



New routes through Europe

Swiss transport policy from A to Z

Approach routes

Switzerland has concluded international treaties with its neighbours Germany and Italy to ensure the expansion of the approach routes to the base tunnels, which will allow them to handle the growing volume of traffic. The progress of the work is regularly monitored by joint committees. In addition, the corridor between Rotterdam, Antwerp and Genoa, which is one of Europe's most important rail freight routes, is being expanded and equipped with the ETCS train protection system. In addition, organisational measures are being implemented to allow the trains to travel faster.

Base tunnels

The construction of the Lötschberg, Gotthard and Ceneri railway base tunnels means that trains no longer have to climb steep inclines on their route through the Alps. After the opening of the Gotthard and Ceneri base tunnels, the highest point on the Gotthard route will be 550 metres above sea level. The gradient is a maximum of 1.2 percent. This will allow the transport capacity to be increased. In addition, the north-south link through the Alps will be shorter and the journey time faster.

Ceneri base tunnel

The Ceneri base tunnel, which is 15.4 km in length, is being built under Monte Ceneri in the Canton of Ticino. It connects the northern part of Ticino (Sopraceneri) with the southern part of the canton (Sottoceneri) and completes the level route through the Alps on the branch of the Gotthard axis which leads to Milan via Chiasso. In addition to the benefits for freight and long distance passenger traffic, the tunnel also brings huge improvements to the regional transport system in the Canton of Ticino.

Data	
Opening of the Simplon tunnel	19 May 1906
Opening of the Lötschberg summit tunnel	15 July 1913
Start of scheduled operation in the Lötschberg base tunnel	9 December 2007
Opening of the Gotthard summit tunnel	1 June 1882
Breakthrough in the Gotthard base tunnel	15 October 2010
Start of scheduled operation in the Gotthard base tunnel	11 December 2016
Start of scheduled operation in the Ceneri base tunnel	2020

ETCS

The European Train Control System (ETCS) is one of the key features of rail interoperability throughout Europe. Depending on the version, this train protection system requires no external signals at all. The information is displayed on a screen in the locomotive driver's cab. This allows trains to travel more quickly and also reduces the time between trains. The ETCS is intended to replace the wide variety of different European train protection systems. It has been in use on the high-speed routes from Rome to Naples and Milan to Turin since 2006. In Switzerland it was first introduced on the new line between Olten and Bern (Mattstetten–Rothrist; in 2004/2006) and in the Lötschberg base tunnel (in 2007). The entire standard gauge network in Switzerland will have been converted to ETCS Level 1 LS or ETCS Level 2 by 2017.



ETCS L2 provides locomotive drivers with information on a screen.



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Finances

The NRLA is forecast to cost 23.5 billion Swiss francs (around 22.4 billion euros; current prices, including interest and VAT), which corresponds to 3.5 percent of Swiss gross domestic product (GDP).

The costs of the NRLA can be broken down as follows:

- Gotthard base tunnel: 12.5 billion Swiss francs (around 11.9 billion euros)
- Lötschberg base tunnel: 5.3 billion Swiss francs (around 5 billion euros)
- Ceneri base tunnel: 3.5 billion Swiss francs (around 3.3 billion euros)
- Expansion of the approach routes: 2.2 billion Swiss francs (around 2.1 billion euros)

Financing and Expansion of Rail Infrastructure (FABI)

In February 2014, the Swiss people approved the proposal for the Financing and Expansion of Rail Infrastructure (FABI) in a popular vote. This proposal will safeguard the financing of the rail infrastructure, including maintenance and expansion, in the long term. At the same time, a decision was also made as part of the Strategic Development Programme for Rail Infrastructure (STEP) on the basic aspects of future railway expansion and on the first specific phase of expansion for the period up to 2025. This includes projects costing 6.4 billion Swiss francs (around 6.1 billion euros), which are primarily aimed at eliminating bottlenecks in and around stations in large Swiss cities.

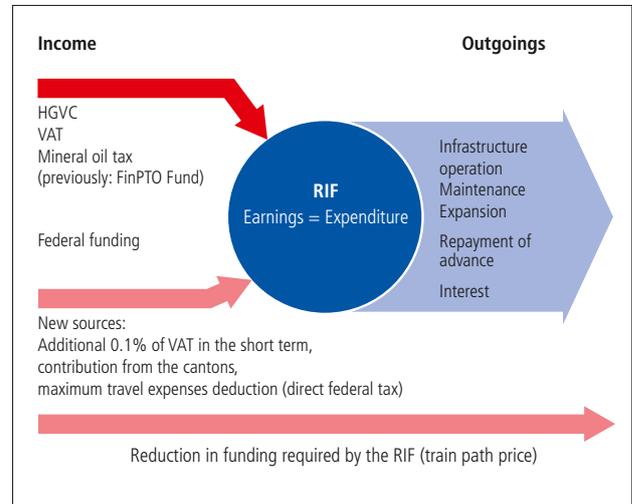
FinPTO Fund/Rail Infrastructure Fund

On 29 November 1998, the Swiss people voted in favour of the Federal Decree on Construction and Financing of Public Transport Infrastructure Projects (FinPTO), which allowed the rail infrastructure in Switzerland to be completely modernised and expanded. The following four large-scale projects were and are being implemented at a cost of 31.5 billion Swiss francs (around 30 billion euros; 1995 prices):

- Rail 2000, FDRIA and the 4-metre corridor
- NRLA
- Connection to the European high-speed rail network (HSR)
- Rail noise reduction

The funding comes from three sources:

- Heavy Goods Vehicle Charge (HGVC, two thirds of the revenue)
- Part of the revenue from mineral oil tax
- Part of the revenue from VAT (0.1%)



The Rail Infrastructure Fund (RIF) will make additional expansion projects possible.

At the beginning of 2016, the FinPTO Fund will be replaced by the new Rail Infrastructure Fund (BIF) which was established by the FABI proposal. The RIF will be used to finance the large projects from the FinPTO Fund, together with further expansion measures and the operation and maintenance of the entire existing rail infrastructure.

Gotthard base tunnel

The Gotthard base tunnel, which is 57 km in length, connects Erstfeld in the Canton of Uri and Bodio in the Canton of Ticino. Construction began in 1999, the breakthrough was made in October 2010, and the tunnel will be opened and come into scheduled operation in 2016. The tunnel will increase the capacity for freight transport and shorten the journey times for freight trains. Passenger trains will also be able to travel more quickly between northern and southern Switzerland thanks to the tunnel. The Gotthard base tunnel will be the longest rail tunnel in the world, replacing the existing record holder, the Seikan tunnel in Japan (53.9 km).

Growth in traffic

The increase in the volume of transalpine traffic through Switzerland shows that the modal shift measures have been effective.

The railways in Switzerland transport 67 percent of transalpine freight traffic, while 33 percent travels by road (2014). In the neighbouring countries of France and Austria, the ratio is reversed.

Despite the overall growth in traffic, the number of transalpine truck journeys has fallen from 1.4 million in 2000 to



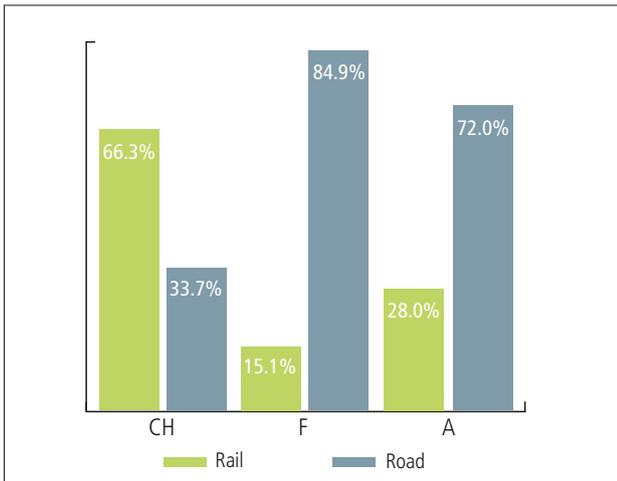
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1 million in 2014. Experts have calculated that around 700,000 additional trucks would be crossing the Swiss Alps every year if the modal shift measures had not been taken.

Although the modal shift policy has been successful, it will not be possible to achieve the targets specified in the Goods Traffic Transfer Act.

- Interim target for 2011: In 2011 around 1.25 million trucks crossed the Alps, in contrast to the target of 1 million laid down in law.
- Modal shift target for 2018: The modal shift target specified in the legislation requires the number of trucks travelling across the Swiss Alps two years after the opening of the Gotthard base tunnel in 2018 to be restricted to a maximum of 650,000. It will not be possible to meet this target. However, the additional modal shift effect that will be created as a result of the opening of the NRLA Gotthard route should be sufficient to stabilise the number of trucks at the current level. The creation of a 4-metre corridor along the entire Gotthard axis by 2020 should give a further boost to the modal shift effect.

The Swiss Federal Council aims to continue with its existing modal shift instruments and accompanying measures and to introduce further changes.



Breakdown of transalpine freight traffic between France, Austria and Switzerland (2013).

HGVC

The Heavy Goods Vehicle Charge (HGVC), a toll for trucks, was introduced in Switzerland on 1 January 2001. The amount of the charge depends on the overall weight of the vehicle and its trailer, its level of pollutant emissions and the distance travelled. This allows the so-called exter-

nal costs of heavy goods transport to be covered on the polluter pays principle. A total of 70 percent of HGVC revenue comes from Swiss trucks. The maximum amount of the HGVC has been laid down in law in the Land Transport Agreement between Switzerland and the European Union.

HSR connection

Switzerland needs an improved connection to the European high-speed rail network (HSR). In 2005, the Swiss Parliament adopted a package of measures to bring this about. It includes co-financing projects in France and Germany and expanding the Swiss rail infrastructure. At the same time, the investments will be used to improve the system of nodes within Switzerland. The project, which will cost 1.1 billion Swiss francs (over 1 billion euros), will be completed in 2020 and will lead to shorter journey times to cities such as Paris and Munich.



The Lötschberg base tunnel shortens the journey times between Switzerland and Italy.

Lötschberg base tunnel

The 34.6-km-long Lötschberg base tunnel runs between Frutigen in the Bernese Oberland and Raron in the Canton of Valais. Construction work began in 1999 and the tunnel came into operation on 9 December 2007. The highest point on this north-south route is at Frutigen, which is



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780 metres above sea level. The route continues through the Simplon tunnel to Italy (Domodossola). The Lötschberg base tunnel has massively increased rail freight capacity and shortened the journey time for passengers travelling between Basel and Milan.

NRLA

In order to shift as much transalpine freight traffic as possible from road to rail, rail infrastructure must be modernised and expanded. The creation of the New Rail Link through the Alps (NRLA) involves the construction of the new Lötschberg, Gotthard and Ceneri base tunnels. The expansion measures on the approach routes to the tunnels will lead to shorter, faster and more efficient north-south links for passenger and freight traffic. The Gotthard and Lötschberg base tunnels will significantly increase freight transport capacity.

Rail Freight Corridor Rhine-Alpine

The rail route between Rotterdam/Antwerp and Genoa is one of the most important European rail freight corridors. It is known as the Corridor Rhine-Alpine and runs north-south through Switzerland. The volume of freight trans-



The Rotterdam–Genoa corridor is very important to the EU.



The FDRIA provides rail passengers with an improved service.

ported each year on the 1500-km-long corridor amounts to more than one billion tonnes (2013). Forecasts indicate that this figure will more than double by 2030. The plan is to introduce ETCS as the standard train protection system on the corridor over the next few years.

Rail noise reduction

In 2000, around 260,000 people in Switzerland were exposed to excessive noise from railways. A comprehensive noise reduction programme was introduced to protect them, which was financed by the FinPTO Fund. This included making modifications to rolling stock, building noise barriers and fitting soundproof windows. The package of noise reduction measures was completed at the end of 2015. A ban on goods wagons that have not been modified to reduce noise levels is planned in a subsequent programme. This ban will come into effect by 2020. In addition, noise reduction measures on the rails will be introduced and the foundations will be laid for promoting innovation and research in the field of railway noise.

Rail 2000 and the Future Development of the Rail Infrastructure (FDRIA)

In 1987 the Rail 2000 project was launched to improve the quality of the Swiss rail network. It includes measures to increase the speed and the number of trains on existing connections and to modernise the rolling stock. The first phase of Rail 2000, which was completed in 2004, con-



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sisted of 130 construction projects costing 5.9 billion Swiss francs (around 5.6 billion euros). The second phase of Rail 2000 has been named the "Future Development of the Rail Infrastructure (FDRIA)". This programme includes expansion measures costing 5.4 billion Swiss francs (around 5.1 billion euros). One area of importance is the expansion of the approach routes to the new base tunnels. This will involve new signalling systems, among other things, that will reduce the time between trains.

4-metre corridor

It is already possible to transfer semi-trailers with a 4-metre corner height onto trains on the Lötschberg route and in the Gotthard and Ceneri base tunnels, but there are obstacles to this on the approach routes to the Gotthard tunnel. Therefore, the Swiss Confederation has awarded contracts for the modification of a number of tunnels, platform roofs and catenaries. This will allow semi-trailers with a 4-metre corner height to be transported along the entire length of the Swiss north-south axis by 2020. This move is particularly important because the combined transport of semi-trailers with a 4-metre corner height is a rapidly growing segment. Switzerland is also financing measures to increase the clearance on the Italian Luino line to enable semi-trailers of this kind to reach the major intermodal terminals in northern Italy. The overall cost amounts to almost 1 billion Swiss francs (around 950 million euros).



Semi-trailers with a 4-metre corner height can be transported through the Gotthard base tunnel.

Further information

- On Swiss transport policy:
<http://www.bav.admin.ch>

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