

# Transalpine Transportation Policies in Switzerland and Austria

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The Alpine countries of Switzerland and Austria must, like France, deal with a number of problems caused by transit traffic. In the Alps between the Fréjus Pass (France–Italy) and the Brenner Pass (Austria–Italy), transit traffic weighs in at about 36.5 million tonnes and is equivalent to 41% of road traffic crossing the French Alps. This transit traffic accounts for 90% of all road traffic crossing the Austrian Alps and 52% of that crossing the Swiss Alps, with a growth rate of 14% for both countries between 1997 and 1998. Switzerland is developing a policy aimed at discouraging road traffic through a new tax on road use and incentives to encourage rail use. In addition, railway tunnels are under construction at the St. Gotthard Pass and at Lötschberg.

Although Switzerland is not an EU member state, it recently signed agreements with the EU anticipating the deregulation of truck traffic in the 28- to 40-tonne range under a quota system starting in 2001.

Austria's transportation policy is being developed within the framework of EU regulations. Here, the aim is also to discourage transit traffic on Austrian roads. Measures will include an ecopoint system (to reduce exhaust emissions) and bilateral quotas with East European countries. New fees will be levied from 2002 for using the transportation infrastructure and this could lead to reductions in tolls at the Brenner Pass.

This article examines current trends in the transportation policy of Switzerland and Austria and recent developments in infrastructure projects.

Switzerland and Austria are faced with high levels of heavy-vehicle transit traffic in mountain areas. This road traffic follows corridors that wind through densely populated valleys, damaging the fragile Alpine environment along the way. Only in Switzerland can railways compete with these transalpine roads.

Switzerland and Austria have adopted different approaches to road traffic problems. However, both are adopting measures that comply with their status within the European legal framework.

In August and December 1999, a delegation representing France's motorway interests visited Switzerland and Austria within the framework of the Association of French Motorway Companies (ASFA) Economic Research Programme. The purpose was to learn about current transportation policy directions and developments in infrastructure projects.

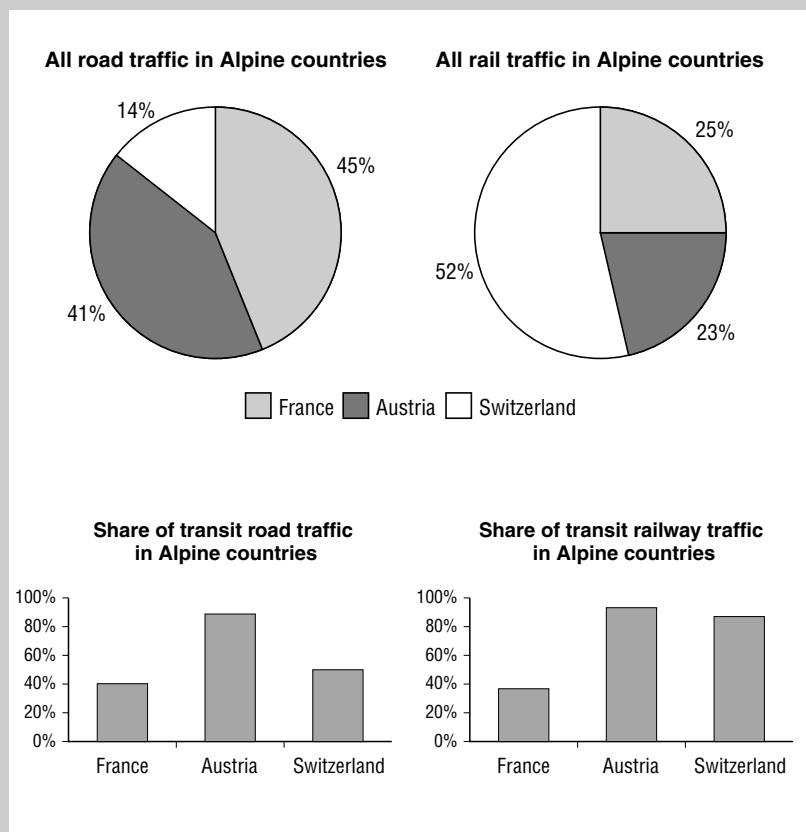
This article summarizes the information obtained from meetings with representatives of national and local

governments, freight carriers and the rail industry. It places this information within the perspective of problems seen in transport of freight through the Alps and highlights some poorly known factors.

## Transalpine Freight Tonnage

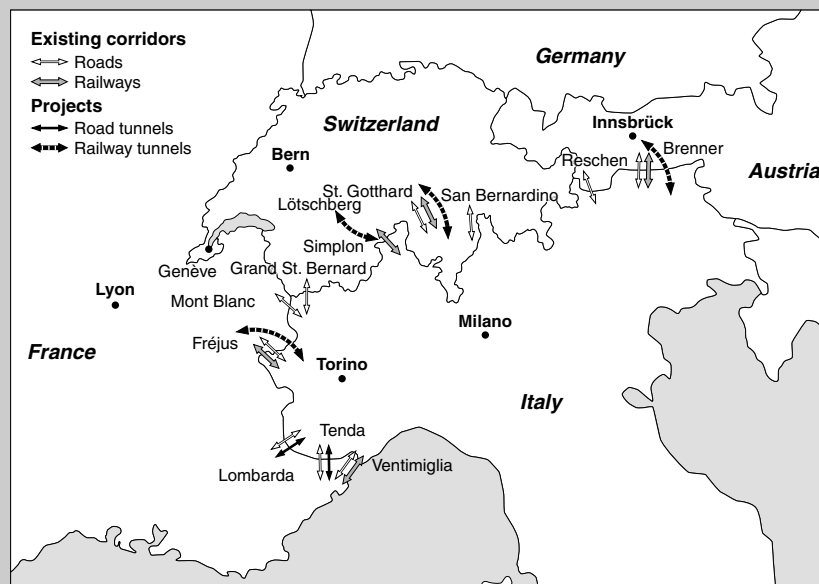
According to Swiss sources<sup>1</sup>, total freight traffic on the Fréjus–Brenner–Alpine segment amounted to 95 million tonnes in 1998 of which 61% was carried by road and 39% by rail. French roads in this Alpine area carried almost 26 million tonnes of freight compared to 24 million for Austria and 8 million for Switzerland. Railways

### Road and Rail Traffic



carried 9.25, 8.5 and 19 million tonnes, respectively, for these three countries. Only Swiss railways enjoy the lion's share (72%) of all freight traffic due to the ban on trucks over 28-tonnes and to a well-established hands-on policy of promoting railways. In Austria and France, railways carry only about 26% of all freight. In France, transit road traffic represents 41% of all transalpine road traffic (domestic + import/export + transit). The comparable figures in Austria and Switzerland are 90% and 52%, respectively. For rail traffic, the figures are 36.5%, 93%, and 86.5%. Between 1986 and 1997, road transport experienced an average annual growth rate of 4.5% with marked differences between corridors (5.4% in French corridor, 2.9% in Austrian, and 7.6% in Swiss). Average growth rates for transit

### Major Transalpine Road and Rail Corridors



### Traffic Crossing Swiss, French and Austrian Borders between 1986 and 1997

(million tonnes)

	Routes			Conventional railway			Mixed transport		
	1986	1997	Growth rate	1986	1997	Growth rate	1986	1997	Growth rate
Ventimiglia	5.4	11.6	114.8%	1.6	0.9	-43.8%	0	0	0.0%
Mont Cenis	5.5	12.6	129.1%	4.9	5.0	2.0%	2.1	5.1	142.9%
Mont Blanc	8.5	12.7	49.4%						
French corridor	19.4	36.9	90.2%	6.5	5.9	-9.2%	2.1	5.1	142.9%
Grand St. Bernard	0.3	0.3	0.0%						
Simplon	0.1	0.1	0.0%	2.5	4	60.0%	0.1	0.3	200.0%
St. Gotthard	2.3	6	160.9%	7.7	5.3	-31.2%	2.7	7.4	174.1%
San Bernardino	0.4	0.6	50.0%						
Swiss corridor	3.1	7	125.8%	10.2	9.3	-8.8%	2.8	7.7	175.0%
Reschen	0.5	1.2	140.0%						
Brenner	16.5	20.1	21.8%	2.9	3.1	6.9%	1	3.1	210.0%
Felbertauern	0.3	0.5	66.7%						
Tauern	3.9	5.8	48.7%	4	3.9	-2.5%	0.5	0.5	0.0%
Schober	7.8	8.5	9.0%	3.6	3.9	8.3%	0.5	0.4	-20.0%
Semmering	2.8	4.4	57.1%	5.3	8.7	64.2%	0.2	0.4	100%
Wechsel	2.9	7	141.4%	0.4	0	-100%	0	0	0.0%
Austrian corridor	34.7	47.5	36.9%	16.2	19.6	21%	2.2	4.4	100.0%
<b>Total</b>	<b>57.2</b>	<b>91.4</b>	<b>59.8%</b>	<b>32.9</b>	<b>34.8</b>	<b>5.8%</b>	<b>7.1</b>	<b>17.2</b>	<b>142.3%</b>

The data for piggyback transport are not shown in the table. However, for 1997, the Brenner Pass was 1.6 million tonnes and St. Gotthard was 1 million tonnes.

Source: Service for General Traffic Studies (1988), Alpine Freight Traffic, GVF-News, No. 48.1

traffic were 3.6% for the entire Alpine segment, compared to 4.6% for the French corridor, 2.3% for the Austrian, and 11.35% for the Swiss.

Road transit traffic through the Alps generates the most concern and is estimated at almost 36.5 million tonnes in the above-mentioned transalpine segment. This tonnage continues to grow. Railways compete effectively with roads only when they offer mixed and piggyback transport.

In 1997 and 1998, road traffic experienced high growth rates—4% in France, and a high of 14% in Switzerland and Austria. The results of combined surveys by the French, Austrian and Swiss authorities were published in 2000 and provides figures based on uniform standards<sup>2</sup>. Although the most recent traffic estimates made within the framework of the Pan-European Transport System (PETS) project<sup>3</sup> anticipate a 1.46-fold increase<sup>4</sup> in heavy truck traffic through the Alps by 2010, the increasing concentration of road traffic is already creating serious problems that are being tackled by Switzerland and Austria in different ways.

### Swiss Solutions

After voting against EU membership in 1992, the Swiss voted in 1994 in favour of an Alps Initiative to protect mountainous areas from the negative effects of transporting freight by road. As Switzerland promotes this Initiative, it will have to open its market to road transport, introduce measures to transfer road freight to railways, and adopt coordinated policies within the Alpine region.

Switzerland is located at the geographical heart of Europe, and is ratifying agreements with the EU and individual member states<sup>5</sup> encompassing road transportation issues. The ratification process was completed on 11 July 2000.

The seven EU Bilateral Agreements (transportation and free circulation of people are the most contentious) are likely to establish new rates for using infrastructure, deregulation of trucks of up to 34 tonnes and introduction of quotas for trucks of up to 40 tonnes, but not before the first half of 2001.

The railway tunnels at Lötschberg and St. Gotthard will probably not start operation before early 2008 and 2012, respectively, since improvement of upstream and downstream networks for the entire north-south corridors is still in planning.

The next sections discuss the Swiss transportation strategy and examine transport policy and financing. Then, we examine some of the technical and economic aspects of the railway tunnel projects (the backbone of Swiss transport policy). Finally, we place the construction of tunnels within the framework of the agreements recently signed with the EU.

### Swiss Strategy

Switzerland's strategy is based on two principles that respect its framework of compromise with the European Commission:

- Discouraging road freight traffic by tax on road use
- Attracting traffic to railways by improving rail services (mixed and piggyback)

The choice was made to transfer the equivalent of the entire road transit tonnage and the post-1999 growth in Switzerland's transalpine domestic freight tonnage to railways once the new railway tunnels are completed. It was decided to transfer 650,000 journeys from road to rail each year by 2010, using new tunnels accommodating piggyback transport. This initiative is called New Railway Lines through the Alps (NLFA).

The Swiss Federal Council stipulated the

following conditions when implementing this strategy:

- Swiss and foreign trucks must be treated equally—measures will apply to all transalpine transportation of goods, not just to transit from one border to the next.
- No prohibitions should be implemented but market controls should be used (introduction of new tax on use of infrastructure).
- Enforcement should not result in bypass traffic via France or Austria.

This Swiss strategy follows a uniform and hierarchical transport policy outlined below.

### Swiss Transport Policy

Swiss transport policy is organized around several parts:

- Rail 2000: Improvement of north-south and east-west railway links (both passenger and freight)
- NLFA: Construction of railway tunnels at Lötschberg, St. Gotthard, Zimmerberg, and Ceneri (extensions and improvements)
- Connection to trans-European high-speed rail networks
- Development of noise-reduction measures

This policy will be implemented according to the following schedule:

- 1995–2005: Improvement of north-south links
- 2010–20 : Improvement of east-west links
- 2000–12 : Construction of NLFA
- 2001–11 : Construction of trans-European high-speed links
- 2002–13 : Implementation of noise-reduction measures

Implementation will obviously require extensive financing.

## Financing by Proportional Heavy Vehicle Tax

Table 1 shows how Switzerland intends to finance its transport policy. The required total is FFr122 billion (FFr1=US\$ 0.14) with tunnel construction (including improvement of Zimmerberg Tunnel) accounting for FFr54.4 billion. Switzerland intends to self-finance its transport policy with borrowing for 16% of the investment. A special fund has been set up to collect money from the various sources for the various uses. The financial keystone is the Proportional Heavy Vehicle Tax (RPLP) to be implemented in 2001 and providing almost 55% of all revenue for implementing the policy. One third of the revenue will go to the cantons to cover the cost of roadside infrastructure, and two-thirds will go to the federal government to finance the NLFA. The RPLP will be levied according to distance and weight and will apply to all vehicles with a gross weight over 3.5 tonnes whether loaded or empty travelling in Switzerland<sup>6</sup>. The tax is to be reduced (by up to 20%) for vehicles under 28 tonnes causing little pollution and is to

**Table 1 Funding of Swiss Transport Policy**

(FFr billions)

	Source of funds	Use of funds
RPLP	66.8	
Value Added Tax (VAT) (+ 0.1%)	23.2	
Gasoline tax (fossil fuels)	12.0	
Loans	20.0	
<b>Total</b>	<b>122</b>	
NLFA (tunnels, including Zimmerberg)		54.4
Rail 2000		53.6
Trans-European TGV links		4.8
Noise countermeasures		9.2
<b>Total</b>		<b>122</b>

be increased for vehicles causing more pollution.

The planned rate in 2001 for 34-tonne vehicles will be FFr0.064 per tonne-km. When the first railway tunnel is opened in early 2008, the rates will reach their maximum level of FFr0.12 per tonne-km. Consequently, the 300-km journey from Basel to Chiasso will cost FFr1300 (SFr325—SFr1=US\$0.62) with an upper limit of SFr330 according to a Swiss–EU agreement.

## Lötschberg and St. Gotthard Railway Tunnels

### Existing transalpine routes

The current railway tunnel at Lötschberg now carries motor vehicles on flat wagons and the St. Gotthard tunnels permit passage of both road and rail traffic. According to the Department of Communications, Transportation and Energy (DETEC), approximately 14 million tonnes of freight are carried in trucks through these tunnels (by road and rail piggyback) with an additional 8 million tonnes carried by conventional or mixed railways. This totals 22 million tonnes of freight carried through these two corridors. In 1998, 1.235 million heavy trucks crossed the Swiss Alps by road (52% in transit). St. Gotthard alone accounted for 84% of this traffic (80% of all transit traffic). The total number of heavy trucks on this route increased by 7.4% between 1997 and 1998 (14% for transit traffic). Simplon handled only 2.5% of all traffic whereas the more westerly Grand St. Bernard accounted for 11% of all traffic (131,000 heavy trucks per year)<sup>7</sup>. The Lötschberg Tunnel corridor links Novara (Italy) with Freiburg (Germany) via Basel (Switzerland). Thanks to improvements in 1999, the Lötschberg



Vertical shaft at new St. Gotthard Tunnel

(L. Clement)

Tunnel can now accommodate 4-m wide trucks. However, delays at the Italian end of Simplon prevented movement of traffic through Domodossola until late 2000. The St. Gotthard Tunnel corridor stretches from Lugano (Italy) to Freiburg (Germany) through Basel (Switzerland). Unfortunately, it has a maximum width of 3.8 m, preventing passage of modern trucks.

Construction of new tunnels

The proposed transfer of freight from road to rail in Switzerland requires new railway tunnels at Lötschberg and St. Gotthard, costing FFr14 billion and FFr34.4 billion, respectively. The new St. Gotthard tunnel will be complemented at the southern end by the Ceneri Tunnel (15.6 km) and at the northern end by the Zimmerberg Tunnel (11.3-km extension of present tunnel). No date has been set for the opening of the complete north–south link. The purpose of these two railway tunnel projects is not to improve capacity, which is already quite sufficient, but is to improve safety, establish a low-environmental-impact transport corridor, and improve freight shipping with competitive times across Switzerland.



Access tunnel for vertical shaft at new Lötschberg Tunnel

(L. Clement)

Tunnels under Construction

	Lötschberg	St. Gotthard
Start of operations	2008	2012
Altitude (m)	750	550
Length (km)	34.6	57
Entrance/exit	Raron/Frutingen	Biasca/Erstfeld
System	One one-way tunnel (21.6 km) Two one-way tunnels (13 km) Possible extension to two one-way tunnels over entire length	Two one-way tunnels
Construction to date	Start of horizontal boring	Start of horizontal boring
Boring locations	Steg, Ferden, Mitholtz	Amsteg, Sedrun, Faido, Piora
Boring method	Blasting + tunnel borers	Blasting + tunnel borers
Diameter (m)	9.50	9.20
Height at angles, wagons (m)	4.20	4.20
Wagon width (m)	2.60	2.60
Cost including improvements (FFr)	14 billion	34.4 billion
Cost per km (FFr)	404 million	604 million
Average speed of freight trains (km/h)	80	80

When the two railway tunnel projects are completed, it will be possible to send trucks through the Alps piggybacked on dedicated flat wagons. In keeping with the government’s transport policy, Swiss Federal Railways (CFF/SBB/FFS) will encourage transport

of unaccompanied rather than accompanied trucks.

Traffic projections and socio-economic advantages

In Switzerland, railway construction is not necessarily expected to result in eventual railway profits. Acting as the so-called ‘final authority,’ the people of Switzerland have decided that transit trucks must be carried by rail. This is a political rather than an economic decision. Switzerland has enormous freedom in the area of transport planning and regulation because the people have a large say in political decisions. Moreover, the country has considerable ability to raise funds, does not have to abide by EU regulations (Switzerland is not an EU member state and does not have to abide by EU Directive 99/62 EEC), and can establish irregular special funds or even change funding sources. According to documents submitted to the Swiss parliament, when both new railway tunnels are open, planned capacity is expected to be between 51 and 74 million

tonnes (66% for St. Gotthard Tunnel, 33% for Lötschberg Tunnel), depending on the type of equipment used<sup>8</sup>.

The reference study<sup>9</sup> used here dates from 1996 and anticipates approximately 58 million tonnes in 2010, assuming that all Alpine tunnels are in operation (including a capacity upgrade for Mont Cenis) and assuming also that heavy vehicles are limited to 40 tonnes. According to the medium-term scenario, the annual tonnage will be 52 million tonnes. This scenario is most likely if work proceeds as planned (Lötschberg and St. Gotthard open, Brenner not open, capacity improvement of Mont Cenis not ready, and vehicle tonnage limited to 34 tonnes). However, if present trends continue, the annual tonnage will be only 39 million tonnes.

Incentives expected to amount to SFr300 million annually for covering operating costs are planned to encourage railway operators to ship freight piggyback through the tunnels. However, there will be no direct grants and financing costs will not be subject to incentives.

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### Switzerland–EU Agreement

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The construction of railway tunnels in Switzerland cannot be considered in isolation because Switzerland has RPLP agreements with the EU that gradually deregulate passage of trucks over 28 tonnes through the country.

Seven agreements were signed in 1999 and ratified in July 2000. The agreement on land transport was highly contentious and in addition to acknowledged hot issues, it regulates licensing of drivers, hours on the road, dangerous products, and exhaust emissions. The opening of the Swiss road network to heavy trucks from throughout Europe is closely linked to introduction of a fee system for using infrastructure, which hinges on pollution emissions of trucks with proportional

penalties. It should be noted that part of the agreement calls for integration of Switzerland's railway system into the existing international system, as well as links to the trans-European networks.

The agreement is related to the RPLP because this fee system will replace the 28-tonne limit currently set for trucks. In addition to the RPLP, the agreement also introduces quotas for vehicle transiting Switzerland, which will open its borders first to 34-tonne trucks (no quotas) and then to 40-tonne trucks (quotas). Quotas for heavy trucks up to 40 tonnes will be 300,000 in 2001 and 2002, increasing to 400,000 in 2003 and 2004. Full deregulation will be achieved in 2005. Quotas will be apportioned in relation to each EU member state's transport requirements with a basic quota of 1500. (This provision is strongly opposed by some states who see it as an incentive for some countries to attract freight from areas where they would not usually seek it.) France will receive 16.3% of the quota, Germany 38.2% and Italy 21.5%.

Without going into details, the agreement:

- Establishes RPLP levels (before and after opening of first tunnel accommodating piggyback transport)
- Specifies rules for empty or lightly loaded trucks
- Maintains ban on night travel (while improving Customs procedures at borders)
- Introduces a protective clause (increase of road use charges under certain conditions).

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### Switzerland's place in Europe

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As a palliative to the 'No' vote in the Swiss referendum on joining the EU, the Swiss parliament approved seven agreements with the EU by an overwhelming majority on 31 August 1999, setting the stage for compromises that benefit Switzerland and the EU as a whole. The agreements were

ratified by the EU member states in July 2000. Switzerland's place in Europe as well as the EU's relationship with Switzerland are now being clarified.

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### Unknown Factors

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The above issues rest on a number of still-unknown factors. The first is the impact of the RPLP on the business of Swiss carriers. The second is what conditions will be required to ensure transfer of road freight to railways.

### Impact of RPLP

Three-quarters of all revenue from the RPLP will come from Swiss carriers, which is causing some debate in Switzerland with representatives of Swiss carriers believing that the tax will lead to more smaller trucks, withdrawal by major trucking companies, and a 10% to 25% rise in commodity prices depending on the industrial sector. Swiss carriers say they will suffocate under this new tax and see their major contribution to the RPLP as unfair<sup>10</sup> and an enormous burden when coupled with costs of installing in-cab terminals<sup>11</sup>.

Studies by DETEC show that the cost structure of Swiss railways clearly favours use of heavy road vehicles. The RPLP will not reverse this trend—light trucks (under 3.5 tonnes) will still be penalized in the sense that they cannot offer advantageous tonne-km conditions. However, to protect the Swiss road transport industry, 40-tonne quotas are planned.

To encourage transfer of road freight to rail, road transport quotas will be made conditional upon use of railways, under a system known as reward quotas. In addition, federal government representatives state that the RPLP will have little negative impact, since it will represent only a minimal sum per person per year.

Anticipated Situation of Heavy Vehicles

< 28 tonne	Existing freedom of circulation	Quotas and preferential rates for light loads (7.5 to 28 tonnes)
28–34 tonne	Freedom of circulation starting in 2001	
34–40 tonne	Circulation by quota from 2001 to 2004	

Road–rail transfers

One important question for which there is no definite answer is the extent to which road freight can and will be transferred to rail. Perhaps the only people who can answer this question are shipping agents and service providers who devise strategies for selecting routes after considering price and time. However, the Swiss authorities have adopted all these measures in order to ensure that transfer is feasible from both the technical and operational viewpoints. In practical terms, bearing in mind that Switzerland plans no road improvements<sup>12</sup>, the high volumes of road traffic and congestion that will prevail when the tunnels open should encourage transfer to rail.

The transfer of road freight to rail depends upon five factors:

- Future actions of France and Austria  
Heavy trucks of up to 34 tonnes and then up to 40 tonnes coming from north and south of Switzerland will pay almost equal infrastructure usage charges.
- Policies encouraging rail freight transport
- Congestion levels on alternative road routes in Switzerland, France and Austria
- Continuance of CFF/SBB/FFS marketing policies to increase demand and increase the railway's market share  
CFF/SBB/FFS's goal is 28% growth in freight transport between 1999 and 2005.
- Competition between two railway tunnels

The Swiss government has one more device for collecting fees from road freight carriers—the Tax on Alpine Transit (TTA). This tax cannot be implemented at present because it is precluded by the Switzerland–EU agreements that set a maximum limit on transit costs. If implemented, this tax would be levied on top of the RPLP on all heavy trucks on the St. Gotthard, San Bernardino, Simplon and Grand St. Bernard axes. The tax rate is unknown but it may be adjusted in relation to the RPLP based on the actual transfer of traffic from road to rail.

Austria

Austria faces the same problems of environmental degradation by road transit traffic as Switzerland. In 1988, the government determined that increases in road freight had greatly increased pollution and noise levels. The Tyrol, which carries 80% of all transit traffic, lobbied the government to negotiate a settlement of this problem with the EU. In 1987, Austria severely restricted transit traffic while the EU was pushing for full deregulation. The Austrian authorities then started considering introduction of ecopoints<sup>13</sup> for transit traffic in order to reduce NOx emissions by 60% between 1991 and 2003. The ecopoint system was implemented in 1993. Protocol No.9, which deals with ecopoints, was appended to the Act of Accession of Austria, Finland, and Sweden with the requirement that Austria should begin working in 1997 to replace its manual

management system with an electronic system. The electronic system has been in operation since 1 January 1998.

Since joining the EU, Austria has been faced with the possibility of deregulation of road traffic from the east followed by a high natural growth in road transit traffic. Austria tried to curb road traffic growth by two successive increases in road tolls following the 28% decrease required by the Act of Accession (which had led to a 20% increase in traffic over the Brenner Pass). The European Court of Justice rendered a decision on Brenner Pass tolls in late 2000 and the prosecution's demand that Austria be admonished for excessive charges was upheld.

Austria's transport strategy, policy, and financing for implementing these strategies are discussed in following sections along with an examination of the Brenner rail tunnel project and some unknown factors.

Austria's Transport Strategy

Austria intends to discourage transit traffic from crossing the country along its north–south and east–west axes. The nation's transport policy is centred around two goals: reducing exhaust emissions, and obtaining the approval of its citizens for measures to this effect.

Austria now uses quotas to curb east–west truck traffic but it is adversely affected by the passage of additional trucks through its territory due to Switzerland's ban on trucks over 28 tonnes. The Tyrol is a victim of Swiss policy with some 30% of the 1.489 million trucks crossing the Brenner Pass in 1999 being traffic that is bypassing Switzerland.

Although passage across the Alps at the Brenner Pass is not the shortest route, it offers the lowest altitude (1380 m), making it an advantage in terms of travel time. The Brenner Pass is on the 450-km Munich–Verona main road and although



these two cities are connected by a sub-regional rail network, road traffic at the Pass is constantly increasing with freight tonnages showing a year-on-year average growth rate of 4.5% since 1980. This is in comparison to 3.4% for rail. The Austrian Science and Transport Ministry estimates that traffic at the Brenner Pass will double by 2015.

### Austria's Transport Policy

Austria's transport policy has several priorities:

- Avoiding irrational (= unnecessary) transport
- Internalizing external costs to avoid distortion of transport modes
- Linking and promoting some transport modes (conventional rail, mixed transport and piggyback) in conjunction with other countries through incentives (one additional road authorization for four piggyback journeys)
- Using latest technical standards and applying differential charges (in accordance with European vehicle pollution standards)

Austria uses three effective tools to apply these policies. First, it negotiates bilateral quotas with each East European country with the goal of encouraging entry of modern, low-pollution trucks. For example, if a carrier uses one EURO II polluting vehicle, two journeys can be made instead of one. Quotas might end up being adjusted or waived because a priority is EU membership by East European countries. Second, ecopoints are applied to vehicles over 7.5 tonnes travelling through Austria. Points are distributed<sup>14</sup> as follows: Italy, 34%; Germany, 32%; Austria, 14%, the Netherlands, 8% (12% distributed to remaining 11 countries) based on the assumption of almost 1.5 million transit

journeys. In 1999, 11 million ecopoints were issued (compared to 23 million in 1993). It is anticipated that only 8 million ecopoints will be issued in 2003. According to the 1998 report of the Council Commission, the ecopoint system decreased NOx emissions by almost 27% between 1993 and 1996. This is demonstrated by the increase in traffic and decreased use of ecopoints—the percentage of trucks paying the maximum of 16 ecopoints per transit journey decreased from more than 51% in 1993 to less than 18% in 1996, whereas the percentage paying 8 ecopoints increased from 20% in 1993 to 41% in 1996. The system should be redundant by 2003. Third, it is trying to promote the Brenner Pass railway tunnel project within the limits of EU financial restrictions.

### Financing Transport Policy

Under EU Directive 99/62 EEC, Austria cannot increase charges on its transalpine crossings and use this extra revenue to invest in railways. (However, other resources can be used to finance railways.)

Also, funds from road tolls can be used only for infrastructure investment and maintenance. Therefore, Austria cannot use special funding systems like those in Switzerland where revenue (RPLP and road tolls) from one sector of the transport industry is used to finance improvements in another sector (NLFA or other rail lines). Instead, Austria must finance its transport policy from the general budget and through non-budgetary measures for road infrastructure projects. As a result, Austria's present financial resources are insufficient to implement the Brenner Pass railway tunnel project.

### Brenner Pass Railway Tunnel Project

A new 55-km railway tunnel at the Brenner Pass costing FF26 billion has long been on the Austrian government's drawing board to provide a more efficient way to cross Austria to Manching in Germany (20 km north of Munich). Completion of the tunnel would connect Innsbrück (Austria) and Portenza (Italy) and double the capacity of the present railway (which consists of a succession



Present Brenner Pass crossing—trucks piggyback on flat rail wagons

(L. Clement)





Present Brenner Pass crossing—loading trucks on flat rail wagons

(L. Clement)

of small 4-m wide tunnels) to 36 million tonnes per year. The present through railway dates to 1867 and carries 7.9 million tonnes of freight annually by piggyback (trucks on flat wagons), mixed transport, and conventional railway. However, the project is currently stalled due to financing difficulties, although Germany and Italy both have an interest. Unfortunately, most of the financing will have to be borne by Austria because of territorial considerations. A quick decision would mean that the new tunnel could open between 2020 and 2025, but it would compete with the Swiss tunnels now under construction and would have to accommodate trucks on flat wagons. In the meantime, Austria is promoting a dynamic and constantly evolving railway policy. It is now in the process of eliminating the rail bottleneck north of Innsbruck and is substantially increasing capacity. To double freight tonnage, it is also promoting vigorous marketing (commissioning consultants throughout Europe and examining transport activities in order to attract more clients).

### Unknown Factors

There are several unknown factors affecting transport in Austria. The first is the impact of implementing new tolls for infrastructure use (the only source of funds for the Brenner Pass railway tunnel project). The second is possible deregulation of transport links with East European countries. The third is the extent to which railways can curb increases in road traffic (even after completion of the Brenner tunnel). The fourth is the extent of the effect on Austria when Switzerland opens its doors to trucks over 28 tonnes.

### Impact of new infrastructure tolls

In compliance with EU Directive 99/62 EEC, Austria will switch to tolls linked to the distance travelled for vehicles over 3.5 tonnes with different rates for vehicles with 2, 3 or more axles (base rate per km of FFr0.95). Revenues will go to the organization responsible for setting up the tolls to finance and maintain the transport infrastructure.

Unlike in Switzerland, in Austria, tolls will

not be used to finance railway infrastructure for accompanied transport. Vehicles under 3.5 tonnes will continue to be charged a network access tax for motorways and expressways. The new toll system will be implemented in January 2002 and should produce between Sch2 and 2.5 billion per year (FFr0.95 and 1.19 billion). Austria should be able to upgrade its road network and reduce its debts using these new sources of revenue, As in Switzerland, Austrian freight carriers believe that they will be paying more than their European competitors. Indeed, before Austria joined the EU, it imposed a usage tax based on vehicle-km. This tax was greatly reduced when a tax on vehicles over 12 tonnes was started and this latter tax will now be replaced by the new toll system. However, costs will probably increase, penalizing Austrian carriers<sup>15</sup>.

### Deregulation of transport links with East European countries

The entry of East European countries into the EU is a priority for Europe as a whole. Even if this is not achieved for several years, transport deregulation may be implemented over the short and medium term. If this occurs, the quotas Austria has agreed with these countries might be modified or waived. Such a step would increase east-west traffic and reduce the competitiveness of Austrian carriers and service providers.

### Curbing road traffic growth

The present use of the Brenner Pass is very revealing. Each year, 108,000 trucks cross by piggyback on flat rail wagons while 1.5 million trucks cross by road. Between 1998 and 1999, traffic growth was 8% (300 trucks per day). Hence, the annual growth rate in road traffic each day on this main road is equivalent to the piggyback demand.

All other things being equal, the expected natural growth in road traffic will account for half the capacity of the new tunnel over

about 10 years. This raises the question of whether the new rail infrastructure can curb the natural growth in road traffic. A study of the same through-route indicates the reasons for transporting trucks on flat rail wagons rather than send them by road. The main reasons are: the ban on trucks over 40 tonnes (preventing them crossing Austria), non-possession of ecopoints, non-possession of authorizations (quotas with East European countries), and fleet management (including driver rest time because the distance between the Brenner and Manching terminals is 283 km with a south–north journey time of 6 hours 20 minutes to 6 hours 50 minutes, and a north–south journey time of 7 hours 30 minutes to 7 hours 55 minutes). The challenge of how to curb natural road traffic growth is complemented by the additional challenge of implementing a policy favouring transfer of road freight to rail, based on competition (or combination) between the various transport modes over the main routes.

### Impact on Austria after Switzerland permits trucks over 28 tonnes<sup>16</sup>

Austrians do not consider the opening of Switzerland to vehicles over 28 tonnes to be much of a problem because there are too many unknown factors. For example, can the Swiss policy be implemented as planned? And what would be the reaction of carriers and service providers if it is implemented? The charges for crossing Austria should remain lower than those in Switzerland (the toll at the Brenner Pass

is likely to drop, since its current purpose is to do more than just cover infrastructure costs) and the quota system should reduce traffic in Austria, at least temporarily.

## Conclusions

First, it is difficult to predict future trends except with regard to the number of heavy trucks passing through France, which should drop when Switzerland opens its doors to trucks up to 34 and 40 tonnes. However, the drop would not necessarily be significant because of unknown factors in Switzerland and Austria, France's transport policy in mountainous regions (now being defined), and above all, economic growth in Europe (with strong natural growth in traffic).

Second, the impact of opening the EU to carriers from East European countries could lead to transport dumping throughout the EU.

Third, will the transport policies actually transfer road traffic to piggyback rail? The above-mentioned factors governing the choice of transportation mode—whether goal-oriented (as in Switzerland) or macro-economic (as in Austria)—provide an important lesson. The incentives to promote rail use will have to be very strong if we are to transfer huge volumes of road freight to rail. ■

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## Notes

1. Dienst für Gesamtverkehrsfragen, 7 July 1999.
2. Sources vary with different average tonnages and units.
3. Transalpine Freight Case Study, DIO, July 1999.
4. These estimates are more conservative than previous estimates that anticipate up to 1.65 times more vehicles.
5. Germany is Switzerland's main supplier (31.4%) and customer (22.7%). EU countries are suppliers (79% of imports) and customers (60.7% of exports).
6. For example, PTAC for trucks and PTR for articulated vehicles and trailers.
7. Press release from GVF and DETEC.
8. Report to Swiss parliament, 26 June 1996.
9. Study of the Development of Transalpine Traffic Horizon 2010, European Commission, 1996.
10. For example, a 40-tonne truck travelling 75,000 km per year will pay SFr0.0275 per tonne-km (reference rate).
11. The RPLP is to be levied using GPS on-board units.
12. The Alpine Clause forbids any additional development of Alpine roads.
13. EU Countries plus Switzerland and Slovenia receive ecopoints. Each truck has a document issued by the manufacturer proving its compliance with pollution standard requirements. The planned 50% NOx reduction was achieved by 2000.
14. The initial number of ecopoints (23 million in 1993) is equal to the average amount of NOx exhaust emissions (between 9 and 14 g/kWh) multiplied by the number of transit journeys in 1991 (1.5 million).
15. The system will be semi-open with one main toll station on each road. Tolls will be paid at the motorway exit when the exit is before the main toll station for that section, at the motorway entrance when the entrance is situated after the main toll station for that section, and at the main toll station itself when passing that station. On some sections there will be no toll (where traffic is low).
16. However, these costs cannot be compared to those in Switzerland. For example, a 40-tonne truck travelling 100 km will pay FFr440 in Switzerland but only FFr95 in Austria.



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