however, that, today, the problem with the environment does not rest with harmonisation of standards. The real task in environmental policy nowadays lies in <u>enforcement</u> and enforcement control. This is hardly looked at within the EC and, therefore, contrasts sharply with some of the non-EC countries.

### 3.2 <u>EC Demands on Switzerland</u>

In the context of the creation of the European Single Market the EC demands a lot from Switzerland both in the context of negociations concerning a through traffic agreement and of the negociations concerning the European Economic Area (ex Space).

The central demand is that Switzerland should assure its natural share in traffic crossing the Alps: Instead of the low share in road transport, Switzerland should road freight traffic that, now, has to make the detour through France and through Austria.

The detailed demands are the following:

- Acceptance of the EC standards concerning weights and measure (40 instead of 28 tonnes max. weight) - at least on a North-South-corridor.
- Levy of the ban on night and Sunday driving for lorries.
- Reducing administrative barriers on the borders for freight traffic.
- Abolishment of the heavy vehicles' tax.

# 4. Swiss Solutions to Transport Problems

## 4.1 General Attitude and Objectives

All along its history, Switzerland has always been concerned with providing and securing lines of communication for international traffic. It is Switzerland's will to fulfil this task also in future. However, this cannot be done by a road corridor for lorries of 40 tonnes through our country as it was requested by some of the European countries.

Switzerland is determined to keep up the weight limit of 28 tonnes and to convey the traffic sparing the environment as much as possible. This solution is dictated by the lacking capacity of our road system. A relatively small increase in the number of transiting trucks would inevitably lead to severe traffic jams on the North-South road links. Furthermore, there are aspects of ecology, quality of life and traffic safety as well as the density of population in our country. In our agglomerations, but particularly in the narrow Alpine valleys the internationally accepted standards of environmental pollution are already now exceeded by 20 to 35 per cent. It is, therefore, unthinkable to accept a doubling of road freight traffic by foreign vehicles which are not considered to be the cleanest. Because of limited capacity and severe impact upon man and his environment, the enormous additional quantitiy of freight traffic cannot any longer be transported through the Alps by road.

## 4.2 The Swiss Government's Transport Policy

Early in 1989, the Swiss Federal Council (cabinet) discussed the transport policy to be pursued in future. The Federal Council wants to maintain its objectives:

**The Swiss transport system must make the greatest possible contribution to the quality of life and to qualitative growth by satisfying the essential transport needs, without artificially increasing mobility.**

This particularly means that:
- Transport growth must be kept within limits.
- The transport modes must be improved and expanded in a well coordinated way.
- The negative impacts of traffic must be reduced.
- International traffic must be accomodated economically and sparing environment, energy and land as much as possible.
- Financial self-sufficiency of transport must be improved.
- Direct and indirect subsidies of transport must be reduced.

The Federal Council's general concept in transport policy may be summarized as follows:

**4 Principles**
- Free choice of the means of transport.
- Conveying additional traffic in accordance with our needs.
- Giving priority to public transport.
- Switzerland as a test country for combined traffic.

**4 Priorities**
- RAIL+BUS 2000.
- New Alpine Rail Axis (NARA) and extended through traffic corridor for combined traffic (interim solution).
- Completion of the national motorway network.
- Improvement of traffic in agglomerations.

**3 Stages**

- Until 1994, quadruplication of the combined transport offer on today's through axes.
- By the year 2000, implementation of RAIL+BUS 2000.
- By 2010, a Lötschberg base tunnel and a St. Gotthard base tunnel as the core of NARA.

## 4.3 Short Term Measures for Combined Traffic

In order to cope with the pressing demand in the shorter term, the Swiss Federal Council decided upon a through traffic corridor for combined traffic rail/road. The corridor is an **interim solution** until the new Alpine rail tunnels will be operational. At the same time, it is an element of the transport negotiation mandate between Switzerland and the EC. This new offer will be operational four years after the mandate is assigned. The sum of investments for the two corridors amounts to 1'465 million Swiss francs, of which 1'151 million Swiss francs concern the St. Gotthard.

The improvements of the transport offer consist mainly in the construction of a dual corridor for freight through traffic on the St. Gotthard and the Lötschberg/Simplon routes. Today's capacity in combined traffic across the St. Gotthard route will be tripled. However, vehicles of a corner height of only 3.80 metres will be conveyed by piggyback on this route. The Lötschberg line will be adapted for piggyback transport of vehicles of 4 metres height at the corners.

By 1994 the two corridors together will be able to cope with a demand four times the size of today.

## 4.4 Long Term Measures: Two New Alpine Tunnels

A new Alpine tunnel crossing the **St. Gotthard as the main axis**, with a new **Lötschberg base tunnel** will serve the future passenger and freight traffic through Switzerland (see figure 7). Apart from unaccompanied combined transport (conveyance of containers,

swap-bodies and articulated trailers), both lines will be able to cope with piggyback transport of trucks with a corner height of 4.20 metres.

There will be remarkable gains of time for passenger trains (travel time between Basle and Milan just over 3 hours instead of more than 5 hours). The capacity for freight trains will be increased considerably from 20 million to 60 million tonnes per year. These measures will make competitive tariffs for through traffic possible and will result in optimum economic benefit from the new Alpine axes integrated into the European high-speed railway network. Initially, a basic system of base tunnels and only the necessary access lines will be constructed for through traffic.

It is not just simply the construction of two Alpine tunnels which Switzerland is offering; but rather, a logistic Europe-oriented concept. According to most recent estimations, the total cost of this basic system, without full construction of all the access lines, will amount to more than 10 billion Swiss Francs. The internal Swiss benefit is not considered to amount to much. Yet Switzerland is ready to invest a great sum for a prospective European solution to transport problems.

## 5. Conclusions

Switzerland is willing to contribute a positive alternative system to Europe by investing in new and modern rail infrastructure favouring the use of combined transport. With an overall plan of measures, the Swiss Federal Council expects to develop and intensify the traditional Swiss through traffic policy and make accessible an efficient transport infrastructure through the Alps.

This through traffic strategy should, on the one hand, reflect national interests; on the other hand, however, it should complement the **European transport policy**. The construction of the **Channel Tunnel** is already a positive step towards combined transport.

In planning major investments for a Swiss through traffic strategy, the Federal Council believes that the European Community will support a transport policy favouring the environment and promote rail through traffic by constructing transfer terminals and other supporting improvements to the infrastructure.

We do not need a transport policy oriented one-sidedly towards economic growth. We need a transport policy which is co-ordinated
- among all the carriers;
- within all European countries;
- with all the vital concerns of society.

Appendix

# Switzerland's Through Traffic Concept in Figures

The implementation of the measures for combined transport, planned by the Federal Council, is scheduled as follows:

## 1 Short and medium-term measures for through traffic

| | |
|---|---|
| 1988 | 114'00 shipments transported by piggyback: lorries, articulated vehicles, containers (approx. 2.5 million tonnes net) |
| 1989 | approx. 137'000 shipments; capacity available: 164'000 shipments or about 3.6 million tonnes net |
| 1992-93 | planned capacity: 300'000 shipments or 6.6 million tonnes net |
| **1994** | **planned capacity: 470'000 shipments or 10.5 million tonnes net; admissible height of vehicles at corners: 4.00 metres via Lötschberg-Simplon** |

From 1988 to 1993-94 Switzerland will be able to meet an increase in demand of 420 per cent. The real demand at the time and the supporting measures implemented abroad (e.g. transshipment terminals) will determine the actual capacity offered. Here, the Brussels EC authorities have an enviable task ahead. They are in level. The transshipment terminals must be planned throughout the entire European Community in such a manner that an economically sound movement of freight is assured from one economic area to another.

## 2 Long-term Measures for Through Traffic

a) Until about 2005: Construction of a **Lötschberg base tunnel** of 28.4 kms for vehicles of a height of 4.20 metres at the corners; capacity: 220 trains per day and two directions (today 170); construction time: approx. 8 years.
b) Until about 2010: Construction of a **St. Gotthard base tunnel** of 49 kms for vehicles of a height of 4.20 metres at the corners; capacity: 400 trains per day and two directions (today: 250 trains); construction time: approx. 14 years.

The total capacity of both tunnels will allow 620 trains per day (currently the figure is 420). This capacity can be increased considerably by extending the access lines later.

After the final decision by parliament and a possible general referendum, the construction of the two tunnels will commence simultaneously.