INTERNATIONAL FUTURES PROGRAMME

TRANSCONTINENTAL INFRASTRUCTURE NEEDS TO 2030/2050

INLAND HUBS: AUSTRIA SWITZERLAND CASE STUDY

BERN WORKSHOP
HELD 24 JUNE 2010

FINAL REPORT

Contact persons:
Barrie Stevens: +33 (0)1 45 24 78 28, Barrie.Stevens@oecd.org
Pierre-Alain Schieb: +33 (0)1 45 24 82 70, pierre-alain.schieb@oecd.org
Anita Gibson: +33 (0)1 45 24 96 72, anita.gibson@oecd.org
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CHAPTER 1
INTRODUCTION

OECD’s Infrastructure Needs to 2030/2050 Project

The OECD’s Infrastructure Needs to 2030/2050 Project is bringing together experts from the public and private sector to take stock of the long-term opportunities and challenges facing macro gateway and corridor infrastructure (ports, airports, rail corridors, oil and gas pipelines etc.).

The intention is to propose a set of policy options to enhance the contribution of these infrastructures to economic and social development at home and abroad in the years to come.

The Project follows on from the work undertaken in the OECD’s Infrastructure to 2030 Report and focuses on gateways, hubs and corridors which were not encompassed in the earlier report.

The objectives include identifying projections and scenarios to 2015/2030/2050, opportunities and challenges facing gateways and hubs, assessing future infrastructure needs and financing models, drawing conclusions and identifying policy options for improved gateway and corridor infrastructure in future.

The Project Description includes five work modules that outline the scope and content of the work in more detail.

The Steering Group and OECD International Futures Programme team are managing the project, which is being undertaken in consultation with the OECD/International Transport Forum and Joint Transport Research Research Centre and with the participation of OECD in-house and external experts as appropriate.

The Steering Group includes representatives from: OECD Ministries of transport, mobility and public works, environment and energy, sustainable development and the sea – as well as from other departments and agencies; non-OECD members (Chinese Taipei and India), international organisations (EC, EIB) and private enterprise.

The project is exploring the future opportunities and challenges facing some key gateway areas and inland hubs. The Inland Hubs: Austria Switzerland Case Study was chosen for consideration, following discussions with the Project Steering Group members.

Bern Workshop

The Inland Hubs: Austria Switzerland Case Study Workshop was organised jointly by the OECD, Switzerland’s Federal Office of Transport and Austria’s BMVIT.

The Workshop was held in Bern on 24 June 2010. It was hosted by the Swiss Ministry at its premises in Bern and attended by participants from the Swiss and Austrian Ministries as well as the OECD.
The meeting Agenda and the participants list are provided in Annex A.

The purpose of the Workshop was to allow the OECD project to focus on the:

- Current situation of Switzerland and Austria in relation to inland transport and transit traffic
- Expected future growth and development in their roles as inland hubs
- Planned infrastructure and related funding and financing arrangements
- Opportunities and challenges related to the current position and the outlook.

An Outlook paper was prepared by the OECD’s International Futures Programme for the Bern Workshop. This outlined the global outlook for economic growth, trade and development; the European Region outlook; and other important developments bearing on the Gateway area – including maritime developments such as possible new trade routes. The paper drew on forecasts and projections prepared by other responsible bodies – e.g. IMF, World Bank and International Energy Agency on economic aspects; UNCTAD, IMO etc on maritime aspects; and independent experts. All forecasts and projections prepared before or during the Global Financial Crisis need to be treated with some caution.

**Workshop Report**

The first part of the Report outlines the OECD project and expectations for the Workshop.

The second part of the Report provides the context for the work, some insights on the current situation Switzerland and Austria (including transport policies, their role as inland hubs and current traffic) and the economic and trade outlook as it relates to inland transport, connections to the gateway ports and transit traffic through the region.

The third part of the Report focuses on the Opportunities and Challenges facing the Inland Hubs: Austria Switzerland Case Study Area, including on expected hub and transit developments and related infrastructure needs.
CHAPTER 2
REGIONAL CONTEXT AND TRANSPORT TASK

Transport and Regional Setting

From a transport viewpoint, hub locations generally offer greater connectivity than spoke or rim locations.

Switzerland has France, Germany, Austria and Italy as its immediate neighbours. Austria has Germany, the Czech Republic, Slovakia, Hungary, Slovenia, Italy and Switzerland as its immediate neighbours. For any goods or services that Switzerland or Austria need, they can turn to these countries at their borders and choose the best products and services on a competitive basis from well performing neighbours around them.

European Rail Corridors

Current European rail corridors are shown in the following graphic, prepared by the Austrian Ministry of Transport. The graphic shows ERTMS corridors (in red), trans-European freight corridors A, B, C, D and F (in orange), and corridors recently identified as part of a European network for competitive freight – which are not ERTMS rail corridors (in black). The graphic also shows important freight areas to be served by the network.
Austria and Switzerland are at the cross roads of major transport corridors in Europe. Both are land-locked countries that depend on international freight transport from neighbouring as well as more distant countries, to meet needs that are not being satisfied locally.

Road freight and rail freight through the Alps play an important role in meeting the diverse needs of both Austria and Switzerland and are the principal means of carrying both import and export freight. Trans-Alpine road freight and rail freight are also important to the economies of neighbouring countries – including Italy, France, Germany, the Czech Republic, Slovakia, Hungary and Slovenia – whose export and import needs often include transit across Austria and Switzerland as a part of the transport between origin and destination countries.

The impact of transit traffic on fragile Alpine areas and the populations of Austria and Switzerland is sufficient to guarantee that freight flows in this region are very important to national and international transport policy in the countries concerned. The following sections provide some further insights on rail and road freight transport tasks.
**Trans Alpine Freight Transport by Rail**

Rail freight services on trans-Alpine routes are especially important to Austria and Switzerland, as rail freight is often the most efficient mode over the long distances involved, particularly from the north-west ports. Rail freight also has lower environmental impacts than road freight transport, another important consideration, especially in the Alpine regions. The graphic below shows rail freight flows in 1999 and changes in flows between 1999 and 2004.

**Figure 2. Trans Alpine Rail Freight Flows in 1999 – and changes to 2004**

(M. tonnes p.a. net)

The CAFT (“Cross-Alpine Freight Transport”) Survey, considered the most reliable data source for Alpine freight transport, is conducted every five years – in co-operation between France, Switzerland and Austria, using data from railway enterprises and interviews with lorry drivers at Alpine crossings. The graphic and the next one need to be viewed carefully, taking note of the legend:

- The routes with red show where rail freight has increased. Along these sections, the black widths show the volumes in 1999 – and the red widths show the increases in volumes to 2004.
- The routes with blue show where rail freight has decreased. Along these sections, the black widths show the volumes in 2004 – the blue widths show the decreases between 1999 and 2004.
Notes:

- For rail traffic, on the German side, there is a progressive build up in Germany along each corridor to reach the very large volumes of rail freight shown crossing the Alps in Switzerland and Austria, from the north.

- However, on the Italian side, there is no equivalent progressive build up in Italy to the large rail freight volumes shown crossing the Alps from the south. In fact, the volumes on the Italian side are virtually truncated in Italy close to the Alps. There is little continuity past Milan and Turin. It is as if the freight simply “appears” in Turin and Milan when travelling north and simply “disappears” into these cities when travelling south. There are almost no significant rail freight flows further south e.g. to and from Rome.

Trans Alpine Freight Transport by Road

The graphic below shows road freight flows in 1999 and changes in flows between 1999 and 2004.

Figure 3. Trans Alpine Road Freight Flows in 1999 – and changes to 2004

(M. tonnes p.a. net)

• For road freight, there is a progressive build up on the northern side of the Alps, in Germany, the Czech Republic and Poland along each corridor to reach the very large volumes of road freight crossing the Alps via Austria. There is a similar pattern in France building up to large road freight volumes across the Alps. There is also some build up of the road freight volumes via Switzerland.

• There is some build up on the southern side of the Alps, in Italy, France and Slovenia, to the large road volumes along each corridor crossing the Alps in Austria, Switzerland and France.

• There is relatively little road traffic via the Gotthard pass (the most intensive rail corridor).

The road transport flows include imports of goods from neighbouring countries to final destinations in Switzerland and Austria. They include exports of goods from Austria and Switzerland and destined for neighbouring countries and beyond. They also include transit traffic across Austria and Switzerland as part of international trade flows between countries on either side – e.g. Germany and Italy in particular.

Comparison of the rail graphic with the road graphic above highlights some remarkable differences. The most outstanding is that rail volumes seem to “disappear” in Milan and Turin; there is virtually no rail freight on these routes in Italy south of Milan and Turin. By contrast, road volumes give the appearance of far greater continuity to the south in Italy, especially for road transport via the Brenner. The reasons for the unusual differences in road and rail freight transport patterns will be explored later in the Workshop report.

Capacity adequacy over the period ahead is one of the critical aspects for cross-Alpine traffic.

The following graphic shows road and rail freight volumes across the Alps in the three countries.

Figure 4. Freight Traffic across the Alps by road and by rail 1980-2008 Mont-Cenis/Fréjus/Brenner

(M tonnes net p.a.)

Aspects most of interest include: the strong growth in total volumes via Austria and Switzerland; the high total volume via Austria, followed by Switzerland and France; and difference in modal shares. Rail carries 64% of the total volumes via Switzerland, compared with 28.5% via Austria and 18.2% via France.
CHAPTER 3
SWITZERLAND

Facts about Switzerland

Switzerland is a landlocked country geographically divided between the Alps, the Central Plateau and the Jura. Its area is 41 285 km. The Swiss population is approximately 7.8 million people, located principally on the Plateau, where the largest cities are to be found. Among them are the two global cities and economic centres of Zürich and Geneva. Switzerland is one of the wealthiest countries in the world by per capita gross domestic product. Zürich and Geneva have respectively been ranked as the cities with the second and third highest quality of life in the world. The World Economic Forum's Global Competitiveness Reports in 2009-10 and 2010-11 rank Switzerland's economy as being the most competitive in the world.¹

Swiss Transport Policy and Funding

Switzerland’s funding and financing arrangements have evolved over an extended period. They have been adapted recently to meet new Constitutional and Legislative requirements relating to trans-Alpine traffic. The infrastructure funding and financing arrangements have two different but related goals. The first is Modal Shift; and the second is the secure Financing of Infrastructure.

Modal shift of freight onto rail is part of the federal constitution

The Federal Constitution includes provisions relating to transit freight traffic through the Alps. The Federal Constitution provides (in Art. 84, al. 2) for: “Transit freight traffic through the Alps to occur on rail”; and for “the Federal Council to take the necessary measures”.

The Traffic Transfer Act sets down the objective of limiting heavy freight vehicle movements across the Alps. The Traffic Transfer Act provides (in Art. 3) for:

- A goal of limiting freight traffic through the Alps to 650 000 heavy freight vehicles per year.
- The goal to be achieved, at the latest, two years after the opening of the Gotthard base tunnel.
- The goal to be maintained in the longer term.

While the target for trans-Alpine crossings is 650,000 heavy vehicles, at the moment, there are over one million vehicles crossing the Alps per annum. Switzerland has an agreement with the European Union on levying a heavy vehicle tax, helping ensure the target is met. Switzerland is using the funds raised – which come partly (around 25%) from international trucking operators – to finance and build two alpine tunnels.
Financing of infrastructure

Swiss Transfer policy is based on multiple instruments, as shown diagrammatically below:

![Diagram of Financing of Infrastructure]

*Source: Swiss workshop presentation, June 2010.*

Sources of Funding

Switzerland has well developed arrangements for financing of the whole transport infrastructure system, including rail and road.

The most important funding instrument is the so-called “Special Financing of Road Traffic” which was introduced in 1958 in order to finance the construction of the Swiss motorway network. Its main sources of funds are the Petroleum Tax (since 1958) and the Motorway Vignette (since 1985).

The “Special Financing of Road Traffic” (SFRT) contributes to replenishing the two additional Swiss transport funds that have been introduced more recently, namely:

- the “Major Railway Projects Fund” which was created in 1998 and funds major extensions of the railway network; and

- the “Infrastructure Fund” which was established in 2008 and funds completion of the motorway network, elimination of motorway bottlenecks – and also Metropolitan transport projects (road and rail).

The “Major Railway Projects Fund” receives funding from the Heavy Vehicle Fee (see above), 0.1% of the Value Added Tax and the SFRT. The “Infrastructure Fund” is provisioned solely by the “SFRT” (and thus the Petroleum Tax and Motorway Vignette). The overall arrangements are illustrated in the following graphic.
These current arrangements, which resulted in part from a major policy change during the 1990s, mean that, under the Swiss financing system for transport infrastructure, “roads” to some extent cross-subsidize “rail” infrastructure.

The “Major Railway Projects Fund” – which provides the funding needed for expansion of the rail network – has total funding of €20 Billion, which is allocated on the basis of priority to: NRLA; Rail 2000; High speed; and Noise reduction. This is shown graphically in the figure below:

Figure 5. “Major Railway Projects Fund” – Network expansion financed by fund

Looking to the future, the Swiss Federal Council has very recently presented its views on possible future reform of the Swiss transport infrastructure financing system.
The core of Council’s vision consists in integrating the financing of both the “extension” of the railway network (to date funded by the “Major Railway Projects Fund”, which is limited in duration) and the network’s “maintenance & operations” (to date charged to the general budget) into one single “Railway Infrastructure Fund”, which would be unlimited in time. The funding sources of the new “Railway Infrastructure Fund” would include those of the “Major Railway Projects Fund” today, together with number of new sources to be defined in the political decision-making process.

The Federal Council is also proposing not to raise further the level of cross-subsidisation of “rail” infrastructure by the “roads”, as roads themselves are suffering from funding problems which will lead to a rise of the price of the motorway vignette in a first step and to a rise of the petroleum tax in a second step. Rather, the Council is proposing that the users of the railway network and the Cantons who enjoy the improvements of the network should contribute more to its financing (e.g. by higher passenger fees).

It is expected there will be a very intense political debate on these proposals. At the end of the day, the Swiss people will have to vote on any change of the transport infrastructure financing system in a general referendum.

**Swiss Infrastructure Funding System: Assessment and Experiences**

The Workshop heard that the Swiss infrastructure funding system works well, with advantages including:

- It guarantees a reliable, long-term financing of the transport infrastructure, unaffected by the imponderables of the budget process.
- Without this system, the ambitious capacity extension programme of the Swiss railway network (e.g. New Rail Link through the Alps) would not have been achievable.
- Nevertheless, the system evolved historically and could be simplified.

Clearly, the Swiss system of transport infrastructure funding has proved itself over many years. It has been able to raise the funding required to undertake some very important and strategic rail and road investments, despite the recent economic downturn associated with the global financial crisis.

The investments made have been directed to meeting the transport and sustainable mobility needs of Switzerland’s population; to providing the strategic transport infrastructure required by its position as an inland hub within Europe, at the cross-roads of major transport corridors (e.g. Germany-Italy); and to responding in particular the need for increasing use of rail freight to reduce the environmental impacts of existing trans-alpine transit traffic.

**Alpine Crossing Exchange: additional instrument in preparation**

While the infrastructure funding system has worked well, the Workshop heard there is room for improvement in pricing and related arrangements.

Consideration is currently being given to the possibility of revised arrangements that could involve a trading system for alpine crossing rights. This would need to be developed in agreement with other Alpine countries – and in line with European legislation.
Domestic Transport Flows

Roads
The domestic road network and the volume of domestic road transport flows in 2004 are shown below.

Rail
The domestic rail network and volume of domestic rail transport flows in 2004 are shown below.

Total Traffic – Demand forecasts and trends

The Swiss ministry provided advice on the outlook for total traffic as well as for roads and rail traffic.

Total Freight
As can be seen from the graphic below, both road and rail freight transport are expected to grow.

Figure 6. Demand forecasts – Freight traffic to 2030

Trans-Alpine traffic
Since reaching a peak in 2000, the number of large goods vehicles has decreased from 1 404 000 to 1 180 000 vehicles per annum, a drop of 16% (see following graphic). The first decrease between 2000 and 2005 was caused by the introduction of a performance-related tax on goods vehicles (LSVA), the increased weight limits, the “supporting measures” and the new traffic regulations. The decrease in 2006 was caused mainly by the closing of the Gotthard route for one month. The decrease
in 2009 amounted to -7% or 95,000 vehicles less than 2008, with the economic and financial crisis as main cause.

Figure 7. Total number of heavy goods vehicles through the Swiss Alps 1981-2009

The total volumes of goods through the Swiss Alps by road and rail are shown below:

Figure 8. Total quantities of goods transported through the Alps by road and rail

Rail Freight across the Alps: Transit, domestic and import/export categories

The base scenario projections anticipate ongoing increases in road and rail and total freight traffic in domestic, import/export and transit categories. A breakdown of the forecast Swiss rail freight traffic across the Alps is set out in the table below:

Table 1. Swiss Rail Freight Traffic across the Alps

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit</td>
<td>85%</td>
<td>84%</td>
<td>84%</td>
<td>83%</td>
</tr>
<tr>
<td>Domestic</td>
<td>6%</td>
<td>6%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Import</td>
<td>4%</td>
<td>4%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Export</td>
<td>5%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Source: Personal communication, Federal Office of Transport UVEK.
The major share is due to transit traffic (around 85%). Domestic, import and export traffic share are similar (around 5% each). Over the years, the traffic structure overall is expected to remain much the same, although a slight shift towards Import/Export traffic is anticipated. The traffic projections are relatively stable. With a continuing policy of limiting trans-Alpine truck movements, the largest share of the increased traffic demand will need to be handled by rail.

**Trans-Alpine Railway freight demand – Outlook to 2030**

The outlook to 2030 for rail freight demand is shown in the graphic below. It has a breakdown showing the following categories: Domestic traffic, Import/Export traffic and Transit and their relative size in terms of expected volumes of freight.

**Figure 9. Global railway freight demand – Outlook to 2030**

![Graphic showing freight demand projections](image)

*Source: Workshop presentation.*

The next graphic shows the expected freight demand through the Alps, the freight categories and the expected modal shift due to the 650 000 heavy vehicle movement limit.
Train paths demand for freight on the transit corridors

The relationship between capacity for trans-Alpine traffic and expected demand on the transit corridors is shown in the graphic below. The blue line gives an indication of how train demand could increase, under the continuing regulatory framework and its legal requirements for mode shift. The dashed line shows expected capacity. Up to 2030, no capacity problems are expected on the Swiss transit corridors.

Trends in road transport and combined transport vehicles

In relation to future demand, one of the important developments has been the real market demand for high profile/large capacity freight traffic – particularly for Non-Accompanied Combined Transport. The growth of traffic demand along the Brenner rail line since the enlargement of the profile of free space in 2000 clearly confirms the trend. While the overall volume of the Non-Accompanied Combined Transport along the Brenner rail line almost quadrupled between 1999 and 2008. The semi-trailer share in Non-Accompanied Combined Transport rose by a factor 6. The Swiss Confederation recognised this trend and is planning to equip its transit corridors accordingly. Access
lines (especially in Italy) should therefore also be equipped. German access lines already have the required profile.

There has been a global trend in logistics towards the transport of light and voluminous goods – with more widespread use of semi-trailers or continental containers in response.

In 2008, freight transit through Switzerland was 62% on road transport and 13% on rail transport. High profile trains are a key factor working in favour of modal shift from road to rail.

Source: Swiss presentation, Bern Workshop, 19 June 2010.

The next section explores the state of current transport connections between Switzerland and other countries, in the different connections. The following section outlines the infrastructure improvements in prospect.

**Inland Transport Connections – Current Situation**

The Workshop heard that the rail infrastructure within Switzerland is generally well planned and operating well.
Northern connections

The Northern connections are functioning quite well. In particular:

- The rail frequencies and the hubs and hub facilities are satisfactory.
- Shipping frequencies are important and have a strong effect on economies of scale;
- The feeder services from Germany are working quite well, but more capacity is needed.
- There are some infrastructure problems however with the northern ports.

As part of an agreement between Switzerland and Germany, Germany has committed to complete the Rhine rail line between Karlsruhe and Basel before the opening of the Gotthard axis in 2019 to ensure the rail capacity needed for the modal shift from rail to road (see following graphic). Germany has some financial worries due to its different financing arrangements, which could delay the modernisation of the German access lines. The first graphic below shows the planned improvements along the Gotthard alignment and the improvements to the north which are being co-ordinated with Germany.

Southern connections

The connections south are fine as far as Chiasso/Domodossola (Swiss-Italian Border). The problems start at the Italian border. Rail connections to the Mediterranean ports and to southern Italy
are inadequate. A Convention has been agreed with Italy that controls the southern access lines to the New Rail Link through the Alps (see Southern Connections graphic above). Demand in the longer term along the southern connections will depend to some extent on the performance of the Mediterranean ports.

In relation to the Italian network, the main problems are the length limits of freight trains (> 600 m) and that the P80 high profiles are currently only available on the Novara-Domodossola line. The first is addressed in the Italy-Switzerland agreement. The issue of high profiles is currently under discussion between the two countries.

**Eastern connections**

Switzerland has had less contact with countries to the east up to now. Any traffic to or from these countries travelling through Switzerland appears principally as trans-Alpine traffic on north-south routes. Such traffic accounts for some of the increase in north-south traffic. Switzerland will need to have more contact with countries to the east in future.

**Western connections**

Switzerland’s western connections are not good. The Geneva- Lyon link is still poor. There is a need for a by-pass around Lyon (which is under consideration in France). The connections to Paris are being improved by an upgrade of the Bellegarde/Bourg-en-Bresse link that will shorten the travel time between Geneva and Paris by 20 minutes as from December 2010 – as well as by the completion of the “TGV East” and “TGV Rhine-Rhone” that will further speed up the connections between northern/central Switzerland and Paris.

Switzerland will need to have more contact with France [and Spain] in future and will need to focus more on its international connections in this direction. There is virtually no rail traffic from Spain to Switzerland. There is very significant road transport from the west which would most likely cross the Alps from the north.

**Inland Waterways**

Basel is the highest navigable point on the Rhine. Inland waterways are used for mainly for imports to Switzerland and less for exports. As a result, the cargo is delivered to domestic destinations (not carried further as transit traffic).
New Railway Infrastructure projects

**Rail corridors across the Alps**

Figure 12. Lötschberg and Gotthard corridors – Facts and Figures

<table>
<thead>
<tr>
<th>Lötschberg-Simplon</th>
<th>Gotthard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opening</strong></td>
<td>1882 (Gotthard Tunnel) 1907</td>
</tr>
<tr>
<td>1996: Simplon tunnel</td>
<td>2017 Gotthard base-tunnel</td>
</tr>
<tr>
<td>2007: Lötschberg Base tunnel</td>
<td>2019 Ceneri base-tunnel</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>390 km</td>
</tr>
<tr>
<td><strong>Max. slope</strong></td>
<td>25%</td>
</tr>
<tr>
<td><strong>Freight volume mtp per year</strong></td>
<td>15 Mio.</td>
</tr>
<tr>
<td><strong>Freight Capacity</strong></td>
<td>5 per hour and direction</td>
</tr>
<tr>
<td><strong>Profile</strong></td>
<td>P/C 80</td>
</tr>
</tbody>
</table>

Source: Swiss presentation, Bern Workshop.

New base-tunnel through the Alps (NEAT)
Gotthard alignment – right side of graphic

New base-tunnel through the Alps (NEAT)
Enlarged view
Cross-section view – showing the vertical alignments of the three base tunnels

Effects of the base-tunnels

These three base tunnels require huge construction projects. Once completed, the greatly improved horizontal alignments will improve traction; reduce travel times; reduce energy consumption; and improve punctuality and reliability.

TEN-T Priority Project 24

European TEN-T Priority Project 24 will provide more efficient and reliable freight and passenger transport services along the railway axis Lyon and Genoa via Basel and Duisburg to Rotterdam/Antwerp. This rail axis is approximately 2,100 km long and traverses five EU Member States (the Netherlands, Belgium, Germany, France and Italy) as well as Switzerland. One of the important parts of the project is the installation of the European Rail Traffic Management System (ERTMS) along the corridor.

The PP 24 route transits Switzerland, making use of both the Simplon and Gotthard Passes. Along the Gotthard Pass alignment, the Gotthard Base Tunnel (due to be completed in 2017) and the Mt. Ceneri Base Tunnel (due to be completed in 2019) will greatly improve the grades, transit times and reliability of trans-Alpine services in future. Switzerland will benefit from the rail corridor’s greater service reliability.

Cross border sections and bottlenecks

Rotterdam/Antwerp-Duisburg: A major step forward was taken on this section with the entry into service of the Betuwe Line (PP5) in June 2007, linking the Port of Rotterdam to the German border in Emmerich, Germany. In the medium term, several projects are expected to be implemented on this section, such as the construction of a third track between Emmerich and Oberhausen (2015). In the longer term, the reviving of the Iron Rhine section should diversify rail connections to and from the Port of Antwerp. It is however not expected to enter into service before 2020 at the earliest. Until then, the Montzen route remains the main rail connection for freight heading between the Port of Antwerp and the Rhine Valley.
Mulhouse-Mülheim: Capacity upgrades are envisaged until 2012 on this 25 km stretch so as to enable the circulation of high speed trains between the new Rhine-Rhône high speed line and the Freiburg area in Germany. However, no works have been planned on the German section thus far.

The Alpine transversal: The Alpine crossing between Basel and the western Po Valley made a leap forward with the opening of the Lötschberg base tunnel in December 2007. Two additional base tunnels, the Gotthard and the Monte Ceneri, should enter in operation in 2017 and 2019 respectively.

A major issue consists of securing enough access capacity north and south of the Swiss tunnel by achieving a full four track section between Karlsruhe and Basel, and by implementing various capacity improvement projects between Domodossola and Novara, Luino/Chiasso and Milan.

The Apennine crossing: The issue at stake is that of smoothing sea-to-rail freight conditions in and out of the Port of Genoa. The major project on this section is the so-called Terzo valico dei Giovi, the third pass, which aims at creating additional rail capacity towards the Port of Genoa, both for freight and high speed passenger traffic. Works are expected to start in 2010.

**Rail 2030 – Bottlenecks**

The Swiss presentation highlighted that solutions would need to be found to bottlenecks in rail and freight passenger services on the East-West corridor between and within agglomerations. Current projections suggested there would be over-crowding, particularly in peak hours, with more people standing on trains.

However, for rail freight services across the Alps, there should not be freight transport bottlenecks in 2030, if the planned infrastructure is completed as currently proposed.
CHAPTER 4
AUSTRIA

Facts about Austria

Austria is – like Switzerland – a predominantly mountainous country in Central Europe. It has a total area of 83,859 km², about twice the size of Switzerland. The population of Austria, approximately 8.4 million people, is only a little more than that of Switzerland. On economic data such as GDP per capita and unemployment rate, Austria is not far behind the leading countries in the EU. On some rankings, Vienna is shown as the city with the highest quality of life in the world.

In relation to transport as well as in economic terms, Austria performs a strong bridging function between different European countries and areas:

- On one hand providing a bridge between the “old EU” countries with their high GDPs, facilitating intensive transport relations e.g. on Brenner corridor, between Italy and northern European countries.

- On the other hand, providing a bridge between the “old EU” and the new EU Member States which are experiencing relatively high GDP growth rates, resulting in strong transport growth, e.g. along the Danube axis and the Baltic Adriatic Axis.

A second important issue relates to Austria’s transport corridors. Due to the mountainous character of the landscape, the population and the industry as well as the transport infrastructure are all concentrated in relatively narrow areas. This concentration and the specific climatic conditions of Austria’s Alpine valleys are causing significant problems for the population and the environment.

Austrian Transport Policy and Funding

Transport Policy

Austria has recently published a new Infrastructure Strategy.¹ There, the overall goals for infrastructure policy have been defined as:

- Accessibility: improving and assuring accessibility as a key factor for location economy.

- Reliability: the investments in the transport infrastructure have to contribute to increased reliability of the transport system.

- Safety and security.

• Environment and social sustainability: focussing on a shift to the environmental friendly modes (e.g. priority on rail infrastructure) and improving the sustainability within each mode.

• Upgrading of infrastructure networks according to actual needs.

Within these overall goals, Modal Shift is an important long-term issue for transport policy.

Important measures that are necessary and need to be maintained include: Internalisation of external cost; and Cross-financing – both of which also help with the financing of the infrastructure. Additional measures might be necessary in ecologically sensitive areas: e.g. Alpine Transit regulatory schemes.

**Funding and Financing**

Austria has relatively well developed funding and financing arrangements.

The responsibility for the construction, operation and financing of the Austrian high-level rail and road infrastructure lies with 2 privately organised stock companies, which are 100% owned by the federal government. These are:

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Government-Owned Corporation</th>
<th>Sources of Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads</td>
<td>ASFINAG - Autobahnen- und Schnellstraßen-Finanzierungs AG (Motorways and Express Roads Financing Corporation)</td>
<td>Road toll revenues as well as other revenues. No state subsidies from the Federal Government</td>
</tr>
<tr>
<td>Rail</td>
<td>ÖBB-Infrastruktur AG</td>
<td>Revenues from infrastructure charging (rail infrastructure charging) as well as tickets and other revenues. Funding also provided via State subsidies.</td>
</tr>
<tr>
<td></td>
<td>(Austrian Federal Railways)</td>
<td></td>
</tr>
</tbody>
</table>

ASFINAG is responsible for and manages Austria’s primary road system – which covered 2 034 kilometres in 2005. The government has retained control over road tolling rates over the primary road network. ASFINAG receives all of its revenue from the nationwide system of charging for use of these particular roads. Public guarantees for loans to the road network operator (ASFINAG) reduce the costs of borrowing, although the company’s debt is not consolidated with that of the State.

Similar arrangements apply to ownership and operation of Austria’s Federal rail system. However, financial arrangements for the rail system include provision of funding via State subsidies.

The principles of financing are similar for both roads and rail. The companies raise the capital for their investments on the capital market. In order to create credit conditions on favourable terms, state liabilities are provided for the companies i.e. they have government guarantees. Financing is not based on the principles of project financing but on the principles of corporate financing. Financing is based on pre-financing with income from long-term refinancing.

Investment programmes are developed within these overall funding and financing arrangements. The overall objectives of the investment programmes include network developments that are fully coordinated between the federal government and the companies. The objectives are operationalised by investment programmes with a time frame of six years. Expenditure programmes are controlled on the basis of the yearly sum of the investment programmes as well as at the project level (double control).
The refinancing of the investments in the rail sector is mainly carried out through state subsidies (annuities). Long-term investment agreements are concluded between the federal government and the companies in which the state subsidies are defined on a concrete basis.

Under the annuity models used for both roads and rail financing, the company bears the liabilities. There are high debts on the liabilities side and assets (activated infrastructure investments) on the other side of the company’s balance sheets (balance sheet extensions). Debts and interest are refinanced by annuities over a long-term period which results in a slow reduction of debts. There is no impact on the companies’ profit-and-loss statements because depreciation and interest are covered by annuities.

**Structure of Austrian Transport**

Austria’s highly connected network of major domestic and international connections is shown in the graphic below.

*Figure 13. Structure of Austrian transport – domestic network and international connections*

*Source: Austrian Presentation, Bern Workshop (BMVIT: Austrian Generalverkehrsplan 2002).*
Freight Transport Demand in Austria

Austria’s carriage of domestic, bilateral and transit traffic by the different transport modes is set out in the table below.

Table 2. Austrian domestic, bilateral and transit freight traffic by mode 2008

(Billion tonne-kilometre)

<table>
<thead>
<tr>
<th>Freight mode</th>
<th>Domestic</th>
<th>Bilateral</th>
<th>Transit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T-k bn</td>
<td>(%)</td>
<td>T-k bn</td>
<td>(%)</td>
</tr>
<tr>
<td>Road</td>
<td>15.9</td>
<td>72.6</td>
<td>11</td>
<td>48.7</td>
</tr>
<tr>
<td>Rail</td>
<td>5.9</td>
<td>26.9</td>
<td>10.3</td>
<td>45.6</td>
</tr>
<tr>
<td>IWW</td>
<td>0.1</td>
<td>0.5</td>
<td>1.3</td>
<td>5.7</td>
</tr>
<tr>
<td>Total</td>
<td>21.9</td>
<td>100</td>
<td>22.6</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Austrian Presentation, Bern Workshop – based on data from Statistik Austria and additional data and calculations BMVIT.

Remarks on data sources

Road transport statistics are collected in accordance with EU Regulation 1172/98. Every country collects data based on the vehicles registered in the country. A combination of different data sources is necessary to obtain statistics on the total road transport on national territory. In Austria, BMVIT makes the necessary calculations. Aggregated data are available on a yearly basis. Detailed data – cited below – are available from model calculations in the project Verkehrprognose Österreich 2025 +.
**Modal Shares**

The modal shares of the total freight transport carried in Austria in the above table are as follows – road: 64%; rail: 33%; and inland waterways: 4%. Trends in overall shares of total freight transport by mode are set out in the following graphic:

**Figure 14. Trends in Freight Transport by mode**

![Figure 14: Trends in Freight Transport by mode](image)

Source: Austrian Presentation, Bern Workshop.

The Rail and Inland Waterway shares of domestic, bilateral and transit freight transport respectively carried across Austria by transport category are as follows – domestic transport: 27%; bilateral transport: 51%; transit traffic: 29%.

In relation to Austrian transit traffic, it is important to note that road transport currently has a 71% share. Rail and inland waterway together have a 29% share of transit traffic. Road transport is currently handling some 8.5 billion tonne-kilometres more transit traffic than rail and inland waterway combined (5.9 billion tonne-kilometres).
**Freight Transport Relations – Country of Loading and Unloading**

Bilateral freight by Country of Loading (2005)

Bilateral freight by Country of Unloading (2005)

**Road + Rail + Inland Waterways**

Transit Traffic by country of loading and mode

<table>
<thead>
<tr>
<th>Country of Loading</th>
<th>Rail</th>
<th>Road</th>
<th>IWW</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE</td>
<td>7 946</td>
<td>18 522</td>
<td>185</td>
<td>26 674</td>
</tr>
<tr>
<td>FR</td>
<td>84</td>
<td>959</td>
<td>0</td>
<td>1 053</td>
</tr>
<tr>
<td>IT</td>
<td>3 504</td>
<td>19 046</td>
<td>0</td>
<td>22 550</td>
</tr>
<tr>
<td>CH</td>
<td>153</td>
<td>1 149</td>
<td>0</td>
<td>1 302</td>
</tr>
<tr>
<td>SK</td>
<td>797</td>
<td>622</td>
<td>305</td>
<td>1 723</td>
</tr>
<tr>
<td>SI</td>
<td>365</td>
<td>1 539</td>
<td>0</td>
<td>1 905</td>
</tr>
<tr>
<td>CZ</td>
<td>1 030</td>
<td>1 302</td>
<td>0</td>
<td>2 332</td>
</tr>
<tr>
<td>HU</td>
<td>1 956</td>
<td>2 409</td>
<td>461</td>
<td>4 826</td>
</tr>
<tr>
<td>Rest EU 27</td>
<td>1 951</td>
<td>6 867</td>
<td>240</td>
<td>10 758</td>
</tr>
<tr>
<td>Rest Other</td>
<td>191</td>
<td>2 363</td>
<td>67</td>
<td>2 621</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17 987</td>
<td>55 488</td>
<td>1 258</td>
<td>75 733</td>
</tr>
</tbody>
</table>

Transit by Country of Unloading and Mode (M t)

<table>
<thead>
<tr>
<th>Country of Unloading</th>
<th>Rail</th>
<th>Road</th>
<th>IWW</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE</td>
<td>4 458</td>
<td>17 677</td>
<td>617</td>
<td>22 752</td>
</tr>
<tr>
<td>FR</td>
<td>143</td>
<td>1 045</td>
<td>0</td>
<td>1 187</td>
</tr>
<tr>
<td>IT</td>
<td>8 095</td>
<td>20 156</td>
<td>0</td>
<td>28 250</td>
</tr>
<tr>
<td>CH</td>
<td>116</td>
<td>1 398</td>
<td>1</td>
<td>1 423</td>
</tr>
<tr>
<td>SK</td>
<td>499</td>
<td>326</td>
<td>20</td>
<td>526</td>
</tr>
<tr>
<td>SI</td>
<td>695</td>
<td>1 336</td>
<td>0</td>
<td>2 296</td>
</tr>
<tr>
<td>CZ</td>
<td>108</td>
<td>1 137</td>
<td>0</td>
<td>1 246</td>
</tr>
<tr>
<td>HU</td>
<td>2 090</td>
<td>1 602</td>
<td>232</td>
<td>4 372</td>
</tr>
<tr>
<td>Rest EU 27</td>
<td>1 153</td>
<td>8 127</td>
<td>342</td>
<td>9 621</td>
</tr>
<tr>
<td>Rest Other</td>
<td>430</td>
<td>3 413</td>
<td>48</td>
<td>3 990</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17 987</td>
<td>56 488</td>
<td>1 258</td>
<td>75 733</td>
</tr>
</tbody>
</table>

Source: Austrian National Transport Model, Verkehrsprognose.
Domestic and international volumes: rail and road freight

Rail freight traffic in Austria

Road freight traffic in Austria

Austrian Intercontinental Freight Transport Flows

Austria’s “intercontinental” freight transport flows are shown in the following tables. These tables are based on external trade statistics prepared in accordance with the EU-Extrastat system, which is monitoring the commodity flows between EU Member States and Third Countries. They encompass only those flows which come to the EU border by sea transport. The tables below reflect the mode of transport used at the EU border – which is assumed to be the mode of internal transport used within the EU. Despite the limitations, they provide some useful insights on rail, inland waterway and road transport contributions to the carriage of Austria’s international freight.
Table 3a. Sea transport imports by type of cargo and hinterland mode

<table>
<thead>
<tr>
<th>Weight of Goods (1,000 tonnes)</th>
<th>Inland Mode</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rail</td>
<td>Road</td>
<td>Inland Waterways</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Bulk</td>
<td>2620</td>
<td>249</td>
<td>233</td>
<td>3102</td>
<td></td>
</tr>
<tr>
<td>Container</td>
<td>681</td>
<td>274</td>
<td></td>
<td>956</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3301</td>
<td>523</td>
<td>233</td>
<td>4058</td>
<td></td>
</tr>
</tbody>
</table>

Table 3b. Sea transport exports by type of cargo and hinterland mode

<table>
<thead>
<tr>
<th>Weight of Goods (1,000 tonnes)</th>
<th>Inland Mode</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rail</td>
<td>Road</td>
<td>Inland Waterways</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Bulk</td>
<td>933</td>
<td>656</td>
<td>167</td>
<td>1755</td>
<td></td>
</tr>
<tr>
<td>Container</td>
<td>653</td>
<td>839</td>
<td>262</td>
<td>1755</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1586</td>
<td>1495</td>
<td>429</td>
<td>3510</td>
<td></td>
</tr>
</tbody>
</table>


Methodological Remarks: External Trade Statistics are not focussing on the variable “mode of transport”. Respondents are not always aware of the transport chain components of the goods they are receiving or sending. Thus the information can be biased. The total amount of intercontinental goods flow seems to be under-estimated in these tables – but it can be used for an indication on the structure of hinterland transport.

Despite the strong methodological concerns in the use of these data, some aspects worth noting are:

- The majority of bulk freight imports and exports by sea transport is carried by rail and inland waterways as hinterland modes. For imports, their shares are 84% and 8% – a total of 92% – with road transport carrying only 8%. For exports, their shares are: 53% and 10% – a total of 63% – with road transport carrying 37%.

- In relation to containerised imports, the table shows rail carrying 71% and road 29%. In relation to containerised exports, rail carries 37%, inland waterways 15% and roads 48%. The usage of rail and inland waterways for exports is much less than for imports.

There are also large differences in usage of rail freight transport in Austria for the carriage of overall imports and exports depending on country of origin and destination. These are highlighted in the following tables:
Table 4a. Imports via sea transport showing hinterland transport mode and destination country

<table>
<thead>
<tr>
<th>Weight of Goods (1,000 tonnes)</th>
<th>Inland Mode</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rail</td>
<td>Road</td>
</tr>
<tr>
<td>Europe</td>
<td>53</td>
<td>8</td>
</tr>
<tr>
<td>Asia</td>
<td>621</td>
<td>375</td>
</tr>
<tr>
<td>America</td>
<td>1020</td>
<td>101</td>
</tr>
<tr>
<td>Africa</td>
<td>1595</td>
<td>33</td>
</tr>
<tr>
<td>Australia</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Statistik Austria – External Trade Statistics 2008 analysis BMVIT.

Table 4b. Exports via sea transport showing hinterland transport mode and destination country

<table>
<thead>
<tr>
<th>Weight of Goods (1,000 tonnes)</th>
<th>Inland Mode</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rail</td>
<td>Road</td>
</tr>
<tr>
<td>Europe</td>
<td>22</td>
<td>71</td>
</tr>
<tr>
<td>Asia</td>
<td>672</td>
<td>779</td>
</tr>
<tr>
<td>America</td>
<td>477</td>
<td>414</td>
</tr>
<tr>
<td>Africa</td>
<td>359</td>
<td>172</td>
</tr>
<tr>
<td>Australia</td>
<td>56</td>
<td>58</td>
</tr>
</tbody>
</table>


Methodological Remarks: The same methodological remarks apply to the above tables. The information on which they are based can be biased. The total amount of intercontinental goods flow seems to be under-estimated in these tables. Despite the strong methodological concerns, some aspects worth noting are:

- For imports from overseas using sea transport, the rail shares are as follows. For Europe origins, 84%. For Asia, 61%. For America, 85%. For Africa, 90%. For Australia, 67%.

- For exports from overseas using sea transport, the rail shares are as follows. For European destinations, 16%. For Asia, 41%. For America, 45%. For Africa, 65%. For Australia, 45%.
Austrian Imports and Exports – Gateway Ports

Important Seaports

Table 5. Important Seaports for Austria

<table>
<thead>
<tr>
<th>Seaport</th>
<th>Export 1000 Tonne</th>
<th>Import 1000 Tonne</th>
<th>Total 1000 Tonne</th>
<th>Share 2008 / 2007 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rotterdam</td>
<td>99</td>
<td>3809</td>
<td>4799</td>
<td>27%</td>
</tr>
<tr>
<td>2. Koper</td>
<td>1187</td>
<td>3089</td>
<td>4277</td>
<td>24%</td>
</tr>
<tr>
<td>3. Hamburg</td>
<td>1629</td>
<td>1041</td>
<td>2670</td>
<td>15%</td>
</tr>
<tr>
<td>4. Antwerp</td>
<td>1318</td>
<td>1266</td>
<td>2585</td>
<td>14%</td>
</tr>
<tr>
<td>5. Triest</td>
<td>703</td>
<td>622</td>
<td>1325</td>
<td>7%</td>
</tr>
<tr>
<td>6. Ports in Bremen</td>
<td>1200</td>
<td>100</td>
<td>1300</td>
<td>7%</td>
</tr>
<tr>
<td>7. Konstanza</td>
<td>11</td>
<td>609</td>
<td>620</td>
<td>3%</td>
</tr>
<tr>
<td>8. Rijeka</td>
<td>270</td>
<td>38</td>
<td>308</td>
<td>2%</td>
</tr>
<tr>
<td>9. Ports in Niedersachsen</td>
<td>56</td>
<td>139</td>
<td>195</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>6473</td>
<td>10714</td>
<td>18078</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: (1) Without Ports in Bremen.

Source: Austrian Port’s Transit relations 2008; Source Journal “Verkehr”.

Methodological Remarks. These data, based on surveys from the port administration, seem to be more reliable than the external trade statistics, in terms of the total amount of transport.

Figure 15. Total Austrian Imports and Exports handled at different European Ports

Notes:

- Rotterdam is the most important port for Austria in terms of port throughput volumes. It handled 4.8 m tonnes of Austrian import and export cargo in 2008.

- The Port of Koper (Slovenia) handled 4.5 M tonnes of Austrian import and export cargo, not that much less than the Port of Rotterdam. Koper is the dominant port for bulk goods such as Petroleum, Oil and Liquid (POL) products and important for motor vehicles and food products.
• Hamburg/Bremmerhaven are important to Austria for containers/combined transport
• Antwerp is also important to Austria for container traffic

**Northern versus Southern Ports**

For Austrian imports and exports in 2008, the northern ports had a 64% market share based on throughput volumes – and the southern ports had a 36% market share. In 2008, the market share of the southern ports increased by 3%.

<table>
<thead>
<tr>
<th></th>
<th>Export 1000 Tonnes</th>
<th>Import</th>
<th>Total 1000 Tonnes</th>
<th>Share %</th>
<th>2008/2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Ports</td>
<td>5193</td>
<td>6355</td>
<td>11549</td>
<td>64%</td>
<td>1% (1)</td>
</tr>
<tr>
<td>Southern Ports</td>
<td>2171</td>
<td>4358</td>
<td>6529</td>
<td>36%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7364</strong></td>
<td><strong>10714</strong></td>
<td><strong>18078</strong></td>
<td><strong>100%</strong></td>
<td><strong>2% (1)</strong></td>
</tr>
</tbody>
</table>

*Note:* (1) Without Ports in Bremen.

*Source:* Austrian Port’s Transit relations 2008; Source Journal “Verkehr”.

*Note:* The following graphic highlights the Port market shares. Northern European Ports handled 64% and Southern European Ports handled 36% of Austrian import and export cargo in 2008.

**Hinterland connections – network services and demand**

**Importance of Hinterland Connections**

The Austrian presentation highlighted that:

• Hinterland connections play an important role for the Austrian economy.
• Improvements are necessary to maintain the competitiveness of Austria as an inland country.
• Sustainable modes of transport like rail and inland waterways will have to play the most important roles in future hinterland connections.
These points recognise that international transport corridors can cause significant adverse impacts, both to the populations affected by noise and the duration of transport activities and also to the local and built environments, particularly in ecologically sensitive areas like the Alpine region. Increasing the use of rail and inland transport for hinterland transport can help reduce the burdens and adverse population and environmental impacts.

The presentation also highlighted important measures required to ensure more sustainable hinterland connections. These included:

- Infrastructure development for the hubs and hinterland connections required.
- The necessary political measures, required to deal with: external costs; cross financing; and transit regulation systems in Alpine areas.

The next section explores the state of current transport connections between Austria and other countries, in the different directions.

**Current Inland Transport Connections**

Austria is very dependent on inland transport links in all directions as well as its links to the gateway ports. The advice provided to the Workshop on the current situation with inland transport connections to Austria is set out below.

**Northern connections**

Additional infrastructure is needed on feeder lines in Germany. The signs from Germany are that they are likely to provide the infrastructure when needed along the northern feeder lines. Some possible new variants for this area are currently being developed for consideration.

There’s no immediate need for additional capacity in the corridor via the Brenner, crossing the Danube and on through Munich. The line via Nuremburg is also satisfactory. However, some capacity problems are expected in the vicinity of Munich in future. Some additional infrastructure between Rosenheim (border to Austria) and Munich is planned for development after the finalisation of the Brenner Base Tunnel in 2026.

The rail connections to Prague and the Czech Republic are satisfactory. The main connections to Vienna are part of TEN-T PP 22 and 23. Investments are being made by the Czech Republic as required.

**Southern connections**

The Brenner corridor is heavily used. Feeder lines down to Verona will be better once the current improvement programmes are completed.

The main issues relate to operational aspects of the Italian railways. Liberalisation of the freight markets was expected to help solve the problems. However, the burdens of the Italian network are high and significant improvements are needed to reach international standards.

In terms of infrastructure, there is good infrastructure on the Italian side from Venice to the Austrian border. The main problems with rail bottlenecks are on the Austrian side, which will be solved by the ongoing Austrian projects of the Koralm Railway line and the Semmering Base Tunnel.
Eastern Connections

Connections to the east are very important. Neighbouring countries are growing and improving their infrastructure. Priorities are being driven more by neighbours’ plans for high speed rail. The deficits in infrastructure quality generally relate to secondary networks and maintenance. The rail connections to Budapest are fine. However, there are some longer distance issues, including connections to Trans-Siberian services. Russia is strongly promoting a broad gauge line to Bratislava and Vienna.

The Balkan countries and the south-east will benefit from planned infrastructure investment. However, TEN-T PP 10 is not functioning at all at the moment. Border crossings between South-East European Countries (e.g. Serbia, Albania and Macedonia) take a lot of time. People are working on the issues.

Outlook

Forecast road and rail carriage – and impact of economic crisis

Austria has undertaken some scenario analysis to test the possible implications of different assumptions.

- Scenario 1 reflects a return to business as usual, once the recession passes. However, while the forecast rail and road traffic grows at about the same trend rate as before the GFC, the trend line has shifted downwards with no recovery from the losses due to the recession.

- Scenario 2 assumes that political measures are taken to increase the costs of using the roads by around 70%. This reduces the demand for road freight considerably – and increases the demand for rail freight considerably.

The outlook to 2025 under these two scenarios for road and rail transport is set out in the graphic below:

Figure 16. Forecast Freight Transport demand – following crisis and interruption to growth
The uncertainties seem to point in the direction of possible increases in the rail freight demand over status quo levels. The next section highlights the major railway corridors and axes in and around Austria.

Transport infrastructure – plans for network improvements

Many transport projects are under way which will improve transport connections between Austria and neighbouring countries. The most important corridors are shown in the following graphic.

Figure 17. Pan-European Corridors and EC Trans-European Network – Transport improvements

Source: Workshop presentation.
The position on the major Trans-European Network – Transport (TEN-T) projects identified is as follows:

- **TEN-T PP1**: Traversing Germany, Austria and Italy, this will be important high capacity *north-south* rail axis from Berlin via Munich and Innsbruck crossing the Alps along the Brenner Corridor and extending to Verona, Bologna and Napoli. Estimated completion date: 2026.

**Brenner Axis**

A four track line is being built along the Innsbruck Valley and south to Verona. The key section will be the Brenner Base Tunnel which will involve a 55 km Tunnel and expenditure around €8 billion over the period to 2026 (funded by Italy, Austria and the European Commission). The new tunnel will start at Fortrezza and join up with the existing Innsbruck by-pass – thus creating a 62.5 km long underground tunnel link and the northern and southern access routes.

- **TEN-T PP6**: Connecting the Iberian peninsula with the eastern part of Europe and beyond, this rail axis will run from Lyon to Trieste, Ljubljana, Budapest and the Ukrainian border, with a spur from Trieste to Koper and be the main *east-west* rail passage south of the Alps. Estimated completion date: 2025.

- **TEN-T PP17**: Traversing France, Germany, Austria and Slovakia, this TGV rail axis will run from Paris to Strasbourg, Stuttgart and Wien to Bratislavan east-west oriented axis crossing very densely populated areas in the centre of Europe. Estimated completion date: 2020.

- **TEN-T PP18**: Crossing Europe transversally from the North Sea to the Black Sea, this waterway axis provides connections from Rotterdam and Antwerp via the Meuse and Rhine rivers through the Main river and the Main-Danube Canal to the Danube river, that flows until the Black Sea. It provides a connection to the NL waterways and the Seine-Northern Europe Canal (PP30). Estimated completion date: 2021.
• **TEN-T PP22:** Dresden – Prague – Vienna – Budapest – Greece. The Prague to Vienna section is complete. The remaining TEN-T 22 project work includes the sections from Vienna to Budapest, the section between Budapest and the junction between corridors to Sofia/Athens and to Constanza; and improvements along both these corridors. Completion will improve Austria’s accessibility,

• **TEN-T PP23 and PP 25:** Wien/Brno – Warszawa – Gdansk. Crossing Poland, the Czech Republic, Austria and Slovakia, this multimodal north-south axis (PP23 rail/PP 25 road) will connect the port and city of Gdańsk with Katowice, Žilina and Bratislava and via a western spur from Brno to Vienna. Estimated completion date: 2025.

Note: There is an international push for a corridor that is to be extended to become a Baltic – Adriatic connection. Austria is pushing for PP23 to be extended to Venice and Bologna – as part of the EC’s TEN-T “core” network deliberations.

**Figure 18. Baltic – Adriatic Axis**

![Baltic Adriatic Axis: An Important Port Hinterland Connection](source:austrian-presentation, bern-workshop)
Semmering Base Tunnel

The Semmering Base Tunnel is a major Austrian infrastructure project related to this north-south corridor.

The Project involves a twin tube tunnel system with a tunnel length of 27.2 km. Its gradient is 8.4%. The project currently involves exploratory work leading to detailed planning stages. Its estimated cost is €2.8 billion, with expected completion in 2022. When completed, it will provide better connections from Austria to the ports of Venice and Trieste. If the Baltic to Adriatic project is supported, the Semmering Base Tunnel will make a significant contribution to improved rail connections along the southern part of the axis.

Source: Austrian presentation, Bern Workshop.
The Austrian presentation included the following slide prepared by the Port of Venice Authority, which is supporting greater use of the Mediterranean ports. It shows indicative estimates of CO\textsubscript{2} emissions for cargo carried by sea from Port Said to different ports and then by inland rail to European destinations.

The graphic highlights the finding that with longer shipping distances to the northern European ports and the inland rail connections to countries nearby, the levels of CO\textsubscript{2} emissions are higher than is the case for countries close to the Mediterranean ports, for which shipping distances to the Mediterranean ports are less – and inland transport distances are relatively short.

A number of assumptions have been made in preparing the graphic, including that countries are served via the closest port. Of course, if Austria is served via one of the north-western ports instead of one of the Mediterranean ports (as assumed in this graphic), the CO\textsubscript{2} emissions involved for Austria would be coloured red instead of green, as shown.

Of course, any shift towards the southern ports in future would depend on a great many other factors i.e. not only on CO\textsubscript{2} emissions.
Global Maritime Market

*Capacity increased in 2010 as global shipping recovers*

A press release from HIS Global Insights dated 7 May 2010 (not longer before the Workshop) provided the following forecasts for global cargo volumes for the short term as well as assessments of the prospects for the major routes and shipping operator capacity:

| World trade by all modes of transportation will grow 8.5 per cent in 2010, rebounding strongly from a deep dive during the global economic crisis, according to the latest forecast from IHS Global Insight's World Trade Service. Total world trade is expected to grow 7.8 per cent in 2011. |
| Carriers are beginning to respond to an upturn in cargo volumes by increasing capacity, according to the First Quarter Trends in World Economy and Trade report from the IHS Global Insight World Trade Service. |
| Trade volumes on the Far East to Europe routes are forecast to rise 8.0 per cent in 2010. The export trade from Europe to Asia grew in 2009 and is expected to grow in 2010. Trans-Pacific eastbound trade – from Asia to North America – began to recover in the third quarter 2009, though the downturn in 2009 was 18 per cent, and is forecast to grow 10 per cent in 2010. Solid growth is forecast for westbound trade after two years of decline. Eastbound trans-Atlantic trade from North America to Europe is forecast to return to 2007 levels by 2013. However, westbound trans-Atlantic traffic will not recover to 2007 levels until 2015. |
| Major container shipping operators recorded huge losses in 2009. However, in February and March 2010, the number of container ships in lay-up diminished and stood at 1.2 million TEUs, or 9.1 per cent of the container fleet on 1 March, the lowest level since July 2009. Additional capacity is expected to be taken back into service in the near future as new services are opened and vessels reduce their cruising speed. |

*Source: HIS Global Insight, 7 May, 2010.*

Global Outlook to 2030 and beyond

*Global projections* to 2030 and beyond anticipate continued global population growth for the period to 2050, with growth rates decreasing over time.

Global GDP is expected to increase 30% from 2007 to 2015 and could double over the period from 2007 to 2030. By 2050, global GDP could grow to over three times its 2007 level.

GDP per capita is expected to increase around 15% from 2007 to 2015, close to 60% by 2030 and around 140% over the period to 2050. The largest absolute increases in GDP per capita are likely to be in OECD developed countries – but the fastest growth rates will be in developing countries.

Regional Outlook

*Projections for Asia.* By 2030, GDP in China could increase to well over 3 times its 2007 level – while in India it could increase to 3 times its 2007 level. By 2050, global GDP could grow to over three times its 2007 level – and GDP in China and India could increase to around seven to eight times
2007 levels. GDP per capita could increase to levels over seven times higher in China and over 5.5 times higher in India, over the period 2005-2050.

**Projections for Europe** anticipate a slowing in population growth over the period to 2050. GDP is expected to grow, but more slowly than previously: i.e. less than 10% from 2007 to 2015; around 40% over the period from 2007 to 2030; and a little over 60% from 2007 to 2050. In combination, these trends will contribute to continuing increases in GDP and GDP per capita for Europe as a whole and in most European countries.

**Projections for other Regions.** Higher growth than historic trends is expected in Turkey and in developing countries in other Regions, including the Middle East, Latin America and Africa.

**Impacts on trade and transport.** The global and regional increases in population levels and economic activity are likely to be associated with increasing trade and trade-related transport requirements. The largest increases are expected in intra-Asia trade and transport and on the major trade routes Asia/US and Asia/Europe. Trade and trade-related transport growth is also expected in other regions, including the Middle East, Turkey, Latin America and Africa.

For the **European Union**, the expected growth is fragile in the short term and the outlook is patchy for some time. However, the positive global growth and the stronger regional outlook in the short-medium term and longer term can be expected to make positive contributions to the overall levels of trade and maritime transport to and from the EU – and to increasing growth in maritime volumes handled by the N-W European ports in particular.

### Possible new trade routes and infrastructure developments inside/outside Europe

The OECD presentations highlighted a number of possible changes in trade routes and other expected maritime developments raised in discussions. Significant changes in prospect in the short term include:

- European TEN-T rail, road and waterway priority projects currently under way.
- Panama Canal enlargement – expected to be complete by 2014.
- Larger container vessels (10 000-12 500 TEUs) currently being delivered – and on order.
- Increasing liner shipping services from Asia/Southth Asia to Europe/North America via the Suez Canal.

Possible important changes in the medium term to 2030 would include:

- improved land transport connections between Asia and Europe, including possible upgrading of Russian, Trans-Siberian and Trans-Asian rail links (as proposed by UN ESCAP and other parties).

In the longer term (to 2050), new trade route possibilities could include:

- opening of the Northern Sea Passage for up to 3 months p.a. – and/or the Northwest passage.

All of these developments could be expected to have some impact on the European Region. The possible changes in trade routes in the medium term – e.g. following improvements in land transport
connections between Asia and Europe – could have significant impacts on rail freight volumes. However, the land transport volumes that might be possible (e.g. between 0.5 and 1 million TEUs per annum) would be very much less than the volumes being transported by maritime containers (around 20 million TEUs per annum). In the longer term, the expected opening of the Northern Sea passage for longer periods each year could also lead to some additional development opportunities, especially in the Baltic Sea Region. The more important aspects are considered further in the following sections.
CHAPTER 6
OPPORTUNITIES AND CHALLENGES

Economic outlook

Sources of growth

Expected growth in countries in Asia (China), South Asia (India) and South East Asia will lead to increasing trade and related transport requirements – with strong growth expected within the Asian region and between Asia and its largest markets, including Europe in particular. The stronger growth expected in other developing regions – including Turkey and the Middle East, Central America (including Mexico), Latin America and Africa – will also contribute to changing trade patterns and increasing transport volumes.

The Regional outlook for Europe is not as robust as it is for developing regions in the short term. However, the OECD Economic Outlook May 2010 advised a gradual recovery is under way driven by economic policy stimulus, a rebound in world trade and improving financial conditions, despite the recent significant financial market volatility.

Outlook for the Inland Hubs

The economic outlook for both inland hubs – Austria and Switzerland – is likely to be at least as positive as for Europe generally. In fact, Austria and Switzerland geographically should be better placed than many western European countries.

Austria and Switzerland are closer to the eastern European countries whose growth rates are expected to be higher than those of most EU member countries, over the next decade at least.

Importantly, they are also closer geographically than most other EU members to the major developing countries in Asia (e.g. China), in south Asia (e.g. India), Turkey, the Middle East and Africa.

Opportunities

Switzerland and Austria have geographical locations which are likely to benefit from the changes in the economic landscape expected in Europe in the next decade, as the European economy tilts eastward. There will be greater opportunities for exports of goods and services as eastern European countries grow and develop. There will also be greater opportunities for sourcing the goods and services they need from lower cost countries in eastern Europe.

Proximity to greatly increased trade flows along the Mediterranean suggests there will also be opportunities for Switzerland and Austria to benefit from the increasing growth of China, India and other developing countries and the increasing trade that can be expected as a result.
Challenges

Austria was adversely affected by the global financial crisis in part because Austria had helped fund some of the developing countries in the region – including eastern European countries in particular – before the financial crisis. While Austria has weathered the storm, its economy will need to go through a period of fiscal consolidation and debt reduction, with some reduction in growth prospects over the next few years.

Public finances in Switzerland were not adversely affected by the economic crisis. The Swiss Federation’s Budget achieved a surplus of 2.7 billion Swiss Francs in 2009 and its debt level was reduced by SF 11 billion. The overall public debt (Swiss Federation, Cantons, municipalities and social security) rose to around 40% of GDP and the current account balance has remained positive (around +2% of GDP). Consequently, there is no need for any fiscal consolidation that could affect economic growth. As well, the maintenance and development of infrastructure is not in question, thanks to a system of financing that is relatively independent of the general Budget and to the two special transport infrastructure funds created.

Transport policy and regulatory frameworks

Transport policy and regulatory frameworks in Switzerland and Austria have needed to adapt to deal with the pressures on transport and the environment in the sensitive Alpine regions.

Switzerland

Switzerland experienced an increase over many years in trans-Alpine transport and in particular road transport in transit across Switzerland. Significant improvements were made to rail transport infrastructure and services but road transport demand remained too high.

Modal shift of freight on to rail is now part of Switzerland’s Federal Constitution. The goal is a limit of 650 000 heavy freight vehicles a year, at the latest two years after the opening of the Gotthard base tunnel. The TEN-T 24 Gotthard and Mt. Ceneri base tunnel projects will provide the rail capacity required.

Road taxes/charges are levied on trans-Alpine road transport to limit road transport and promote modal shift. The charges themselves are set in accordance with an Agreement reached with the EU. The heavy vehicle tax has reached the maximum level allowed under the bilateral EU-CH Agreement on land transport and cannot be increased in future.

The Swiss advised that the road taxes/charges are paid partly by international road freight operators, with their share of heavy vehicle tax revenues around a quarter. These trans-Alpine road transport taxes/charges are then ear-marked and applied [primarily] to the funding of the major rail transport improvements that have been agreed.

Rail freight volumes are expected to rise from around 25 million tonnes in 2010 to around 36 million tonnes by 2030 – over the same period as trans-Alpine road freight movements reduce to 650 000 heavy vehicles per year.

The Swiss Ministry advised that consideration is being given to the possibility of a trading system for alpine crossing rights, which would need to be developed in agreement with other Alpine countries and in line with European legislation.
Austria

Austria has recently published a new Infrastructure Strategy. There, the overall goals for infrastructure policy have been defined to include: accessibility; reliability; safety and security; environment and social sustainability; upgrading of infrastructure networks according to actual needs. Within these overall goals, Modal Shift is an important long-term issue for transport policy.

Austria has relatively well developed funding and financing arrangements. The responsibility for the construction, operation and financing of the Austrian high-level rail and road infrastructure lies with 2 privately organised stock companies, which are 100% owned by the federal government. These are: ASFINAG (Motorways and Express Roads Financing Corporation); and ÖBB-Infrastruktur AG (Austrian Federal Railways). The principles of financing are similar for both roads and rail. The companies raise the capital for their investments on the capital market. In order to create credit conditions on favourable terms, the companies have government borrowing guarantees. Financing is based on the principles of corporate financing not project financing.

Overall, Austria’s infrastructure funding and financing arrangements are quite sophisticated and very well adapted to the country’s infrastructure needs. Austria is also giving consideration to additional measures that might be necessary in ecologically sensitive areas – such as Alpine Transit regulatory schemes.

Inland connections from north-west European gateway ports

The Transcontinental Infrastructure project has singled out connections between gateway ports and their hinterlands for special attention, given the issues encountered to date, the outlook for robust economic growth over the period to 2030 and beyond – and the expectation that trade-related growth will be at least as important in the future as its has been in the past.

Neither Switzerland nor Austria has its own gateway port (or any ports at all) but both countries have well established inland connections from gateway ports in other European countries.

The Inland Hubs Case Study examined how Switzerland and Austria are currently being served by inland connections from the north-western European gateway ports and from the Mediterranean ports. This item focuses on inland connections from the north-western European gateway ports.

Switzerland

Opportunities

Clearly, the Swiss legislative framework for limiting trans-Alpine crossings by road transport will be important in the short-medium term in limiting and reducing road transport volumes and their adverse impacts on sensitive Alpine areas. Determined efforts will need to be made to do so, given the current road transport volumes (around 1 million heavy freight movements) are well above the target (650 000 movements).

Completion of the strategically important Trans European Network – Transport (TEN-T) projects that are currently under way will help, given the substantial improvements in rail transport connections that will result.

One of the most important will be the TEN-T rail axis from Rotterdam/Antwerp via Germany and across Switzerland to Genoa (and separately to Lyon). TEN-T Priority Project 24 will provide improved services along the north-south railway axis which is approximately 2,100 km long. One important part of the project is the installation of the European Rail Traffic Management System (ERTMS) along the corridor.

At its northwestern end, the Betuwe line is operating between the Port of Rotterdam and the German border – although with restrictions. Improvements are required from Antwerp in Belgium and plans include revival of the old “Iron Rhine” section of rail track to improve connections to the Port of Antwerp. This link still requires Dutch/Belgian agreement and is not expected to enter service before 2020.

The TEN-T PP24 route transits Switzerland, making use of both the Simplon and Gotthard Passes. Along the Gotthard Pass corridor, the Gotthard Base Tunnel (due to be completed in 2017) and the Mt. Ceneri Base Tunnel (due to be completed in 2019) will greatly improve the grades, transit times and reliability of trans-Alpine services in future.

Rail freight from ports in Belgium, the Netherlands and Germany destined for Switzerland will benefit from the greater speed, reliability and efficiency of rail freight services along the PP24 corridor, following the completion of the TEN-T project, expected by 2020.

Rail freight service improvements are likely to result from the EU’s competition policy framework for rail freight in Europe. New cross-border rail freight operators can be expected, operating a range of new cross-border rail freight services with competitive rates and charges.

**Challenges**

One of the major challenges will be the size of the expected increases in rail freight volumes from the north-western ports. Under some scenarios, the Port of Rotterdam anticipates that throughput volumes at the port could increase three-fold by 2030. A large part of the increase could be in container volumes. Such increases would depend on export and import volumes increasing from countries utilizing Rotterdam for port handling, including Switzerland.

This would mean a continuation of Swiss-related freight being transported inland by road, rail and inland waterways over long distances from the north-western ports. The distances involved would be around:

| From: Port of Rotterdam/Antwerp | To: Basel/Zurich | 900 kms |

At the same time as overall volumes are expected to increase, the Port of Rotterdam’s contractual arrangements with terminal operators are expected to lead to mode shares of inland waterway and rail freight transport increasing significantly over the next decade and beyond.

The combination of higher port throughput and higher rail freight mode shares of the inland transport involved, if realised, would result in rapid increases in port related freight on inland waterway and rail modes. This would fit neatly with Swiss objectives for modal shift away from road transport. However, significant increases in the next ten years – i.e. before the major Swiss and other rail improvements are completed – might put considerable pressure on long distance rail services along these corridors.
Once the infrastructure improvements are completed, there would seem to be better prospects of Switzerland being able to reduce its road transport modal shares in favour of rail. However, there could be other challenges in doing so. The overall performance of rail freight services from origin to destination at that time will not depend only on the improvements made. Rail freight’s performance will also depend on the actual and potential levels of service between the same international origins and destinations via alternative modes (e.g. road transport from north-west European ports to Switzerland) – as well via alternative ports (e.g. the Mediterranean ports) and their inland connections.

In relation to road transport, as advised in Chapter 7, Swiss regulatory arrangements include heavy vehicle taxes on trans-Alpine traffic – aimed at reducing heavy vehicle volumes and increasing use of rail transport. These taxes are currently set at the highest levels allowed under the EU-CH Agreement. The Swiss authorities advised there is no statistical proof of any diversion of road transport via Austria due to the Swiss road taxes.

**Austria**

**Opportunities**

Austria receives the majority of its inland freight from the north-western European gateway ports and therefore relies more heavily on the inland connections from the north-western ports. The latest figures available are for 2007-08 and show that the north-western ports handled a 64% share of the Austrian port/hinterland market, in terms of total tonnages.

Austria is further away from the north-western ports than Switzerland, more so in the case of the more densely developed areas in eastern Austria. The overall inland transport distances between the north-western ports and Austria are quite long – around 1300 km to Vienna for example. Approximate distances are shown in the table below:

<table>
<thead>
<tr>
<th>From:</th>
<th>To: Innsbruck</th>
<th>To: Vienna</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port of Rotterdam/Antwerp</td>
<td>1000 kms</td>
<td>1300 kms</td>
</tr>
</tbody>
</table>

Importantly, over such distances, rail freight should be highly competitive with road transport, particularly for freight transported from concentrated origins such as the north-west ports. This seems to be supported by Austrian data shown in section 4.5 which indicated that, for containerised imports, rail freight carried 71% and road 29% of container volumes. It is expected that the majority of Austria’s container imports were carried from the northern ports. (For bulk imports, the same sources showed rail and inland waterway shares were 84% and 8% – a total of 92% – with road transport carrying only 8%. However, much of the bulk transport by rail would have been via the Adriatic port of Koper.)

Looking to planned infrastructure improvements, Austria is likely to benefit significantly from completion of a number of the strategically important Trans European Network – Transport (TEN-T) projects that are currently under way. In fact, Austria seems likely to be one of the major beneficiaries of the very significant improvements currently being made. However, rail connections between Austria and the north-western European ports are considered to be reasonably good – and the TEN-T projects are not likely to benefit Austria as directly as Switzerland – in terms of connections from the north-western European ports.
The TEN-T projects offering prospects of some improvements in Austria’s connections to N-W ports are:

- **TEN-T PP 5 (Betuwe line)**, which can be expected to provide some benefits

- **TEN-T PP18 Waterway** project, which crosses Europe transversally from the North Sea across European countries including Austria to the Black Sea. This waterway axis will provide improved connections from Rotterdam and Antwerp. The estimated completion date is 2021. Given the distances involved – up to 1300 kilometres – the time taken by barge would probably be well over a week, suggesting it is unlikely to have a significant impact on cargo flows or mode shares between Rotterdam / Antwerp and Austria.

Of course, many of the TEN-T Priority Projects will bring strong benefits in other directions – e.g. to the south-east or the Baltic Sea, where infrastructure investment needs are greater.

**Challenges**

An ongoing challenge is the relatively high share of Austria’s freight that is carried by road transport – particularly in the case of trans-Alpine transit freight. The Austrian Ministry recognises the need to improve rail freight contributions. Rail needs to be ready to pick up large shares of north-west European ports traffic, as the volumes increase.

The extra distances involved from the north-western European ports to Austria are quite long (up to 1300 km for Vienna) compared with Switzerland (around 900 km for Basel/Zurich). Over such distances, rail freight should be more than competitive with road transport, particularly for freight transported from concentrated origins such as the north-west ports. However, there are likely to be problems with the efficiency and reliability of freight rail services between the northern ports and Austria, which infrastructure improvements are being undertaken.

Another difficulty in offering competitive rail freight services in Europe is that freight rail suffers from rail passengers having priority over rail freight on European rail systems. In some other parts of the world, rail authorities and private operators have avoided the passenger versus freight priority issue by building separate passenger networks – or separate rail lines in critical locations. Doing anything similar in the European context would be a major challenge, even if the EC has signaled its intentions and increased the prospects of some action being taken.

To its advantage, Austria has road charges on heavy vehicles throughout its main motorway networks and special tolls and controls in critical areas including sensitive Alpine crossings. Nevertheless, the reliability and reliance on road transport will also become more of an issue in future, as traffic congestion increases.

The longer distances, higher inland transport costs and lower service frequencies for freight transport compared with many other countries in Europe put the Austrian economy at some competitive disadvantage. These factors suggest Austria may need to look more to its competitive advantages in other directions (e.g. to the east) in future.

**Inland connections from Mediterranean gateway ports**

The Inland Hubs Workshop also provided an opportunity to focus on issues related to inland connections between the Mediterranean Gateway Ports and their hinterlands – in this case Switzerland and Austria.
Switzerland

The current freight patterns – which include greater use of the north-west ports – reflect the best current means of transporting the freight concerned. They take into account the frequency, reliability and cost of the transport services on offer via north-western ports as well as on alternative routes via different ports and inland connections. In Switzerland’s case, the north-western ports handle the major portion of Switzerland’s port-related cargo. Why is this the case? The relative distances involved clearly favour the Port of Genoa (see below). Why aren’t the Mediterranean ports used more? Could this be related to the quality of the inland infrastructure connections?

<table>
<thead>
<tr>
<th>From:</th>
<th>To: Basel/Zurich (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port of Rotterdam/Antwerp</td>
<td>900</td>
</tr>
<tr>
<td>Port of Genoa</td>
<td>550</td>
</tr>
</tbody>
</table>

The Workshop highlighted some of the more important reasons. Firstly, in relation to rail transport, the Italian rail freight services are considered quite inadequate. As an indication, the progressive rail freight build-up on the German side of the Alps (see Chapter 2) is not repeated on the Italian side. While it appears as if the freight to and from the south of Italy has simply disappeared, of course, this is not the case. Instead, the heavy rail freight volumes across the Alpine region do not continue in Italy further south than Milan and Turin, which are Italy’s main industrial centres. Importantly, from Switzerland’s viewpoint, they do not continue to the Mediterranean port of Genoa in particular.

The freight south of Milan is carried almost exclusively on road transport, as can be seen from the road freight graphic (also in Chapter 2). The majority of the road freight across the Alps does not travel across Switzerland – it travels across Austria via the Brenner Pass. Some of this road traffic no doubt has been diverted from Switzerland by its charges and policies – and chooses to travel via Austria. The overall pattern is probably not surprising, given the efforts Switzerland has made to reduce the volume of road freight across the Alps and encourage a shift from road to rail freight.

As noted earlier, modal shift of freight onto rail is part of Switzerland’s Federal Constitution. In this setting, when considering inland connections to Switzerland from the Mediterranean ports, the focus needs to be on rail freight as Switzerland won’t countenance increased road transport.

Opportunities

Greater use of international rail connections to the Mediterranean could better balance the north and south flows involved across the Alps. It could also relieve some of the pressure that will result from increasing trans-Alpine freight traffic travelling between Switzerland and the north-western ports in future.

Of course, greater use of inland rail connections to Switzerland from the Mediterranean ports could also bring wider benefits as well – including reduced distances from the ports, reduced rail freight times, reduced costs – and reduced levels of CO₂ emissions as well.

In future, the transport patterns could be shifted in this direction by planned inland transport improvements. Once completed, the TEN-T PP24 project will improve north-south rail connections between Switzerland and the Mediterranean Port of Genoa – and can be expected to favour greater use of the Port of Genoa. With the European rail transport management system (ERTMS) operating along
the entire route from Genoa to Rotterdam, there should be greater reliability and improved travel times along the entire route.

A further opportunity for improvement in rail freight services was created by the decision to open European freight operations to competitive services from international as well as domestic operators. Of course, there is no certainty about what will happen to freight charges and rail service frequencies on the route in the short term, as these will depend on demand, competition and the rail operators on the route.

However, the prospect of infrastructure improvements and harmonised operations along the entire TEN-T PP24 route by around 2020 suggests that reliability and unit costs on this route between Switzerland and Genoa will become more similar to reliability and unit costs on northern sections of the route, between Switzerland and Rotterdam. If this does happen, it will represent a significant improvement in current rail freight operations, particularly in Italy. These could increase the opportunities for increased rail freight flows between Switzerland and the Port of Genoa – as well as to and from activity centres south of Milan.

Of course, improved inland connections alone will not mean that freight patterns will change. Future patterns will depend on supply chain performance over the entire origin to destination journeys via the different international shipping services, ports and inland transport services on offer. In this European setting, they will also depend on the competitiveness of the Port of Genoa vis-à-vis the north-western ports.

**Challenges**

The major challenge for Switzerland is to facilitate large Swiss domestic and international transport volumes as well as international transit volumes on trans-Alpine routes, while ensuring that the fragile Alpine environment is adequately protected. Rail freight volumes will need to increase considerably to meet legislative requirements.

While there should be greater opportunities for freight transport via the Port of Genoa and its inland connections, the challenge will be to improve the competitiveness of both the port and the inland freight connections sufficiently to make a significant difference. Most people appear to be sceptical that the changes involved could be made and realised in a reasonable time. Some people are sceptical that they can be made at all, given the lack of real interest and progress to date.

After the Workshop, further advice was provided on rail freight between Italy and Switzerland as follows:

- The Swiss initiated a rail freight joint venture with Italy in the 1990s which ran for 15 years, i.e. until recently. It was finally abandoned due to “different approaches” and “a lack of progress”.

- If Italian rail freight were to improve (not seen as likely any time soon), there would be adequate rail freight capacity on Swiss trans-Alpine routes to handle the increased traffic involved.
• In the short term, the priority would be to improve capacity of the (larger number of) parallel lines leading to tunnels – rather the tunnels themselves.

• The Swiss could not envisage any circumstances where trans-Alpine rail freight capacity would be inadequate. If any additional rail tunnelling were to be required beyond current plans to 2030, it would be very expensive, however.

Of course, any plans for greater use of the Port of Genoa would need to be supported by a fully developed business case, based on a comprehensive evaluation of the prospects, including an analysis of the aspects outlined above.

**Austria**

Austria is quite far from the N-W ports but relatively close to the Ports of Venice, Trieste and Koper. Approximate distances are shown below:

<table>
<thead>
<tr>
<th>From:</th>
<th>To: Innsbruck</th>
<th>To: Vienna</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port of Rotterdam/Antwerp</td>
<td>1 000 km</td>
<td>1 300 km</td>
</tr>
<tr>
<td>Port of Genoa</td>
<td>600 km</td>
<td>1 100 km</td>
</tr>
<tr>
<td>Port of Venice</td>
<td>350 km</td>
<td>700 km</td>
</tr>
<tr>
<td>Port of Koper</td>
<td>450 km</td>
<td>550 km</td>
</tr>
</tbody>
</table>

The Adriatic ports handle currently around 36% of Austria’s port cargo volumes. In fact, Koper is the second most important port for Austria after the Port of Rotterdam, based on throughput volumes. As a result, Austria has reasons to make better use of the southern ports – and probably better prospects.

Clearly, rail freight connections from Austria to the southern ports are not as good quality as from Austria to the north-western ports. Connections in Italy from the Port of Venice are quite good to the Austrian border but need to be improved between the Austrian border and Vienna. Similarly, the connections from the Port of Koper are quite reasonable but some improvements are still needed in Slovenia to upgrade the rail track to right standard on the approaches to the more mountainous areas. Routes to Venice, Koper and Trieste could all benefit from greater reliability and improved travel times.

**Opportunities**

A four track line is being built along the Innsbruck Valley and south to Verona. The key section will be the Brenner Base Tunnel which will involve a 55 km Tunnel and expenditure of around €8 billion over the period to 2026 (funded jointly by Italy, Austria and the EC). The new tunnel will join up with the existing Innsbruck by-pass – thus creating a 62.5 km long underground tunnel link and the northern and southern access routes. Completion of the new section and other improvements will lead to significant increases in services and reliability.

Major economic beneficiaries of these Brenner Axis improvements are expected to be Germany which will have better access to Italy – and Italy which will have better access to Germany. Around 90% of the tonnage transported via the Brenner on road and rail is transit traffic, linking Italy with Germany and other Northern European countries (and not destined to Austria). The major benefit to Austria could come from modal shift from road freight towards rail freight.
For Austria, while not the major rationale, the *Brenner Axis* infrastructure improvements from Innsbruck down towards Verona – which is relatively close to the Port of Venice – should also improve port-hinterland connections in the area of North Tyrol, in the western part of Austria.

Another opportunity of interest further to the East in Austria is the TEN-T Priority Project 23: *Wien/Brno – Warszawa – Gdańsk*. This multimodal *north-south* axis will connect the port and city of Gdańsk with Katowice, Žilina and Bratislava and via a western spur from Brno to Vienna. Estimated completion date is 2025.

Austria would like to see this TEN-T PP23 route extended as part of a Baltic to Adriatic route. The southern sections involved would be from Vienna to the Austrian border – and from the Austrian border to Venice and on to Bologna. To allow this to happen, Austria would like to see an improved inland link along these lines included as part of the TEN-T “core” network.

Of course, turning the opportunities into real developments will require solving related issues of land use, addressing bottlenecks on roads in the North and South-East, by-passing of cities, building new rail freight terminals etc.). Once under way, such a transformation would allow a greater diversity and volume of freight via the Adriatic ports (e.g. more cars/parts, minerals, containers, agricultural products etc.). It would also boost productivity and growth associated with these activities in nearby countries – including the Inland Hubs – as well as in regional areas closer to the ports.

**Challenges**

Freight traffic in transit across Austria poses significant challenges. Transit traffic is predominantly carried by road and the volumes involved are very large – due principally to the high volumes between Germany and Italy in particular, and the high road mode share.

The Brenner Corridor is amongst the biggest issues for Austria. Italy is a very important trading partner and Germany too. The biggest challenge will be to continue to facilitate the destination and transit traffic, while promoting modal shift from road to rail and improving protection of Alpine areas.

Operational aspects of Italian railways are also a major challenge for Austria. Liberalisation of the rail freight markets was expected to help solve the problems but only limited progress has been made.

The Austrian Ministry is taking part in the initiatives along the Baltic to Adriatic Axis, based on a letter of Intent signed in 2006 by the Ministers for Transport from Italy, Austria, Slovakia, the Czech Republic and Poland. Within the corridor, significant improvements in rail infrastructure are needed mainly in Austria to reach standards for efficient rail transport. The *Semmering Base Tunnel* and *Koralm railway line* projects – which are currently being carried out to eliminate the bottlenecks – are expected to be completed in 2024.

Advice provided after the Workshop indicated there are currently a number of international rail operators (including DB) providing cross border rail freight services into Italy on the Brenner corridor route. DB is expected to become the strongest operator of international rail services across Austria i.e. between Germany and Italy. However, the rail network’s deficiencies remain.

Within this broader framework of overall freight transport between Germany, Austria and Italy, greater use of the Mediterranean ports could make a worthwhile contribution. From the Austrian data in Chapter 4, it would seem as if a major share of the bulk freight handled by the Port of Koper and destined for Austria is handled by rail services at present. If overall use of the Mediterranean ports
increases, as seems likely to be the case, high shares of rail freight from these ports to Austria (and beyond) could make a significant contribution.

**Conclusions**

In the short term, there are not likely to be major changes in inland connections from the Mediterranean ports to Austria and Switzerland. However, given the proximity of these ports and the increasing freight volumes (including to eastern European countries), it seems likely that use of the Mediterranean ports will increase gradually and the freight volumes on inland connections will also increase. Infrastructure improvements over the period to 2020 and after are likely to reinforce this trend.

Of course, it is recognised that significant change would only be possible if the performance of the Italian rail freight connections improved considerably – and the performance and competitiveness of the Italian and Adriatic ports also improved considerably. The prospects are given further consideration in the next section. In the meantime, there seems to be little doubt that the north-west European ports will have to continue to handle the major loads.

**A shift towards the Mediterranean gateway ports?**

The possibility that the Mediterranean ports could carry increasing shares of European gateway port traffic in future was raised in several of the Case Study Workshops.

Some insights were provided in the EC TEN-T Expert Group No. 4 reporting on the “TEN-T and its extension outside the EU” – which the European Commission invited the Secretariat to participate in. The EC Expert Group’s final report noted there could be time savings and possible environmental advantages in them doing so, having regard to the savings in CO₂ emissions, if more of the maritime freight were delivered via the ports closest to final destinations.

The Venice Port Authority is one of a number of parties pushing for the Mediterranean ports to have a larger role in future. The Venice Port Authority prepared the graphic (see Chapter 4) which highlighted possible shipping and inland transport distances – as well as reduced CO₂ emissions if this happened.

Of course, CO₂ reductions would need to be supported by wider benefits for there to be any realistic prospects of such increases in Mediterranean port shares being realised. Governments would need to see the prospects of greater economic benefits are sufficiently strong to justify any significant infrastructure investments. The private sector would need to see there would be tangible commercial benefits for them to invest in complementary infrastructure and provide or use the improved services the infrastructure would allow. Users would need to satisfy themselves that the origin to destination services will be higher quality, more reliable and lower cost than the other options on offer.

Clearly, there are many issues related to the Mediterranean ports that are important to this current project. Unfortunately, the project did not have sufficient resources to be able to undertake the Case Studies on the Mediterranean and Adriatic ports which could have provided authoritative advice on these issues. Instead, some “desk top” assessments have been made, using the information available. The resulting assessments of the Opportunities and Challenges related to greater use of the Mediterranean ports are set out below.
Opportunities

Future changes in demand are expected to offer considerable opportunities for increases in port throughput volumes at the Mediterranean ports. These opportunities include:

- Trade between Europe and Asia/South Asia will grow much more strongly than maritime trade between Europe and North America. The volumes of maritime trade between Europe and Asia/south Asia are expected to increase considerably, as a result.

- The major share of maritime cargo between Europe, South Asia (India) and Asia (China) is expected to travel via the (improved) Suez Canal and Mediterranean routing—not via the Pacific, the (widened) Panama Canal and the Atlantic route.

- The increasing share of European trade that will be generated by the more rapidly growing countries in eastern Europe, for which the Mediterranean ports have a decided locational advantage over the north-western European ports.

- The prospects that there will be increasing support for action to translate the locational advantages of Mediterranean ports into commercial advantage for supply chains (e.g. lower costs, shorter travel times) – and environmental advantage (including savings in CO₂ emissions) as well, if goods are transported via the Mediterranean ports.

Given the proximity of Austria and Switzerland to the Mediterranean ports and the increasing location and trade opportunities, it seems likely that usage of the Mediterranean will increase—but how much? Austria relies more heavily on the Mediterranean ports than Switzerland. It seems this is likely to continue.

Of course, if the Italian and other Adriatic ports were operating efficiently, they would likely attract not only cargo destined for—and originating in—Austria and Switzerland. They could be expected to also attract traffic to and from many other countries nearby, many of which are part of the eastern European group expected to grow quite strongly in future.

There are indications that the Ports concerned are alert to the possible commercial opportunities. A group of Adriatic ports led by the Port of Venice is pushing strongly for the improvements that would be needed.

If the Mediterranean ports did manage to attract increasing volumes and increasing shares, the total shipping distances would be reduced significantly.

<table>
<thead>
<tr>
<th>From:</th>
<th>To: Port of Venice</th>
<th>To: Port of Genoa</th>
<th>To: Port of Rotterdam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port Said</td>
<td>2 580 km</td>
<td>2 789 km</td>
<td>6 175 km</td>
</tr>
<tr>
<td>Port of Mumbai</td>
<td>8 040 km</td>
<td>8 249 km</td>
<td>11 634 km</td>
</tr>
</tbody>
</table>

For each shipping movement of cargoes destined for Austria or Switzerland, delivery to a Mediterranean port would save at least 3000 kilometres of liner ship travel—per direction—by comparison with delivery via north-western European port.
There would also be savings in inland transport given the shorter inland transport distances involved. A comparison for Swiss and Austrian destinations with approximate distances is set out in the table below:

<table>
<thead>
<tr>
<th>From:</th>
<th>To: Basel/Zurich (km)</th>
<th>To: Innsbruck (km)</th>
<th>To: Vienna (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port of Rotterdam/Antwerp</td>
<td>900</td>
<td>1 000</td>
<td>1 300</td>
</tr>
<tr>
<td>Port of Genoa</td>
<td>550</td>
<td>600</td>
<td>1 100</td>
</tr>
<tr>
<td>Port of Venice</td>
<td>700</td>
<td>350</td>
<td>700</td>
</tr>
<tr>
<td>Port of Koper</td>
<td>450</td>
<td></td>
<td>550</td>
</tr>
</tbody>
</table>

To provide a couple of examples, for cargo from Asia via the Suez Canal destined for Switzerland and delivered by ship to the Port of Genoa, the inland transport distance from Genoa to Switzerland (Zurich) would be around 550 km – compared with inland transport of around 900 km from Rotterdam to Zurich. For the same cargo delivered by ship to the Port of Koper (in Slovenia), the inland transport connection from this Adriatic port to Austria (Vienna) would be 550 km compared with 1 300 km from Rotterdam.

When these individual savings – at least 3000 kilometres by ship – by direction – and up to 750 kilometres in land transport between the port and the final destination – are factored up to produce annual totals, the differences are large indeed. In a benefit-cost assessment over a 50 year time period of possible infrastructure investments now, the savings involved in using the closest ports would justify considerable infrastructure investment.

As well as being lower cost, the more direct inland transport to Austria and Switzerland would reduce traffic congestion on European road and rail corridors over long distances (in the case of traffic routed via southern instead of northern ports); produce lower CO₂ emissions and local pollutants and be more environmentally friendly (e.g. less noise and other impacts in urban and residential areas).

**Challenges**

As noted earlier, Switzerland and Austria’s proximity should favour greater use of the Mediterranean ports.

The barriers no doubt include inefficient ports operations. The Italian ports in particular are improving but are still regarded as being quite uncompetitive with the north-western ports. Concerns are broadly based, relating for example to organisational arrangements, labour productivity and efficiency. Mediterranean port throughputs are relatively low and their market shares amongst European and Mediterranean ports are also low. They are generally regarded as under-performing, as a group. By comparison, the north-western ports are mostly very efficient and are continually striving to improve their efficiency and their infrastructure, so that their performance is continuously being improved.

Of course, the Italian ports are not “deep water ports”, able to handle the largest container ships. Not being deep-water ports presents a sizable challenge and one it is not easy to do much about. However, the increasing size of international shipping liners/container vessels could increase the scope for transhipment at ports along long haul routes. There may be opportunities for this in the Mediterranean (e.g. Port Said). The challenge for the Mediterranean ports would be to make these changes work in their favour.
There are probably many other reasons as well for port under-performance – including national frameworks, port authority structures, labour relations and a lack of infrastructure investment funding. There could be historical, geographical and political reasons too. For some ports, a combination of (some of) these factors has resulted in a relatively low degree of market openness. In turn, this has had negative impacts on the ports themselves which have not been able to grow to compete at an international level and have remained as local ports.

Taken together, such barriers would suggest major changes are unlikely, at least in the short term. However, if volumes do increase progressively, as might be expected, some further improvements could become possible.

For these and other reasons, it is clear that proximity alone is not likely to provide automatically the compelling business and commercial advantage needed to promote and sustain increased use of these ports.

The Inland Hubs Workshop highlighted some of the other barriers that would need to be overcome before the Mediterranean ports could be expected to gain any substantially increased market shares.

No doubt, the performance of the Italian ports is interlinked with the performance of Italian inland transport. Clearly, until a few years ago road freight was favoured overwhelmingly in Italy and freight rail was not seen as a priority. Consequently, the Italian rail freight services simply have not been good enough or competitive enough to provide the rail freight advantage over longer distances that the Mediterranean ports need to attract more hinterland traffic. However, over the last few years, important investments have been undertaken to close the gap with rail freight of other EU countries and help provide a good inland transport system.

Taking stock, for Mediterranean port shares of Austrian and Swiss port cargo to increase, improvements at the ports would need to be matched by transport improvements e.g.:

- These Ports would need to have the necessary port terminals, docking and handling facilities to handle the additional vessels and shipping volumes involved. A smaller number of port operators and larger terminals with sufficient economic and operational resources might help achieve this result.

- The Ports of Genoa, Venice and Koper – the port infrastructure needed to handle the additional inland transport capacity and movements required. These needs have been addressed in the strategic plans of each port. Infrastructure projects and investments have been undertaken to fit in with the infrastructure requirements.

- Rail infrastructure improvements on the ground would probably have to be matched by improved rail and intermodal terminals at the Ports of Genoa, Venice and Koper at least. Further consideration would need to be given to the Ports of Trieste and Rijeka.

- Most importantly, the Ports of Genoa, Venice, Koper – and the intermodal operations at these ports – would need to be as well planned and efficient as the best competitive offer from the larger ports – probably best represented by the Port of Rotterdam.

The Port of Koper (Slovenia) – with its history of bulk freight and its current orientation towards container freight and vehicles – seems to stand out as an efficient operation that shows what is
possible – and that many of the barriers can be overcome, given the right approach and supporting institutional frameworks.

The Austrians noted the Port of Rijeka (Croatia) could offer possibilities as well. Rijeka is a deep-water port relatively close to the Port of Koper (Slovenia) that has been growing quite quickly. According to the Rijeka Port Authority, its total throughput cargo in 2007 was more than 13 million tons and is rapidly increasing. Rijeka is well connected by direct daily train to Vienna, to Munich in Germany or Salzburg in Austria. Rijeka is also connected to Trieste and Ljubljana by a separate electrified stretch that extends northwards from the city.

Since the Workshop, there have been some market developments that suggest increasing awareness of the prospects for accessing nearby European countries more directly, via the Mediterranean ports.

Port of Venice – Off-shore terminal

In September 2010, the President of the Venice Port Authority announced a proposed Offshore Terminal (at a depth of 20 m) off the coast of Venice. This would allow the handling of “at least 10 million TEUs a year of the container traffic between Europe and the Far East and also between Europe and the Eastern Mediterranean”. It depends on the “development, in terms of size and traffic, of the ports of Ravenna, Trieste, Koper and Rijeka that, together with Venice, make up the North Adriatic Port Association NAPA Multiport as it is now known. Costs are estimated to be €1.38 billion for the offshore platform and €310 million for terminals in Marghera. The offshore terminal could be “fully operational within 5 years”.

Piraeus Port

In October 2010, while on an official visit to Greece, the Chinese Premier made reference to Chinese container terminal operators having take up long term terminal concessions at Piraeus Port, in Greece – and indicated their intention of accessing eastern Europe markets from the port. The Ports of Venice and Koper (Slovenia) are already linked by direct shipping services to Piraeus. The presence of Chinese terminal operators in the Port of Piraeus should increase the prospects for more direct transport of cargo between Asia and the Adriatic ports – with trans-shipment at Piraeus liner services to and from Asia.

Croatia, Rijeka Port

In March 2011, at the Port of Rijeka, the International Container Terminal Services Inc (ICTSI), a Philippines company, was awarded a thirty-year contract for the management, operations and development of the Adriatic Gate Container Terminal (AGCT). This is part of a Rijeka Gateway Project which aims to improve the port’s competitiveness and link Rijeka and the Balkan region to international transport corridors. Initial investments that could lead to a capacity of 0.6 m TEU pa include super post Panamax quay cranes and the draft dredged to 14.5 m. Rijeka is well placed in relation to the emerging economic centres of Central Europe. It is intended to become a trading gateway for Hungary, Czech Republic, Slovakia, south Poland, Serbia, and Bosnia and Herzegovina, in the Port’s hinterlands.

Improved inland connections and services from the Mediterranean ports could lead to some re-balancing of traffic from the southern and northern ports to European countries. Some wider assessments of the prospects might be beneficial – and if needed, some further policy co-ordination could be useful.
Conclusions

In future, increased market shares will depend centrally on whether the performance of the Mediterranean ports can be improved sufficiently for them to be much more competitive. From a supply chain point of view, their inland connections are equally important and the travel times, costs and reliability of services via the Mediterranean ports will have to be as good – on an origin-destination basis – as those of the northern ports, at the same time.

If all these barriers could be overcome, the southern ports in due course could handle significantly larger shares of the maritime freight transport to Austria and Switzerland (and other countries nearby) from the Middle East and Africa as well as from India, China and the other countries served via the Suez Canal. If they were, the Austrian and Swiss freight flows through the different north-west European and Mediterranean ports would be much more balanced in future than they currently seem likely to be. Overall transport costs to Austria and Switzerland would be lower – and environmental impacts as well. Similar benefits might accrue to other countries nearby.

Further benefits from a more even balance between the northern and southern ports could be expected to include greater security (given the greater diversity of competitive supply chain routings) and some increase in regional development opportunities related to the greater economic activity generated by the Mediterranean ports and their inland connections.

The largest single challenge would be working with Italy and other countries to overcome the many barriers to greater use of the Mediterranean ports. If Italy’s ports and freight rail continue to be improved towards international standards, as is starting to happen now, there could be considerable value for Italy, for Austria and Switzerland and in fact for economic development in the wider region.

Gradual improvement in the market share of the Mediterranean ports over a long time period would probably not raise any major issues for the north-western ports. In fact, it may reduce some of the burdens on them to continue to handle high and increasing volumes of transit traffic needing to be transported over long internal distances to Austria and Switzerland and other countries in their vicinity.

Workshop participants advised they would welcome greater use of the Mediterranean ports. As well as better balancing the traffic between south (Italy) and north (towards the north-western ports), it could also help deal with the problem of rail services and containers returning empty from Italy. Clearly, if it were possible to do so, greater use of the Mediterranean ports could also make a real difference to European transport.

Since the Workshop, there have been some market developments that suggest increasing awareness of the prospects for accessing nearby European countries more directly, via the Mediterranean ports. These include: Port of Venice – Offshore Terminal proposal; Piraeus Port’s Chinese container terminal operators; and Croatia, Rijeka Port’s thirty-year contract for an “Adriatic Gate Container Terminal (AGCT)”, in the Rijeka Gateway Project.

East-west and other transport connections

Switzerland

Switzerland’s transport connections are primarily north-south. Its connections in north and south directions have been well covered in previous items. Its inland connections from the north-west European ports and the Mediterranean ports are the aspects most relevant to the project.
Nevertheless, looking more broadly, Switzerland has important international east-west connections, with France via Geneva and with Austria via Liechtenstein (Vaduz). Connections in the direction of Munich and towards Eastern Europe are also important.

Workshop discussions highlighted that improvements in rail freight connections are needed from Switzerland to the West, from Geneva to Lyon. Looking beyond, Switzerland does not have good rail freight connections with Spain. With Spain’s exports growing rapidly and carried primarily by road transport, improved rail freight connections between Switzerland and Spain may need some further consideration.

Austria

Current situation

Austria has quite good road and rail transport connections in all directions. Its connections in north and south directions have been covered in previous items. Its inland connections from the north-west European ports and the Mediterranean ports are the aspects most relevant to the project.

Opportunities

There are a number of important opportunities for improvement on inland connections to Austria, other than from the north-western and Mediterranean ports.

Workshop discussions indicated that:

- To the north, there is a need for improvements in feeder services in Germany.
- To the south-east, infrastructure and border crossings in the South-East European Countries like Serbia, Albania and Macedonia, as well as Bulgaria and Romania need to be improved.
- To the north-east, better connections are needed with Ukraine and with Russia.

There are also opportunities for improvements in inland waterway transport, particularly in an easterly direction towards the Black Sea/Kostanza.

Future improvements

As noted earlier, Austria can also expect to benefit significantly from completion of the strategically important Trans European Network – Transport (TEN-T) projects that are currently under way in these directions. In fact, given the improvements being made in these directions, Austria seems likely to be one of the major beneficiaries.

Rail

Earlier items have identified the likely contributions from the TEN-T projects including:

- **TEN-T PP1**: Traversing Germany, Austria and Italy with its important high capacity north-south rail improvements, for which the main economic beneficiaries are likely to be Germany and Italy – and with the possibility of ecological benefits for Austria.
- **TEN-T PP6**: Connecting the Iberian peninsula with the eastern part of Europe and beyond.
• **TEN-T PP17**: Traversing France, Germany, Austria and Slovakia, a TGV rail from Paris to Vienna.

• **TEN-T PP23 (road) and PP 25 (rail)**: Crossing Poland, the Czech Republic, Austria, Slovakia, a multimodal *north-south* axis.

**Waterway**

• **TEN-T PP18**: a waterway axis crossing Europe transversally from the North Sea across European countries including Austria to the Black Sea.

Most of the above strategic transport infrastructure investment projects are being undertaken along corridors that link to or traverse Austria – or pass nearby and are readily accessible. Without any doubt, rail transport capacity will increase considerably on routes to, through and near Austria. The major waterway project could help improve connections with neighbouring countries to the east.

Taking together, the TEN-T projects can be expected to promote a modal shift from road to rail in these directions as well.

**Challenges**

The major challenges facing Austria in future still seem likely to be related to the high transit volume of road transport, the prospect that this could increase significantly in future and the policy interest in modal shift to modes with lower CO₂ emissions and lower environmental impacts.

These general challenges could be accentuated by the expected growth of eastern European countries, which seem likely to reinforce the important roles that Austria and Switzerland play as inland hubs.

The expected future market demands reinforce the importance of sustainable policy measures able to manage the demand, deal effectively with pressures in sensitive areas and achieve well balanced outcomes, reflecting the interests of all the parties involved.

**Infrastructure funding and financing**

**Switzerland**

The most important funding instrument is the so-called “Special Financing of Road Traffic” which was introduced in 1958 in order to finance the construction of the Swiss motorway network. Its main sources of funds are the Petroleum Tax (since 1958) and the Motorway Vignette (since 1985).

The “Special Financing of Road Traffic” (SFRT) contributes to replenishing the two additional Swiss transport funds that have been introduced more recently: namely:

• the “Major Railway Projects Fund” which was created in 1998 and funds major extensions of the railway network; and

• the “Infrastructure Fund” which was established in 2008 and funds completion of the motorway network, elimination of motorway bottlenecks – and also Metropolitan transport projects (road and rail).
The “Major Railway Projects Fund” also receives funding from the Heavy Vehicle Fee (see above) and 0.1% of the Value Added Tax – as well as from the SFRT. The “Infrastructure Fund” is provisioned solely by the “SFRT” (and thus the Petroleum Tax and Motorway Vignette).

The separate Funds for specific purposes – with their ear-marked sources of funding – are widely supported and appear to be working well. The funding arrangements guarantee reliable, long-term financing of the transport infrastructure, unaffected by the imponderables of the budget processes.

The Swiss Ministry advised that, without this system, the ambitious capacity extension programme of the Swiss railway network (including the new rail link through the Alps) would not have been achievable. The Ministry noted the system evolved historically and could be simplified.

Clearly, Switzerland’s funding and financing arrangements are providing the financial security needed in practice to undertake the large multi-year infrastructure investment programme that is currently under way.

At the moment, there are over 1 million road freight vehicles crossing the Alps per annum. Switzerland is applying the road and other taxes raised from road transport to meet its obligations to finance and build the two alpine tunnels that will improve the passenger and rail services. Heavy vehicle traffic (domestic and international) is subject without discrimination to the heavy vehicle tax. Actually, a quarter of the revenues come from international operators, not only for transport in transit but also for cross-border transit transport with origin or destination in Switzerland.

**Opportunities and Challenges**

The Swiss strategy for the national infrastructure networks to 2030 has identified two major challenges:

- More energy efficient motor vehicles will mean lower fuel consumption – which in turn will lead to the revenues from the petroleum tax decreasing over time.

- Peak loading problems will make demand management inevitable.

In relation to peak loading, a transport system able to meet peak hour demand in the morning and evening, without any effort to manage that demand, would be extremely expensive indeed. It would also be wasteful use of infrastructure, given that the capacity provided would be grossly under-utilised outside the morning and afternoon peaks. Like most transport authorities, the Swiss authorities recognise the need to moderate the peaks, by spreading demand over time.

The Swiss authorities concluded that within a 20 year outlook period – i.e. by 2030 – they would need to move towards a completely new system of transport infrastructure financing.

Given the importance of efficient operations across the entire transport network, the challenge in the longer term will be to devise a new mobility pricing system that works effectively on a network basis, encompassing both road and public transport travel.
Towards a new system of mobility pricing

The Swiss authorities are exploring the opportunities for a new system of transport infrastructure financing based on mobility pricing. This would be likely to involve:

- pay for use for all transport systems (road, rail, urban)
- price differentiation by space and time (demand management);
- price differentiation by ecological criteria (external cost)
- electronic charging (easy access)
- earmarked revenues; and
- special funds.

The authorities are also exploring the possibility of an Alpine Crossing Exchange, an additional instrument that could encompass a:

- Trading System for alpine crossing rights

Such a trading system would need to be devised in agreement with other Alpine countries – and in line with the European legislation.

The funds raised should be ear-marked for the financing of both extensions and the maintenance of the transport infrastructure networks, e.g. by allocating them to special funds

Cross-Border Financial Support

One surprising opportunity highlighted in the Workshop was that the Swiss had provided cross-border financial support to Germany and France, to help ensure the improved inland connections needed between Switzerland and Germany and Switzerland and France. The financial support provided included:

- a loan to Germany for the electrification of the Zurich-Munich line and
- co-financing of the Rhine-Rhône, Bellegarde/Bourg-en-Bresse and Delle/Belfort TGV connection.

Regional co-financing like this can obviously make it possible and much easier to develop the cross-border connections and facilities that are needed on both sides of the border.

These cross-border financing arrangements seemed to be very good candidates for a Case Study-based listing of “best practices”.

Austria

Austria also has relatively well developed funding and financing arrangements.
The entire motorway network has been devolved to a state-owned enterprise (ASFINAG – the Motorways and Express Roads Financing Corporation). At the same time, the government retains control over road tolling rates.

Similar arrangements apply to the ÖBB-Infrastruktur AG a part of the ÖBB-Holding AG (Austrian Federal Railways) group.

ASFINAG; and ÖBB-Infrastruktur AG – corporations that are 100% owned by the federal government – have responsibility for the construction, operation and financing of the Austrian high-level rail and road infrastructure. Funding and financing arrangements are similar for both roads and rail.

ASFINAG is responsible for Austria’s 2 034-kilometre (2005) primary road system. It receives all of its revenue from a nationwide system of charging for use of these particular roads. Charges comprise three components:

- A nationwide, time-related vignette system for passenger cars. All cars must have a sticker inside the windscreen in order to be able to use these particular roads.
- Six sections of the network are tolled, including the Alpine crossings at Brenner and Tauern. The tolls are charged in order to recover the higher expenses for operating the specific sections.

ÖBB-Infrastruktur AG receives revenues from rail infrastructure charging as well as other revenues. It also receives funding by way of State subsidies.

The companies raise funds on the capital markets. Public guarantees for loans to the network operators reduce the costs of borrowing, although the companies’ debts are not consolidated with that of the state. Financing is based on the principles of corporate financing securing better rates than available for project financing.

Important policy measures related to infrastructure that are in place and need to be maintained include: Internalisation of external cost; and Cross financing. Additional measures might be necessary in ecologically sensitive areas: e.g. Alpine Transit regulatory schemes.

**Opportunities and Challenges**

Overall, Austria’s infrastructure funding and financing arrangements are innovative, sophisticated and well adapted to the country’s infrastructure needs. Austria is also giving consideration to additional measures that might be necessary in ecologically sensitive areas – such as Alpine Transit regulatory schemes.

Austria is very well placed in relation to infrastructure funding by comparison with many other countries. It has robust road management arrangements, with a government owned corporation in charge of the national motorway system and responsible for the truck charging and road tolling across the major road network. ASFINAG raises more funds from truck charges and road tolling than are needed for upgrading, extension and maintenance of the major roads. This allows cross-financing of
rail infrastructure improvements. With a secure source of funds, revenues are also relatively secure – although not immune to the effects on road volumes and revenues of a recession like that caused by the global financial crisis.

Cross financing – i.e. use of funds raised from road taxes and charges to allow funding of rail and public transport improvements – is an important part of the Austrian arrangements that will need to be continued.

Cross-financing from this secure revenue base in future – in conjunction with user charges on rail and other public transport – will mean that Austria can expect to be well placed to undertake the many strategic rail investments needed over the next ten years.

In this respect, Austria’s recently published new Infrastructure Strategy identifies the overall goals for infrastructure policy, which include: accessibility; reliability; safety and security; environment and social sustainability; and upgrading of infrastructure networks according to actual needs. Within these overall goals, Modal Shift is an important long-term issue for transport policy.

The infrastructure priorities that need to be funded include the many ambitious TEN-T priority projects to which Austria will be contributing. They will reflect the other national priorities that will be important, including the other infrastructure improvements needed to reinforce Austria’s role as an inland hub – and ensure it remains as competitive as possible.

Looking to the future, some further consideration may need to be given to Austria’s financing model based on compensation of annuity costs, in the light of any lessons learnt from the recent crisis.

Another challenge is the potential impact of other national and European policy and funding frameworks which can create impediments and reduce degrees of freedom available to Austria – e.g. in relation to ecological protection, transit traffic and trans-Alpine regulatory arrangements.

In short, Austria has considerable opportunities as well as important infrastructure challenges – but has established infrastructure funding and financing arrangements in place that should be up to the substantial challenges ahead.

New policy environments – Green Growth

What is Green Growth?

Growing concerns about the environmental unsustainability of past economic growth patterns and increased awareness of a potential future climate crisis have made it clear that the environment and the economy can no longer be considered in isolation. At the same time, the financial and economic crisis has provided the opportunity for policy interventions aimed at encouraging recovery and renewed growth on more environmentally and socially sustainable grounds.

Within this context, green growth is gaining support as a way to pursue economic growth and development, while preventing environmental degradation, biodiversity loss and unsustainable natural resource use. It builds on existing sustainable development initiatives in many countries and aims at identifying cleaner sources of growth, including seizing the opportunities to develop new green industries, jobs and technologies, while also managing the structural changes associated with the transition to a greener economy.

At the OECD Ministerial Meeting in 2009, Ministers of 34 countries decided to develop a Green Growth Strategy. The mandate was clear: *growth* can – and should – go hand-in-hand with *green*. In this context, central questions for the project’s case study work are: How are “climate change”, “low carbon” and “green growth”-related policy objectives and measures likely to affect key gateways hubs? How can infrastructure investment best contribute to “green growth” in particular?

**Contributions to Green growth**

1. **Planning and Development Stages**

   The first way in which Port infrastructure investment can contribute to Green Growth is during the planning and development stages. The proponents need to ensure that the investments are well chosen in the context of new policy settings that seek cleaner sources of growth. They also need to ensure that the developments are undertaken in ways that minimise adverse environmental impacts, make use of less polluting transport modes and promote new green industries, jobs and technologies.

2. **Contributions during operations and use**

   The second way in which infrastructure can be expected to contribute to green growth relates to the contributions it will make during the infrastructure’s operations and use. Given the long expected life of most infrastructure, there may be scope for users – and their use of the infrastructure – to make very significant contributions over long time periods ahead to the greener outcomes required.

**Action being Taken**

**Trans-Alpine traffic**

As outlined earlier, management of trans-Alpine traffic is important in sensitive Alpine areas. The graphic below shows the changes in total road and rail freight in France, Switzerland and Austria over the period from 1999 to 2008.

![Development of Transalpine Freight Transport between 1999 and 2008](chart)


Clearly, there have been significant increases in trans-Alpine road transport across both Switzerland and Austria. Rail freight across Switzerland has also increased more than road freight. In Austria, road freight has increased more than rail. Both countries have taken decisions to implement
transport policies and measures promoting rail freight for trans-Alpine transport. Both have adopted measures to significantly reduce of heavy goods vehicles for transalpine traffic.

In Switzerland, the provisions in the Constitution and the Federal law on road-rail transfer for freight transport across the Alps was outlined earlier.

In Austria, in May 2008, sectoral traffic bans were set up along the Brenner corridor between Kufstein and Zierl for specific goods (such as garbage and stones). New sectoral bans for other goods were set up at the beginning of 2009 (for wood, steel…). The immediate consequence of these bans was the increase of combined accompanied rail services along the Brenner (more than 10 new services between Wörgl and Brenner). The construction of a new tunnel Brenner was debated for many years before the decision to proceed. The main objective is to transfer road traffic to rail on the axis Bayern – Northern Italy. The project is expected to be completed by 2026.

Environmental indicators: air pollution partly due to traffic

The impact of traffic on air pollutant emissions is obvious and data is collected by the Alpifret Observatoire. However, the data on the concentrations of nitrogen dioxide (NO2) and particulate matter (PM10) for the three last years do not identify an obvious trend. The level of emissions is not only due to traffic. Other factors like heating systems and industry and weather conditions also have significant impacts on air pollution.

Hinterland Connections and Green Transport Issues

As noted earlier, the Port of Venice Authority and others have been pushing for the Mediterranean ports to play a larger role as European gateways.
The Austrian presentation to the Workshop included the slide prepared by the Port of Venice Authority, which shows indicative estimates of CO₂ emissions for cargo carried by sea from Port Said to different ports and then by inland rail to European destinations. The slide is shown again below.

The graphic highlights that with longer shipping distances to the northern European ports and the inland rail connections to countries nearby, the levels of CO₂ emissions are higher than is the case for countries close to the Mediterranean ports, for which shipping distances to the Mediterranean ports are less – and inland transport distances are relatively short. As noted earlier, a number of assumptions have been made in preparing the graphic, including that countries are served via the closest port.

**Opportunities and Challenges**

In the short term, it seems unlikely there will be any major changes in overall patterns along the lines suggested in the graphic. However, given the proximity of the Mediterranean ports to Austria and Switzerland and the increasing freight volumes (including to eastern European countries), it seems likely that the port handling and inland freight volumes on inland connections will increase. Infrastructure improvements in the medium term are likely to reinforce these trends.

Other factors that may point in the direction of greater use of the southern ports include: expected shifts in trade patterns – and in particular trade with Asia; potential savings in transport costs; and expected developments in maritime services between Asia/India and Europe (including increasing ship sizes).

In these circumstances and having regard to the current interests in green growth, it seems there could be value in governments undertaking some serious studies of the options available for greater use of the Mediterranean ports and the further improvements in inland transport connections that would be needed.
Many other aspects would be considered, including the infrastructure costs and business cases, potential contribution to wider objectives such as security, efficiency and regional development and possible sources of funding and financing. Consideration would need to be given to the interests and capacity of the Italian and Adriatic ports and the inland transport operators that would provide the inland services required. Of course, the views of the private sector would also be important, especially port terminal operator and logistics operators that could be involved in making future decisions on supply chains.
Chapter 7
Final Remarks

Inland Hubs

The Workshop deliberations reinforced that Austria and Switzerland have special needs and responsibilities related to their inland locations as well as their hub functions within European transport networks. At the same time, each country faces opportunities and challenges that desirably would be handled consistently but may need to be handled somewhat differently, to ensure the potential benefits from their infrastructures are realised, unnecessary costs avoided and the adverse impacts contained.

From a transport viewpoint, hub locations naturally offer greater connectivity than spoke or rim locations. One of the challenges both countries face is to capitalise on their locational advantages while offsetting relative disadvantages, from an international trade viewpoint, in not having their own deep water sea ports.

Strategic Issues

Infrastructure Funding and Financing

The Workshop reinforced that good funding arrangements are crucially important in getting strategic infrastructure built.

Austrian and Swiss transport infrastructure funding and financing have multiple sources of revenues – including user revenues, taxes and budget funding – and rely to some extent on cross financing from road transport revenues to rail transport improvements.

In Austria, there is a government-owned corporation ASFINAG responsible for managing the major road system, charging heavy vehicles (in accordance with tolls established by the government) – and funding the country’s major road network infrastructure developments. There is also a government-owned corporation ÖBB-Infrastruktur AG which receives revenues from rail infrastructure charging and other revenue sources and also receives funds by way of State subsidies – and is responsible for funding the country’s strategic rail infrastructure developments.

The Swiss system of infrastructure funding is more complex as it depends on:

- Earmarking revenues from petroleum taxes and the motorway vignette to the Special Financing of Road Traffic SPRT (Spezialfinanzierung) Fund for motorway construction and maintenance
- Earmarking revenues the heavy vehicles fee and 0.1% of VAT to the Major Rail Projects Fund for large railway network extension projects (e.g. the new railway link through the Alps)
• Replenishing both the Major Rail Projects Fund and the new Infrastructure Fund (established in 2008 to support completion of the motorway network and metropolitan transport project) from the SPRT Fund.

• Relying on budget allocations for funding of maintenance and small extensions / improvements of the existing railway network.

The funding arrangements in both countries support reliable, long-term financing of transport infrastructure, unaffected by the imponderables of the budget processes. The Swiss Ministry advised that, without their system, the ambitious capacity extension programme of the Swiss railway network (including the new rail link through the Alps) would not have been achievable.

Clearly, the funding and financing arrangements in both countries are providing the financial security needed to undertake the large multi-year infrastructure investment programmes that are underway.

However, there are challenges ahead. As the Swiss have concluded, their earmarked revenues are likely to fall in future. Peak loading on transport systems will require action to manage demand. Like in many other countries, revised and improved arrangements will be needed for the medium term.

Cross-Border Financial Support

One surprising aspect highlighted was that the Swiss had provided cross-border financial support to Germany and France, to help ensure the improved inland connections needed between Switzerland and Germany – and Switzerland and France. The financial support provided included a loan to Germany for the electrification of the Zurich-Munich line; and co-financing of the Rhine-Rhône, Bellegarde/Bourg-en-Bresse and Delle/Belfort TGV connection.

Regional co-financing like this can obviously make it possible and much easier to develop the cross-border connections and facilities that are needed on both sides of the border. These cross-border financing arrangements seemed to be very good candidates for a Case Study-based listing of “best practices”.

Gateway ports and inland transport connections

The majority of Austria and Switzerland’s port volumes are handled by the north-west ports. The greater use of these ports reflects the advantages the northern ports have in terms of the reliability and efficiency, as well as the level of transport services on offer – including liner/container shipping services, port and terminal handling. Of course, it also reflects the inland transport services from the ports to their hinterlands, including the frequency, reliability and efficiency of inland transport services.

In future, services via the north-western ports can be expected to improve. Several of the north-western ports will attract and be able to handle the largest shipping liners – including container vessels with capacity over 10 000 TEUs that will reduce shipping costs significantly. Improvements are expected in port handling at the north-western ports as a result of the significant investments being made. As well, the inland connections from the north-western ports to Austria and Switzerland will improve in future as the TEN-T and national inland waterway and rail transport projects come on stream over the next decade or so.
A continuation of current travel patterns would see very large increases in volumes through the north-western ports in particular, as overall demand increases. They are well prepared and will be able to handle the increased volumes for some time to come. However, if current patterns are maintained, there will be some very large increases in inland transport volumes over long distances, including freight to and from Austria and Switzerland. The costs of such patterns will be quite high in terms of travel times, transport costs and wider transport impacts, including increasing CO\textsubscript{2} emissions as well as noise and local pollution.

**Promoting rail freight**

Switzerland has been one of the most active countries in promoting rail freight. Switzerland’s aims in doing so include reducing the impacts of transit road traffic on the Swiss population and better protecting its sensitive alpine areas. Switzerland’s Traffic Transfer Act aims to reduce heavy vehicles crossing Alpine areas from around 1 million per annum at present to 650,000 by around 2020. Unfortunately, the rail infrastructure and service deficiencies in Italy detract from the quality of European rail services in this part of Europe and the objectives of promoting rail freight more widely. They could also present a real impediment to achieving the objectives of Switzerland’s Transfer Traffic Act.

Austria has a very high volume of road freight in transit across the country, the majority of which is carried between origins and destinations in Germany and Italy. Swiss regulatory arrangements include heavy vehicle taxes on trans-Alpine traffic – aimed at reducing heavy vehicle volumes and increasing use of rail transport. These taxes are currently set at the highest levels allowed under the EU-CH Agreement. The Swiss authorities advised there is no statistical proof of any diversion of road transport via Austria due to the Swiss road taxes. In future, road freight transit demand will increase as a result of economic growth and development, particularly in the eastern part of Europe.

Austria may be adversely affected by the inadequacies in rail freight infrastructure and services to the Adriatic ports (both in Austria and in Italy). Should the hoped for shift in demand from road to rail freight across Switzerland not occur as planned, Austria may also be adversely affected by a diversion of road freight in future from corridors across Switzerland, to routes via Austria. A trans-Alpine crossing exchange as is being proposed, if adopted by both Austria and Switzerland, can be expected to help avoid such an outcome.

Taking a step back, it seems fairly clear that greater policy coherence between the approaches being pursued in Austria, Germany, Italy and Switzerland would be helpful in achieving their broader objectives. Reliance on a corridor and route by route approach may not be adequate. A network approach would seem better suited to the strategic objective of increasing rail freight modal shares – including to and from the major ports – and the challenges and opportunities that have been identified. Of course, road users will respond to levels of service on the network as a whole, rather than the policy objectives on particular routes alone. A network approach can be expected to highlight the opportunities for more coherent policy measures better able to encourage the modal shift on trans-Alpine routes that both Switzerland and Austria are seeking. These are issues in which the European Commission could possible play an effective role.

**Rail freight priority**

The Workshop highlighted another major challenge in offering competitive rail freight services in Europe – rail passenger services generally have priority over rail freight services on European rail systems.
In some other parts of the world, rail authorities and private operators have avoided the passenger vs. freight priority issue by building separate passenger and rail networks or lines in critical locations. Doing anything similar in the European context would be a real challenge, even if the EC has signaled its intentions and increased the prospects of some action being taken.

The majority of lines have a mixed traffic character – major lines, regional and freight. According freight transport any priority could have important consequences for passenger traffic. The strategy pursued in Switzerland, for example, is to integrate all types of traffic at an early stage of the planning processes and to organise the infrastructure necessary as a result. Nevertheless, the major gateway ports and their inland connections are locations and corridors where there may be a need – as well as some opportunities – to increase the priority assigned to rail freight, e.g. on joint tracks during specified periods or by developing infrastructure dedicated to rail freight.

Outlook

Switzerland and Austria have geographical locations at the centre of Europe from which they are likely to continue to benefit. The economic development of Europe is tilting eastwards. There will be greater opportunities for exports of goods and services as eastern European countries grow and develop. Their geographic locations also mean the two countries are closer to south Asia and Asia than most European countries – and trade between Europe and Asia (China) and South Asia (India) is increasing rapidly. Austria and Switzerland are therefore well placed geographically to take advantage of both the growth opportunities in Europe and those in the rapidly growing developing countries in Asia – as well as in Africa.

Greatly increased trade flows are expected along the Mediterranean suggesting there will also be opportunities for Switzerland and Austria to benefit from the increasing growth of China, India and other developing countries and the increasing trade that can be expected as a result over the next decades.

In this context, there are likely to be increasing demands for use of the northern ports and increasing opportunities to make use of the Mediterranean ports. Switzerland is much closer to the Port of Genoa than it is to any of the north-western ports. Austria is much closer to the Adriatic ports than to the northern ports. However, proximity alone will not be enough to encourage any significant re-balancing of activity towards the southern ports.

Greater use of the Mediterranean Ports?

There are important differences in patterns of port handling between the two countries, with a greater proportion of Austrian demand being handled by the Mediterranean ports. Around 36% of Austria’s import and export cargo was handled by the Mediterranean ports in 2008 – and this proportion has been increasing.

In the short term, it seems unlikely there will be any major changes in the use of the Mediterranean ports. However, given the proximity of the Mediterranean ports to Austria and Switzerland and the increasing freight volumes (including to eastern European countries), it seems likely that the port handling volumes at the Mediterranean ports could increase steadily – and freight volumes on inland connections from these ports will also increase. Infrastructure improvements are likely to reinforce these trends by 2020.

Other factors that may point in the direction of greater use of the southern ports include: expected shifts in trade patterns – and in particular trade with Asia; potential savings in transport costs; and
expected developments in maritime services between Asia / India and Europe (including increasing ship sizes).

In these circumstances – and having regard to the current interests in green growth – it seems there could be value in governments undertaking some serious studies of the options available for greater use of the Mediterranean ports – and the further improvements in inland transport connections that would be needed.

In addition to CO₂ reductions, benefits from a more even balance between the northern and southern ports could be expected to include greater security (given the greater diversity of competitive supply chain routings) and better regional development opportunities, related to the greater economic activity generated by the Mediterranean ports and their inland connections.

Many aspects would need to be considered in a cost-benefit context, including the infrastructure costs and business cases, potential contributions to wider objectives such as security, efficiency and regional development and possible sources of funding and financing.

Consideration would need to be given as well to the interests and capacity of the Italian and Adriatic ports and the inland transport operators that would provide the inland services required. Of course, the views of the industry would also be important, especially port terminal operator and logistics operators that could be involved in making future decisions on supply chains.

It is recognised that significant change would only be possible if the performance of the Mediterranean ports and their inland rail freight connections improved considerably. Gradual improvement in the market share of the Mediterranean ports over a long time period would probably not raise any major issues for the north-western ports. In fact, it may reduce some of the burdens on them to continue to handle through their ports the considerable volumes destined for the inland hubs – as well as the increasing volumes of transit traffic involved over relatively long distances to Austria and Switzerland – and countries beyond.

Of course, despite the considerable potential benefits, there is considerable doubt about whether there is sufficient capacity (policy, structures, financial, efficiency and drive) to overcome the barriers and make the improvements required, within a timescale that would be most useful. As well, the infrastructure investment required in the southern ports and their inland transport connections would be considerable – and there is no certainty that the parties involved would be prepared to finance such infrastructure.

**Infrastructure Contributions to Green Growth**

There are greater scale economies at the northern ports – related to port, maritime and inland transport services. The northern ports are doing a lot to ensure they can provide the services required in the longer term in an environmentally responsible manner. The Port of Rotterdam, for example, is putting considerable efforts into planning of its Massvlakte 2 development to ensure it is as sustainable and environmentally responsible as possible. If current patterns continue, the major share of port handling of freight destined for Austria and Switzerland will continue to be carried by the northern ports.

As noted already, greater use of the Mediterranean ports would reduce shipping distances by around 2000 km per ship in each direction. It would also reduce the inland transport distances considerably.
At first sight, there would appear to be real prospects that co-ordinated action could help achieve such outcomes, which could be seen as likely to make a major contribution to Green Growth. As noted in the different chapters of the report, of course there are many other factors to be taken into account.

The opportunities in these areas reinforce that infrastructure planning, development and management are important responsibilities for governments irrespective of the structures and arrangements put in place.

They also reinforce that, in Austria and Switzerland, while there is much evidence of good practices in many areas, there is still some room for improvement in structures and policy frameworks in both countries.

From the viewpoint of green growth as well, there is a need for more consistent policy frameworks in the region and a network approach to solving network problems.
ANNEX A

BERN WORKSHOP – 24 JUNE 2010

LIST OF PARTICIPANTS

Swiss Department for Transport

Christophe Mayor
Federal Office of Transport
UVEK
Switzerland

Urs Weber
General Secretariat
UVEK
Switzerland

Austrian Office of Transport

Thomas Spiegel
Head of Unit V. Infra 5
International Networks and General Transport Infrastructure Planning
Federal Ministry of Transport, Innovation and Technology (BMVIT),
Austria

OECD International Futures Programme

Pierre-Alain Schieb
Head of Projects
International Futures Programme
OECD
Paris

John White
Senior Policy Analyst
International Futures Programme
OECD
Paris
ANNEX B

TRANSCONTINENTAL INFRASTRUCTURE TO 2030/2050
INLAND HUBS – AUSTRIA/SWITZERLAND CASE STUDY
BERN WORKSHOP – 24 JUNE 2010

DRAFT ANNOTATED AGENDA

9:00 1. WELCOME AND INTRODUCTIONS

9:10 2. CASE STUDY PROGRAMME – STATUS REPORT AND WORKSHOP OBJECTIVES – (OECD/IFP staff)

9:20 3. GLOBAL AND REGIONAL OUTLOOK

IFP will make a presentation on the global economic, trade and transport outlook for the short to medium term and beyond. This will identify possible regional and trade route developments that could bear on the Case Study area. Discussion will focus on the key aspects of importance to the Case Study Area.

4. INLAND HUBS – AUSTRIA / SWITZERLAND CASE STUDY: OVERVIEW AND OBJECTIVES

Host country participants (Austria /Switzerland) will make presentations that provide an overview of their Inland Hub situation, their key issues and the aspects of most interest to be considered at the Workshop.

10:00 4.1 Swiss Presentation

The Swiss hosts will make a comprehensive presentation of about one hour, including all relevant aspects of the case study from a Swiss point of view.

[Coffee break]

11:15 4.2 Austrian Presentation

The Austrian hosts will make a comprehensive presentation of about one hour, including:

*) Inland Hubs and Terminals
*) Current transport network and transport services (focussing on Combined transport connections), transport demand and outlook
*) Plans for network improvements, ongoing and planned infrastructure projects.

12:15 [Lunch]
5. SHORT TO MEDIUM TERM PROJECTS – OPPORTUNITIES AND CHALLENGES

Discussions:

1:30 5.1 Current inland transport operations

Discussions will explore current Inland Transport infrastructure and operations connecting the Inland Hubs to ports and external networks. These could highlight such matters as weekly frequencies, reliability, transport costs and travel times – as well as the available data on origin/destination volumes along the major North – South and East – West axes.

Discussions will focus on any current service inadequacies, infrastructure deficiencies and other concerns. Consideration will also be given to whether hinterland transport relations to the Gateway Areas are concerned by the limitation of ecologically sensitive areas and how a sustainable and socially acceptable accessibility of the Gateway Areas can be established?

2:00 5.2 Inland transport infrastructure improvements

Discussions will explore the new and improved international rail (and road) infrastructure currently being developed – including relevant TEN-T projects – and the improvements in the quality, cost and reliability of inland transport services expected when they have been completed.

Discussions will focus on any major changes in inland services (quality, reliability, cost, time) expected once the cross-border and inland infrastructure improvements outlined have been completed.

6. POSSIBLE LONGER-TERM PROJECTS – OPPORTUNITIES AND CHALLENGES

2:30 6.1 Possible strategic transport infrastructure improvements

Discussions will explore any longer term prospects for further improvements in strategic transport infrastructure and prospects for improved inland transport services in the longer term. Aspects of interest could include the extent to which the Inland Hubs are likely to see any re-balancing in transport demand, services and volumes between routes to Europe’s North –West ports and Northern Mediterranean ports; and changes expected on East-West routes.

Discussions will focus on the interactions between the broader regional developments in prospect and improved connections to new growth and activity centres that might be needed as European economic activity tilts eastwards. Consideration might also be given to any improved services and connections likely to be needed to future regional growth areas in Asia (China), South Asia (India), South America and Africa.

[Coffee break]
7. CASE STUDY STRATEGIES – ASPECTS FOR FURTHER CONSIDERATION

3:00  7.1  Infrastructure funding and financing (IFP will introduce)

Discussions will explore the funding and financing arrangements and business models outlined in the Workshop presentations, any funding or financing difficulties expected and any alternatives that might be considered.

3:30  7.2  Infrastructure contributions to “Green Growth” (IFP will introduce)

Discussions will explore the contributions which changes in the patterns of inland services could be expected to make to current broader policy priorities, including low carbon economies, lower CO\textsubscript{2} emissions and “Green Growth”.

These might focus on any possible contributions during infrastructure development stages as well as the more substantial contributions that could be possible in the longer term – as a result of improved infrastructure operation and use. Consideration could also be given to how inland transport patterns might need to change in future if reducing CO\textsubscript{2} emissions and Green Growth become even more important, as currently expected.

4:00  8.  CLOSING REMARKS
### Methodological Remarks

External Trade Statistics are not focussing on the variable “mode of transport”. Respondents are not always aware of the transport chain components of the goods they are receiving or sending. Thus the information can be biased. The total amount of intercontinental goods flow seems to be under-estimated in these tables – but it can be used for an indication on the structure of hinterland transport.