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Cooperation on **Alpine Railway Corridors**

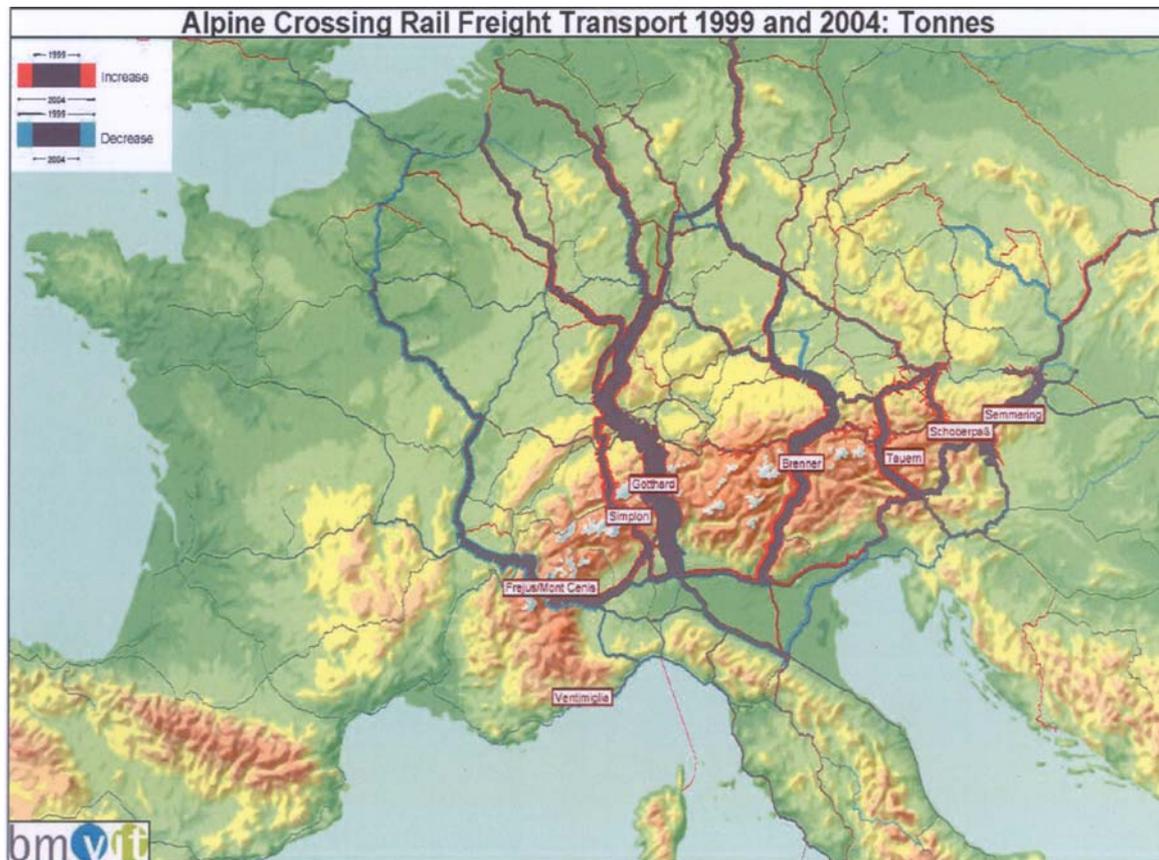
Report by the Transport Working Group

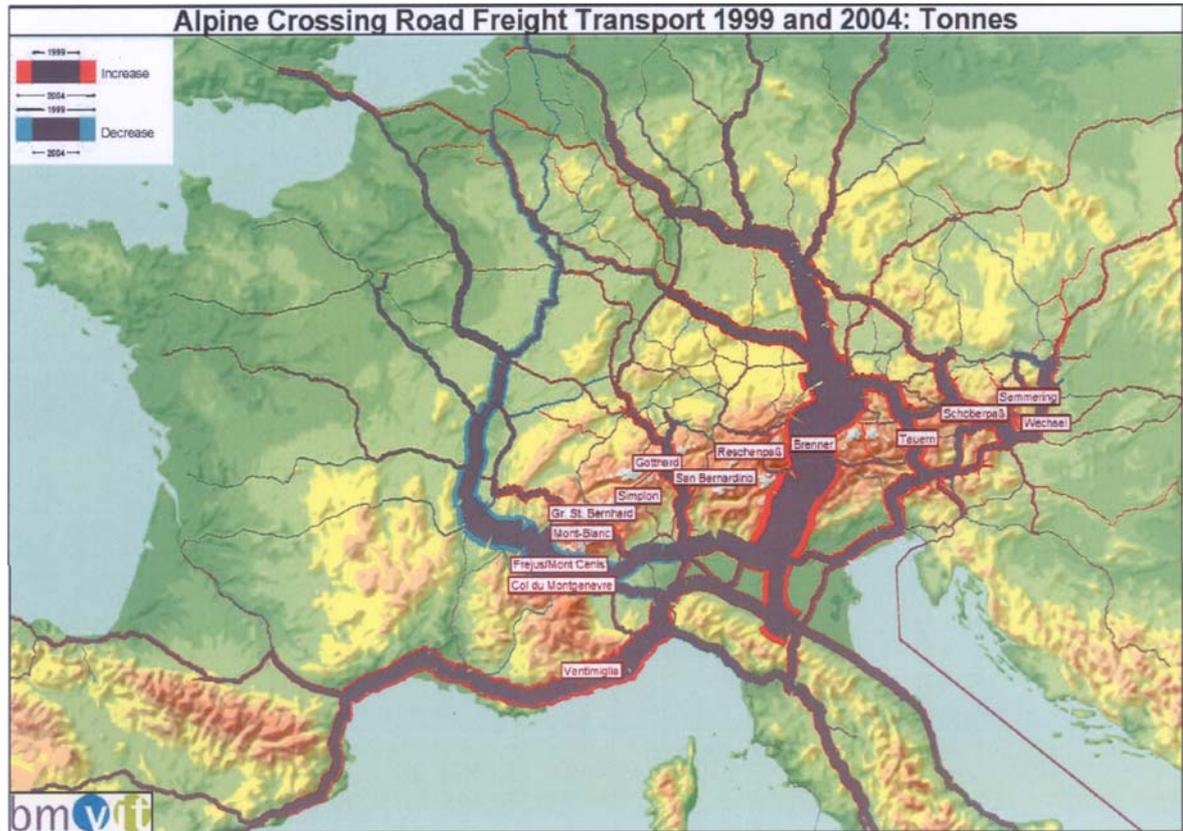
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1. Mandate

A fundamental objective of the Transport Protocol of the Alpine Convention is the modal shift of freight from road to rail. How reasonable this objective is was also shown very clearly by the 2004 CAFT survey. There is a dynamic growth (3,7 % p.a.) on trans alpine transport demand, even if growth has slowed down in the last 5 years (5,4 % p.a. between 1994 and 1999). Since 1994 freight traffic across the Alps (rail and road) increased from 132,4 million tonnes to 190,2 million tonnes in 2004 (+ 44 %). Total road transport share increased from 62 % to 67 %. More than 30 million tonnes (one fourth) of road freight passes Brenner and Gotthard is the most important crossing concerning rail transport (15,6 million tonnes).





In the mid term review of the European Commission concerning the White Paper on Transport the modal shift to environmentally friendly transport modes and the combination of transport modes (“co-modality”) also remain a priority objective of EU transport policy in any case on long distances and sensible areas like the Alps. On the other side, by placing emphasis at the same time on “the optimization of the specific potentials of the individual transport modes” the aim of the white book 2001 “rebalancing transport models” is diminished.

The 8th Conference of Alpine Regions asked the Transport Working Party in Garmisch-Partenkirchen on 16 November 2004 to give special consideration to the enhancement of the rail transport offers on the trans-Alpine rail corridors. In this context, the existing agreements concerning the Brenner corridor and the north-south corridor through Switzerland may provide guidance. This topic is referred to as follows in the ministerial statement on transport adopted in Garmisch: “Not all existing large corridors have yet been covered by programmes that are similar to those implemented in the framework of the Brenner 2005 Action Plan and the north-south corridor. The Conference of Alpine Regions urgently requests governments and railway operators to extend such measures to

the other trans-Alpine corridors before the 9th Conference of Alpine Regions is held. A statement on the situation is to be made at the 9th Conference of Alpine Regions 2006.”

The Transport Working Party cannot directly arrange agreements (such as those mentioned above) between governments, railway companies and other parties involved. However, it can intensify and reiterate the appeal made by the ministers.

This was done by way of discussions within the Transport Working Party of the Conference of Alpine Regions, in which all ministries are represented, and, more specifically, by means of letters of the French chairmanship of the Transport Working Party that were sent to the competent ministries of the countries "with rail corridors" in 2005.

The focus is placed on the following corridors:

Brno – Udine (Semmering)

Munich – Salzburg – Ljubljana (Tauern)

Budejovice – Maribor (Pyhrn/Schoberpass)

Lyon – Turin (Mont Cenis)

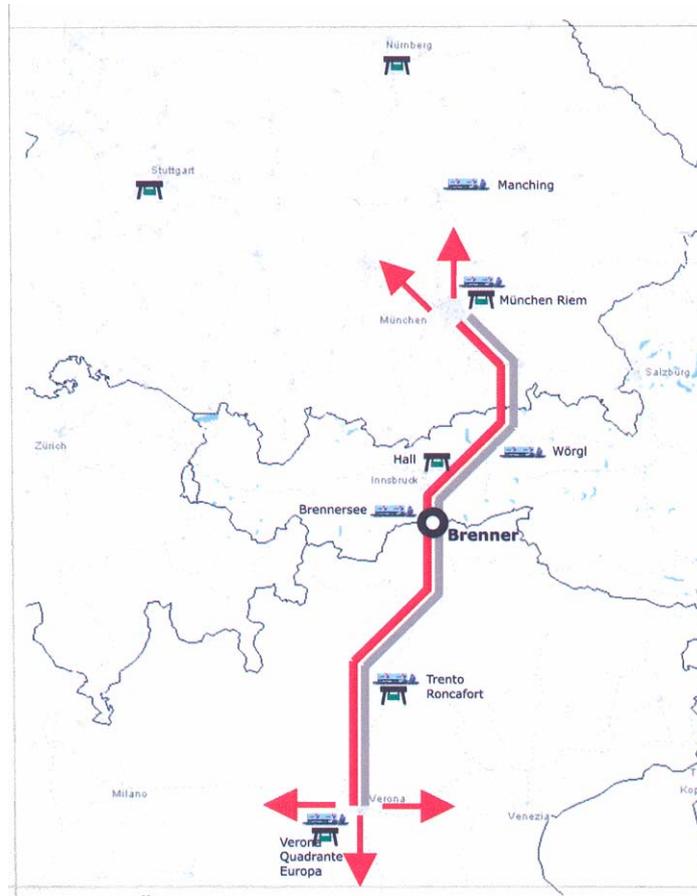
Marseille – Genoa (Ventimille) and

Venice – Trieste/Koper – Postojina – Ljubljana

Passau/München – Bratislava/Budapest (Danube axis)

What are the contents of the Brenner 2005 Action Plan, which provides guidance, and what does the north-south axis involve?

2. The Brenner 2005 Action Plan



Via the Brenner Pass, which is the Alpine crossing with the highest traffic volume, approx. 42,7 million tonnes of goods were transported in 2004, accounting for a modal split with a road transport share of more than 70%. (CAFT 2004) The Austrian master traffic plan forecasted at that time an increase to 52 million tonnes by 2015 (with the modal split remaining broadly unchanged). In 2002, these figures prompted the ministries of transport of Austria, Italy, Greece and Germany to establish working groups and charge them with the development of measures aimed at increasing the volume of combined transport on this axis by 50% by 2005 in comparison with 2001.

After a detailed problem analysis had been carried out, three packages of measures with a total of 35 measures were integrated into the Brenner 2005 Action Plan taking account of the time required for their implementation (the planned Brenner base tunnel is not taken into account).

Package of measures I (start of implementation: immediately)

- improvement and intensification of the initial cooperation between the rail transport companies (including the rail network operators)
- improvement of communication and data exchange in order to optimize the interfaces between those involved and to optimize resource management and customer information
- introduction of an integrated quality management system
- removal of operational bottlenecks (rail, terminal)

Package of measures II (short-term implementation)

- development and implementation of a seamless, axis-related traction concept (interoperability)
- enhancement of the service offer in unaccompanied combined transport and further adaptation of quality characteristics to market requirements
- joint assessment of the accompanied combined transport offer (rolling road) and coordination of short and medium-term increases of the offer

Package of measures III (medium-term implementation)

- coordination and assessment of the actual path availability in all network sectors and junctions concerned in order to further increase the transport volume
- upgrading and modernisation of rail infrastructure (lines, junctions)
- improvement of rail links and increase of the transshipment capacities of combined transport terminals in Italy and Germany

If considered individually, all these measures are rather unspectacular; what is interesting, however, is how their implementation is organized; this can be described in three steps:

Comprehensive participation

The action plan was **jointly** developed and adopted by all parties involved in Brenner transport matters, i.e. the representatives of the relevant ministries of transport, rail transport companies, rail network companies, combined transport operators and terminal operators.

Specification of responsibilities

Clear responsibilities were specified for the individual measures. In the package of measures I, for example, “Brenner Rail Cargo Allianz” is responsible for the assessment and prioritisation of the existing deficiencies in communication and data exchange. The development of a computerized system for communication with combined transport customers is the responsibility of “Rail Cargo Austria” etc..

Monitoring

On the basis of regular reports, the ministers of transport of the three countries accompany and support the implementation process in their respective area of responsibility and make appeals to the competent national partners. Among the parties involved, penalties were agreed e.g. for the non-availability of locomotives and train drivers. The agreed “contractual penalties” are paid into a fund and used for improvements in the framework of the Action Plan.

First successful measures

At the beginning of 2005, the first successful measures were reported:

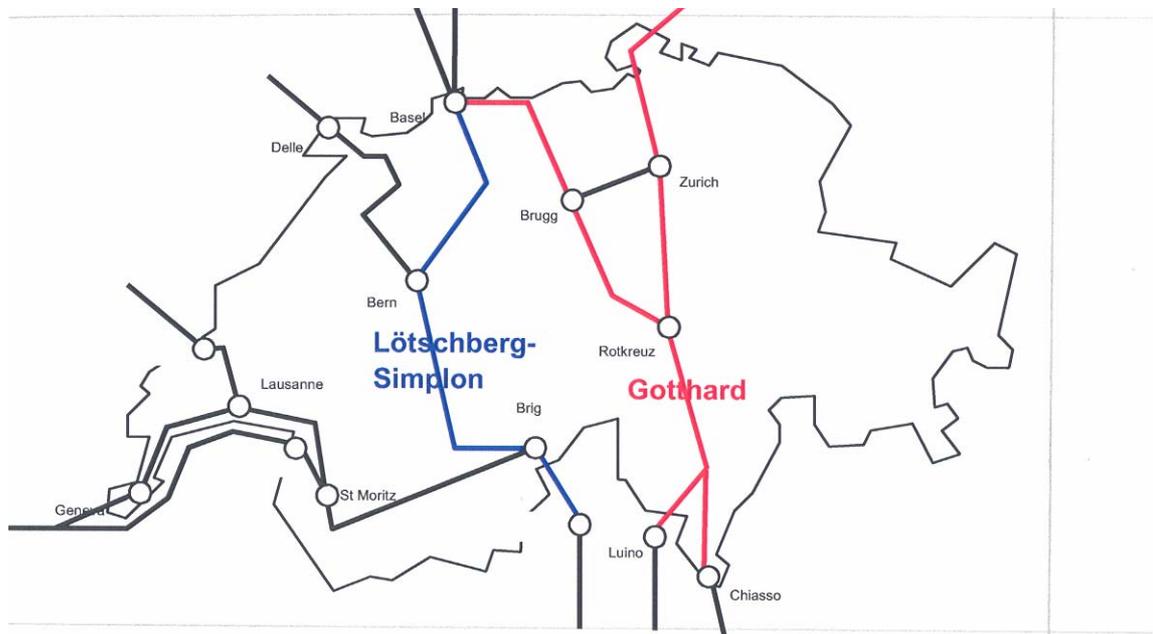
- Thanks to the removal of operational bottlenecks (e.g. allocation of slots for transport and shunting services, improved availability of locomotives and train drivers) it was possible to increase punctuality from an average 40% at the beginning of 2002 to 80% in 2003; since then the percentage has stabilized at this level.
- The terminals Munich-Riem and Verona-Quadrante were equipped with overhead electrification extending as far as possible into the terminals.

- In the combined transport terminal in Verona, a further transshipment module was installed increasing the capacity from 250,000 to 330,000 loading units.
- At the Brenner Pass, a separate office was established which is responsible for managing data exchange, customer information services and GPS-based train monitoring on a 24-hour basis in cooperation with the Verona operational control centre. Through the use of mobile phones for maintaining permanent contact with all train drivers, it is possible to identify irregularities at an early stage and take remedial action. For example, it is also possible to inform combined transport customers in good time of changed dates for the provision of loading units at the terminal of arrival (estimated time of availability).
- Development of an IT component by means of which the quality of the transport process can be visualized on the basis of clearly defined key performance indicators. The relevant basic data are provided by the infrastructure operators concerned.
- Improved formation of block trains through the upgrading of the Verona terminal to a gateway to the Italian network including a shuttle train service between Verona and Bologna.
- Finally, considerable improvements were made with regard to traction: approval of the pusher locomotive, which is required for the north side of the Brenner Pass, so that it can be radio-controlled by the train driver of the first locomotive of double-headed trains (so-called radio control pushing engine). The first multi-system locomotives have also been made available. The question of reciprocal approval has been resolved and only business aspects determine the use of such locomotives. Work is underway to bring forward the international use of train drivers (linguistic barrier).

Despite all this, the objective of increasing the combined transport volume by 50% by 2005 has not yet been achieved. In this context, however, it must be taken into consideration that important framework conditions have changed. For example, the abolition of the ecopoints system on 1 January 2004 has led to a drastic decrease in rolling road transport on the Brenner route whereas unaccompanied combined transport has increased significantly. In 2003, for example, 4.47 million tonnes of goods were transported in unaccompanied combined transport via the Brenner route, 5.09 million tonnes in 2004 (+ 13.5%) and 5.92 million tonnes in 2005 (+ 16.2%). By the end of 2006, an increase to 6.86 million tonnes is expected. In comparison with 2003, this would represent an increase of more than 50%. This can at least partly be attributed to the Brenner 2005 Action Plan. Without the measures agreed in the Ac-

tion Plan it would not have been possible to even maintain the rail transport share. The efforts made to improve the rail transport offer will therefore be seamlessly continued with the BRAVO project in the framework of the 6th EU research programme which involves 15 partners from 6 countries (combined transport companies, railway companies, terminal operators, institutions of higher education and also a Swiss waggon manufacturer).

3. The north-south corridor Rotterdam-Genoa, IQ-C project (Swiss section)



Although the modal split on the Swiss north-south axis accounts for a rail freight share of approximately two thirds and thus more than the inverse ratio of the Brenner route and the French corridors, the Memorandum of Understanding which was signed in Lugano by the ministers of transport of Switzerland, the Netherlands, Italy and Germany in 2003 is also primarily aimed at further increasing or stabilizing the rail freight share. The rail freight routes on this axis are to be strengthened in order to keep them competitive with road transport.

In this case, too, an international working group was established, initially from representatives of the ministries, which, however, was expressly asked to call in representatives of transport companies (i.e. infrastructure and transport operators, in particular) as well as customs authorities, and to work out measures and proposals for improving the quality of the transport offer on this route in coordination with other interested parties (e.g. railway companies, hauliers etc.).

The measures proposed by the working group were essentially placed under the responsibility of the infrastructure operators and ministries which began working on their implementation.

3.1 Infrastructure operators

The infrastructure managers of the five railway companies involved have intensified their cooperation.

A so-called one-stop shop network for the whole corridor has been in place for some years now. For customers, two computerized systems are available: "Pathfinder" which is for ordering train paths and the European Infrastructure Charging Information System (EICIS) which provides information on infrastructure utilization. Finally, there is a special system for providing train paths to meet short-term needs (System Train Paths).

Furthermore, a corridor manager has been dealing with specific problems concerning the whole corridor since 2005.

Great efforts are also being made with regard to the automated exchange of data between neighbouring infrastructure managers. In addition, the EU funded EUROPTIRAILS project (start: 2006) is to make possible the monitoring of selected trains on the entire corridor.

3.2 Ministries

The ministries are responsible for promoting regulations on the reciprocal approval of locomotives and mutual recognition of train driver qualifications. This must be done within the predefined EU framework and is time-consuming. For example, the first EU Directive for the international admission of train drivers is not expected until 2010. Until then, cooperative solutions must be found between the organizations (enterprises) responsible, and, therefore, a range of bilateral agreements have been concluded, e.g. on the mutual recognition of medical and psychological tests for train drivers. A form of cooperation which is particularly appreciated in the framework of trans-Alpine transport is the official enlargement, by experts from Switzerland and the Netherlands, of the Interoperability Working Group (Germany, Austria, Italy) which already exists for the Brenner axis. The Working Group works on the speeding up of processes and cost-reduction with regard to the reciprocal approval of locomotives and also makes its know-how available to third parties.

Following a Swiss proposal, a tailored and simplified customs procedure for rail freight from the EU will remain in force until the end of 2007. (Goods from the EU account for approx. 90% of rail freight via the north-south corridor.)

Finally, the ministers charged the Working Group in 2004 to examine whether it is possible to equip the corridor with ETCS (European Train Control System).

ECTS would mean continuous traction throughout the entire route with every equipped locomotive and therefore increasing productivity, better quality and easier access for operators (the equipment of locomotives with ETCS is relatively inexpensive).

Results of the study: technically feasible by 2012/2015; economic efficiency, however, depends on a broader use of the system, beyond the route Rotterdam-Genoa, on the remaining network. In order to equip the relevant corridor, subsidies are needed for the infrastructure operators.

The results were put in a wider European context. With the Letter of Intent signed on 3 March 2006, the ministers of transport of the four above-mentioned countries decided in formal agreement with EU TEN coordinator, Mr Karel Finck, to implement ERTMS (ERTMS includes both the above-mentioned ETCS and GSM-R (Global System for Mobile Communications – Railways)) on the corridor Rotterdam-Genoa by 2012/2015 at the lowest possible cost. Through the priority introduction of ERTMS on ten further important freight corridors in Europe the cost-benefit ratio for the introduction of the above-mentioned north-south corridor is improved considerably.

For the purpose of implementation, an executive committee will be established in which the EU Commission and the infrastructure managers will also be represented. A management committee ensures coordination with the other measures taken on the corridor.

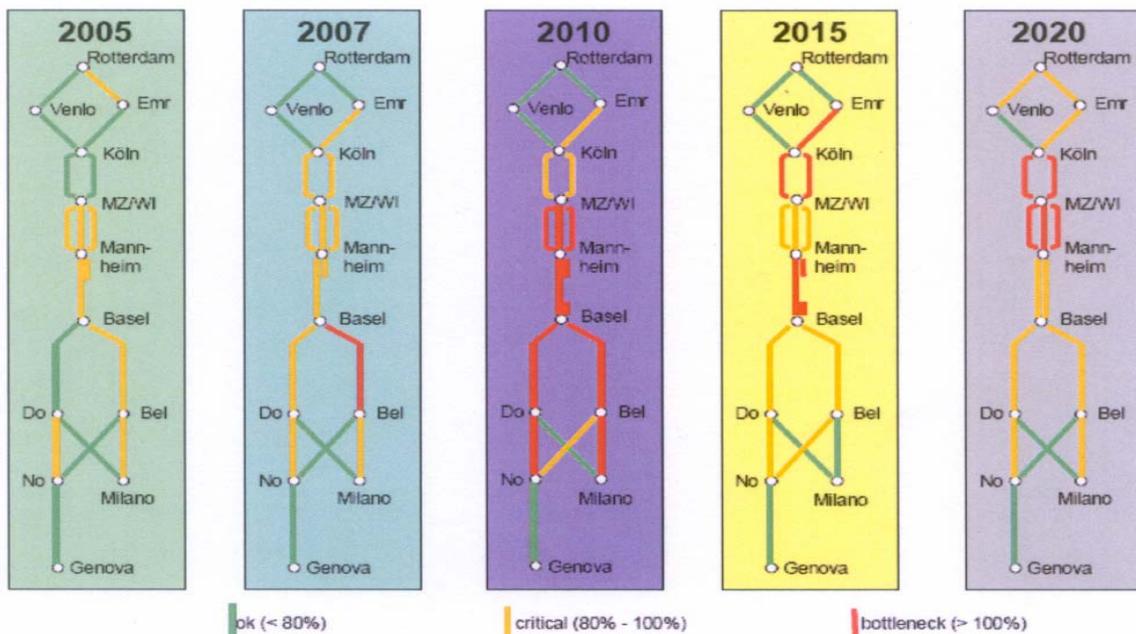
3.3 Results and outlook

As regards the success of the described measures, it should of course be taken into account that due to the traditionally large share of rail freight in Switzerland (2000: 70%) strong increases are simply no longer possible. However, apart from the tax on the use of roads by heavy goods vehicles which boosted combined transport and thus prevented a further decrease of the rail freight share, the current stabilization at 65% can certainly be seen as a success that can be attributed to the described measures.

There is still a need for harmonization, inter alia, with regard to the differences in the implementation of the relevant EU Directives in the Member States and the mutual approval of rolling stock. The situation concerning punctuality and delays of the trains is also still unsatisfactory. This aspect will be one of the key areas of the measures in the years to come.

However, given the existing and new bottlenecks in the corridor caused by the increasing traffic volume, it is above all the ministries that must coordinate their plans for the upgrading of their infrastructures.

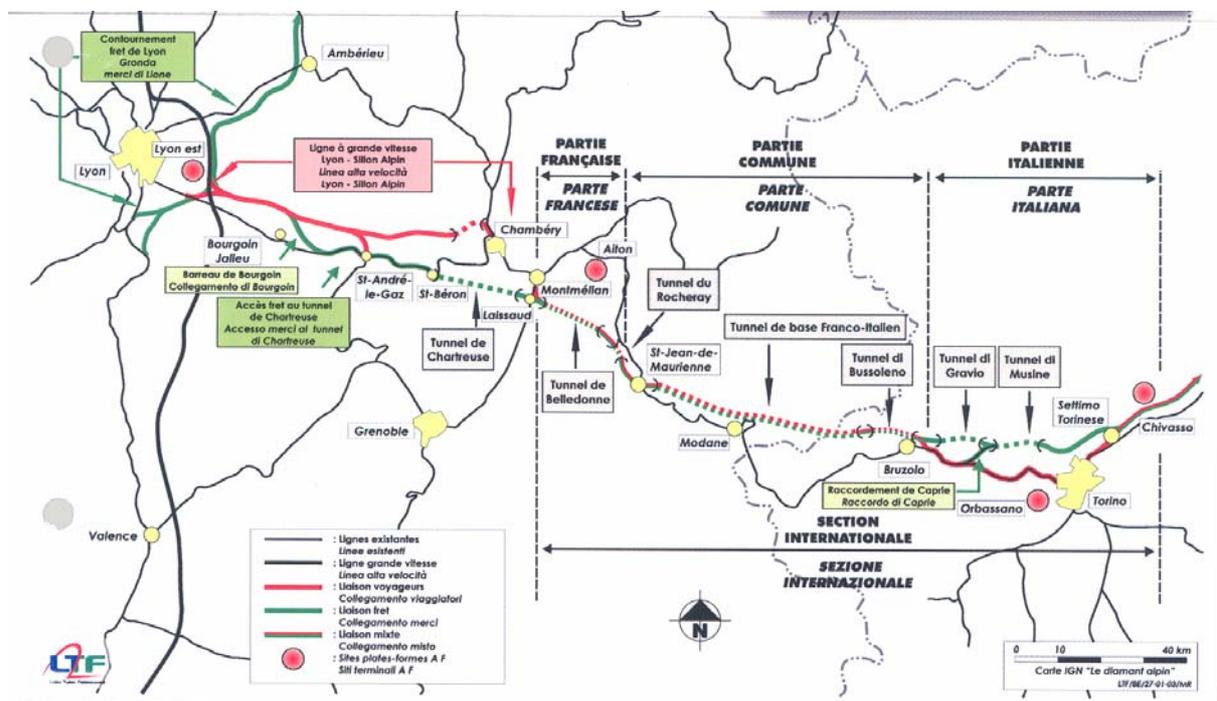
Development of bottlenecks on the N-S Corridor 2005-2020



4. The remaining corridors

Of course, improvements of the quality of the offer have been considered for all corridors long before the conclusion of the Alpine Convention and concrete measures have been and are currently being taken. However, they are very different in nature and range from quasi-contractual cooperations, as in the case of the Brenner 2005 Action Plan and the north-south corridor, through the intent to conclude such agreements in the medium term to the conclusion that such measures do not seem to be useful at all. It is obvious in this context that, given the specific infrastructure and operational requirements, specifically adapted solutions must be found.

4.1 Lyon-Turin (Mont-Cenis) and Marseille-Genoa (Ventimille)



The Lyon-Turin route is a section of the TEN corridor D Valencia – Ljubljana and the most important rail link between France and Italy (transport volume in 2004: 6.9 million tonnes).

Similarly to the Brenner corridor, there are plans to significantly improve the quality of the rail transport offer in the short and medium term without waiting for the completion of the tunnel between Saint-Jean de Marienne and Orbassano (52 km, completion planned for 2020).

The objective is to achieve at least the transport volume of 1999 (10 million tonnes).

According to the CAFT survey 2004, the French rail transport share via the Alps amounted to a total of 6.8 million tonnes with a modal split share of 14% which has decreased considerably in comparison with 1994 (19%).

The governments of both countries decided to optimize the conditions in the existing Mont Cenis Tunnel and to develop a high-quality rail transport service (rail highway).

4.1.1 Upgrading of the tunnel

The 13.7-km long Mont Cenis Tunnel, inaugurated in 1871 is a high altitude tunnel, with winding lines that include very steep gradients, which can greatly limit train loads and seriously penalises rail transport costs. For example, the incline either verges up or exceeds 30 ‰ and bends are often below 400 m of the curvature radius, on both sides. A systems of two successive banking engines is required for heavy trains between Saint-Jean-de-Maurienne and Modane, on the one hand, and beyond Modane on the other.

Finally, the reduced gauge of these structures, designed for trains of that era, are now found to be unsuitable.

Under these conditions, the political decision was for heavy works aiming to upgrade the Mont Cenis Tunnel gauge to the European B1 gauge, which will be completed at the end of 2008 and then enable technically to transport most of the road traffic that passes in transit along the Mont Blanc / Fréjus corridor route.

Of course these decision in fact led to reduced tonnage transported on the historical line. The works period does not ease operations and, in 2005, a derailed train at the entrance of the tunnel damaged the track even more. The aim is to at least enjoy the same traffic level as in 1999 (10 MT).

4.1.2 The experimental rail highway

A second political decision was to put into service a 175-km long experimental rail highway in Autumn 2003 between Aiton (France) and Orbassano (Italy), in order to test road sector acceptance, the accessible market, carriages, locomotives, terminals, timetables, regularity, handling of lorry drivers.

This service uses the MODALOHR system and low-loader wagons (20 cm from the rail), equipped with standard-sized wheels, because of the present, very restrictive gauge of the Mont Cenis tunnel, thus receiving up to 4-m high and 2.60-m wide lorries (about 6 % of all HGVs using the Fréjus and Mont Blanc road tunnels, which are mostly tankers). The terminals (at Aiton and Orbassano) are user-friendly and enable simultaneous loading / - unloading of lorries (in less than 40 minutes). The tractor must be uncoupled and can board another MODALOHR carriage. The driver moves to a reception carriage at the front of the train, where meals, films and magazines are available.

Since June 2004, semi-trailers can also travel on their own (unaccompanied transport), as the operator performs loading / unloading via a tractor (service jockey).

The rail highway uses the existing railway line where both passenger and freight trains co-habit.

The service includes four rotations a day (5 days a week). Each can load a maximum of 15 to 16 trailers because of the percentage of accompanied trailers (see infra).

After nearly three years of experience, the experimental rail highway has been found to be technically successful, as the MODALOHR system is reliable and efficient. Nevertheless, service regularity is still deplorable. Thus, in 2005, 65 % of trains in the Italy-France direction arrived at Aiton at least 30 minutes late. There are multiple causes for these delays; notably incidents on engines, works in the Mont Cenis Tunnel, priority given to passenger trains, etc....

There is an average 65 % shuttle occupation rate for all traffic (4 daily return journeys), but the saturation point is reached in afternoon and evening shuttles. Indeed, these times are the most sought after by hauliers, as they enable to load at the plant in the morning or during the day.

Traffic was very slow to pick up at the end of 2003 and in 2004. However, since the start of 2005, traffic numbers reached about 250 lorries a week, which was the result of long and profound commercial canvassing work with hauliers.

Also, most unaccompanied trailer transport grew rapidly (from 40 % in 2004 to 60 % in 2006), thus improving rail highway productivity (+25 %) increasing the load/tare ratio and number of trailers per train. At the same time, haulier logistics around both terminals were reorganised, with agreements being signed between French and Italian partners.

Transport of hazardous substances increased continuously and now exceeds 40 %, after the exceptional peak due to the tunnel closure.

However, the Alpine rail highway's economic and financial results are not very satisfactory, as direct revenue is well below charges. Note that the price of a rail highway crossing is lower than the cost of the equivalent road crossing (by about 20 %), in order to make up for the poor service quality (numerous delays) and longer journey (due to loading / unloading time). During the whole test period, France and Italy equally share the rail highway's operating loss, with aid approved by the European Commission.

4.1.3 Future steps towards a concerted France – Italy action plan for the rail corridor

During the Franco-Italian Summit of 4 October 2005, ministers decided to start thinking about operating a further service, at the end of construction work. This mission must notably consider increasing frequencies, improving timetable distribution, lengthening shuttles and possibly proposing regulatory restraints for directly-competing road crossings (prohibiting some types of goods or time intervals, etc...).

Also, in the medium-term, ministers decided to set up a concerted action plan for optimising rail service on the existing line, in order to stop the drop in the rail freight market share and establish the credibility of the longer term Lyon-Turin project (see ministers' letter of 4 October 2005). For this, RFF, RFI, SNCF and Trenitalia, under the auspices of both ministries, will set up a concrete action plan (monitoring each traffic, work site hazards and delays, setting up a monthly co-ordination committee, improving operational communication between infrastructure managers, connection between the Aiton platform and railway network, etc...). France and Italy could then sign a Memorandum of Understanding, similarly to the approach instituted on the Brenner by Germany, Austria and Italy).

4.1.4 Deploying the ERTMS along corridor D

Similarly to the Swiss section of the IQ-C project, the Lyon-Turin route will also benefit from the intention of the EU Commission to equip the entire corridor D with ERTMS.

In compliance with the Memorandum of Understanding, signed on 17 March 2005 by the European Commission and railway companies, the strategy for deploying the ERTMS on the Valencia (Spain) – Marseille (France) – Lyon (France) – Turin (Italy) – Ljubljana (Slovenia) (= corridor D) standard line is currently being finalised. It will enable to greatly improve service interoperability and quality on this international freight corridor. They planned to deploy the ETCS-level 1 control system.

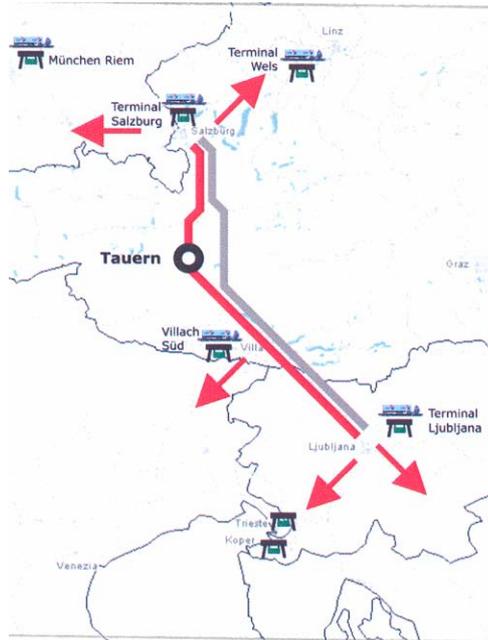
The involved countries' ministers of transport shall soon sign a letter of intent and set up financing required for deploying the ERTMS on the corridor sections in their respective countries. Also, the European Council is preparing financial regulations specifying co-financing application rules for the 2007-2013 period.

The section Lyon-Turin is planned to be equipped in the period from 2010-2014.

4.1.5 Ventimille

Because of the low traffic passing through (0,5 Mio t in 2004), which has been more or less stable for several years), and of the impossibility of modernising this coastal rail route with very restrictive geographical features, Ventimille doesn't offer real optimisation opportunities at all.

4.2 Salzburg- Ljubljana (Tauern)



After the Brenner route, the Tauern axis is the route with the second largest freight traffic volume of trans-Alpine traffic via Austria.

The principal function of the Tauern corridor today is to link the ports of Koper and Trieste to Southern Germany and the central region of Upper Austria. Since the volume of traffic on these routes exhibits a rising trend, rail freight via the Tauern corridor still has great potential.

In 2004, approximately 4% of the total freight on the Tauern axis was transported using un-accompanied combined transport services and approx. 5% using rolling road services. Between Salzburg and Trieste, rolling road services are operated with 21 trains per week running in each direction.

For this axis, a so-called “Tauern action plan” has been developed. This is a national research project that was carried out in 2003 and aimed at examining deficiencies of this corridor and possible improvement measures. Therefore, it is comparable with the first stage of the Brenner Action Plan, i.e. the first analysis of the situation.

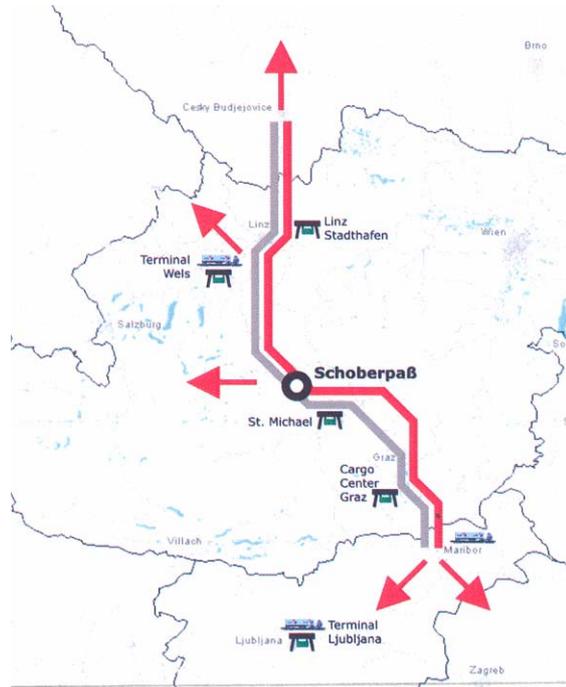
Possible additional measures according to the “Action plan Tauern-Track” which could complete the already planned step by step progressive double tracking of the remaining single track sections, would be

- establishment of an information and quality management system
- removal of operational bottlenecks
- enhancement of the service offer, especially in unaccompanied combined transport, by means of trainload services to Trieste and Koper
- development of a seamless, axis-related traction concept to accelerate the trainload services that are to be introduced

These measures are therefore similar to those set out in the Brenner Action Plan.

The unaccompanied combined transport links from Nuremberg to Trieste ("Trailertrain") and from Munich to Trieste and Koper ("Adria train") have meanwhile been established in the framework of the INTERREG III B project AlpFRail. On the Salzburg-Villach route, capacity was created for an additional nine trains a day in each direction.

4.3 The Budweis-Maribor corridor (Phyrn-Schober axis)



Since a large part of transport operations on the Phyrn-Schober axis are currently intra-Austrian or bilateral transport operations between Austria and Germany, the same approach as in the Brenner 2005 Action Plan would be less rich in meaning because the interface problems are not the most important aspect in this context.

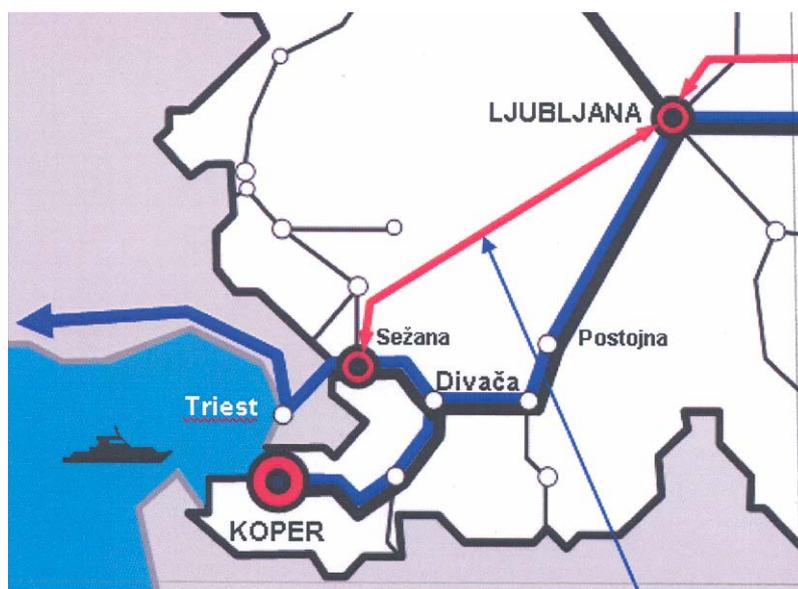
Although the railway line between Linz and Selzthal is currently for the most part only a single-track line, it can be used for normal combined transport operations without any restrictions. In 2004, 3% of the total freight on the Phyrn-Schober axis was carried using unaccompanied combined transport services and approx. 2.5% using rolling road services. Currently, two rolling road services are operated from Wels to Maribor and from the Cargo Center Graz to Regensburg (42 trains in each direction in total per week). In unaccompanied combined transport, a block train runs between Graz und Duisburg.

In 2005, the Phyrn-Schober axis was analysed with regard to deficiencies and possible improvement measures.

It is planned to double track some single-track sections on the Phyrn-Schober axis. Efforts are being made to bring forward these measures as well as specific capacity increases, for example, through the extension of tracks in crossing stations or measures to enhance signalling technology.

Therefore, a further improvement of the operating quality can be expected in combined transport. Further specific measures to increase capacity are in preparation. The service offer on the rolling road and in unaccompanied combined transport could be increased, in particular, by operating block train services between the Cargo Center Graz and Germany.

4.4 Venice-Trieste/Koper-Postojina-Ljubljana



The Italian-Slovenian sector as part of the Trans-European Corridor 5 from Barcelona to Ukraine includes the axis Venice-Trieste/Koper-Postojina-Ljubljana. It represents a logistic platform for East-West commercial flows and an important “delivery point”. The existing infrastructural network allows to collect an important traffic quota, including local traffic between Italy and Slovenia, too.

The transport system and logistic network in the Italian-Slovenian borderline is due to develop as part of a larger system integrated with the neighbouring regions.

In 2004, the Italian-Slovenian in/out rail freight flows amount to about 2 million tonnes per year.

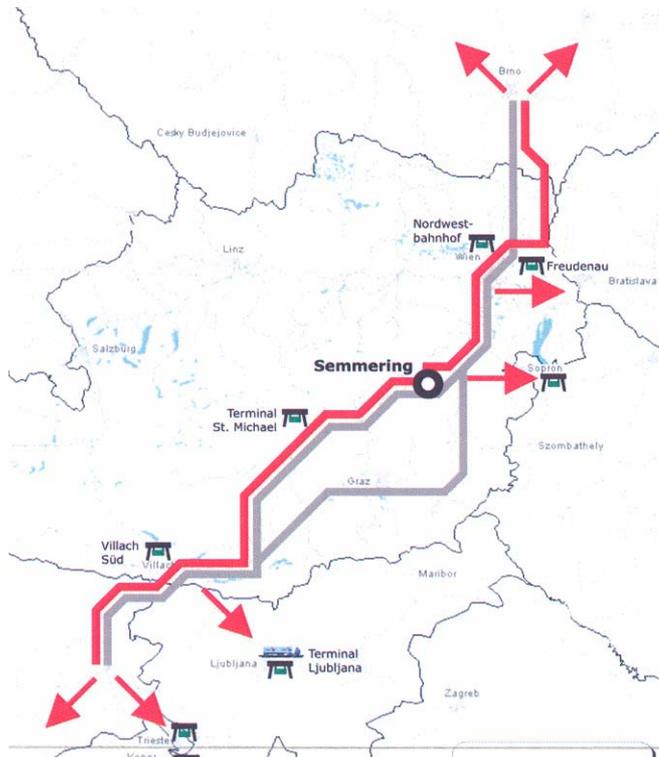
Modernisation of the SS devices on Ljubljana-Sezana line was finished in 2004. The project of doubling the Capodistria/Divaca rail connection has been approved. The segment Divaca/Ljubljana is still under planning.

Other short and mid term projects are:

- Ljubljana-Sezana line (5 stations, 13 line sections 2006-2018)
- Diváca-Koper line (4 stations, 5 line sections 2008-2010)
- Reconstruction of existing track of Diváca-Koper line (2007-2010), Upgrading of SS devices on this line (2006-2007), construction of new double track line on the line in phases (2008-2015 and after 2020)

On the Italian side there is no relevant work in progress yet; critical operational conditions persist in the double track line Venice/Monfalcone-Trieste/Villa Opicina/Sezana from the Isontine plane to the Aurisina Fork, because the 12 % slope limits to 1,100 tonnes the maximum weight allowed per train.

4.5 Brno – Udine (Semmering, South corridor)



The South corridor is the main connection between the north Italian industrial area, the ports of Trieste and Koper, the eastern region of Austria and Slovakia, the Czech Republic and Poland. Against the background of these states' accession to the EU, this traffic will gain in importance. (In 2004, approximately 5% of all freight traffic were carried out on this route by unaccompanied transport operations.)

The railway from Brno via Vienna, the Semmering and Villach to Udine has been a continuous double-track line since December 2003 when the new double-track section Tarvisio Boscoverde – Udine was opened to traffic. A total of four tracks are available on a number of sections between Vienna and Wiener Neustadt.

Due to small arc radii and narrow tunnel profiles, certain restrictions apply to the carriage of swap containers and semi-trailers on the section over the Semmering Pass. This means that it is impossible to operate a rolling road. In the long-term, the planned construction of the Semmering Base Tunnel and the Koralm railway could make the axis more attractive for combined transport, too.

The line is completely electrified; however, between Brno and the Czech/Austrian border, a different distribution system is used (25 kV/50 Hz). Dual system locomotives are needed here for the section Bernhardstal – Breclav, but the ÖBB (Austrian Federal Railways) is able to provide them in sufficient quantities. In Austria alternating current of 15 KV and 16.7 Hz is used. In Italy, the line is electrified with 3 KV direct current.

Train control on the southern section of the line is currently carried out using track circuits. In Italy, an automatic signalling and section block system has not yet been installed along the entire line, which is why the law requires two engine drivers for each locomotive.

On the Semmering Pass, the line has gradients of up to 26 %. Due to small arc radii pusher operations are impossible, for which reason a large number of freight trains have to be split.

It is precisely because of the international importance of this rail link and the above-mentioned “border-related” problems to apply element packages of the Brenner Action possibly could make sense to this route.

The following approaches from the Brenner Action Plan possibly could be applied to this route:

- Quality management and removal of bottlenecks in operations, especially on the Villach – Tarvisio – Udine – Trieste section
- Expansion of the range of services offered in unaccompanied combined transport, especially trainload services from Trieste container port to Vienna, Slovakia and the Czech Republic
- Development of a seamless axis-related traction concept to accelerate the trainload services that are to be introduced
- Coordination and assessment of the actual availability of paths on the South corridor

- Improving the provision of rail links from the South corridor towards Verona and Milan and enhancing the transshipment capacities in Northern Italy and Slovakia, the Czech Republic and Poland.

4.6 Danube axis

Although the Danube axis is not a trans-Alpine traffic route in the proper sense, it partly runs along the area of the Alpine Convention and is contained in Appendix 1 of the Transit Protocol to the EU Accession Treaty of Austria. Therefore, it has been included for the sake of completeness, especially since it could provide an important alternative to the Tauern axis, in particular, where the volume of South East European traffic is expected to increase as a result of the accession of the new EU Member States Hungary and Slovakia and later on of Romania and Bulgaria.

The Danube axis runs from Passau and Munich in the west to Bratislava and Budapest in the east. The sections from Passau and Munich to Wels are double-track lines; from Wels to Linz there is, in addition to the double-track western line, a third track via Traun. The line between Linz and Vienna is currently being widened to four tracks, and some important four-track sections of the line are already in operation. The eastern line from Vienna to Budapest is a double-track line from which a single-track line branches off to Bratislava-Petrzalka via Kittsee.

Apart from that, there is a further single-track line between Vienna and Bratislava-Central Station north of the Danube, as well as a single-track line to Budapest via Sopron. In 2004, the Danube axis, compared to the other Austrian rolling road axes, had the largest rolling road transport volume.

Where appropriate, measures or elements from the Brenner Action Plan or the North-South corridor (Switzerland) would be welcome and should be taken into consideration.

5. Conclusion

The examples of the “Brenner Action Plan” and the “IQ-C North-South corridor” have shown that it is possible, on the basis of relevant agreements concluded between all parties involved in freight transport concerning operational, technical and organizational measures and their implementation in ambitious but realistic steps, to achieve significant improvements of the service offer on the trans-Alpine rail corridors without having to wait for major tunnel solutions.

Of course, the challenges are corridor-specific so that a simple transfer of measures is not always possible.

For the corridor Lyon-Turin similar forms of cooperation are conceivable.

For other routes, the transfer of individual elements or element packages seems to be useful (for example on corridor Pontebbana (south corridor) and on Danube axis).

Finally, there are routes (e.g. the Phyrn-Schober axis and the Arlberg axis) with no interface problems since domestic traffic predominates on such routes.

The appeal made by the ministers at the Conference of Alpine Regions in Garmisch-Partenkirchen in 2004 did not lead to any new activity in this field, but comforted government’s decisions already implemented, such as on the corridor Lyon-Turin.