

## *Chapter 5*

### **Key issues emerging from the case studies**

*The major gateways and hubs considered here are preparing for large increases in volumes in the future. Some have large infrastructure expansion plans and developments under way. Most are working on international connections and on the improvements needed to inland connections. All are acutely aware of the importance of good planning and secure funding and financing to take advantage of the opportunities. Good structures and organisational models are highlighted, as well as some of the best funding and financing models currently used to provide funding security. Other wide-ranging issues are raised that need to be addressed satisfactorily if the projects are to be successful.*

## Strategic policy objectives

Policy objectives are in a state of flux in different locations. A short overview of the changes in policy directions over the period since the 1970s allows this current flux to be seen in perspective.

Over the decades from the 1970s to 1990s, transport policy generally placed special emphasis on more competitive and more efficient transport services. In most countries this meant focusing on airports and ports for longer distance/international transport – and on roads and road transport to carry the growing volumes of freight transport. As the most efficient mode, road transport grew substantially in most countries and was used increasingly to satisfy cross-border and broader international freight transport requirements. As road transport's share of freight grew, the share of alternative modes – inland rail transport and inland waterway in particular – fell significantly. Initially, increasing road transport allowed considerable productivity gains but at the same time generated considerable local pollution and other unpleasant impacts, including noise and fumes. As technology improved, local pollution was reduced and other adverse impacts also diminished.

Since the 1990s there has been evidence of slowing levels of investment in motorways. Over the past decade the evidence has pointed to increasing investment in rail and public transport in many countries, as the need for improvements in these areas has received increasing attention. There has also been an increasing focus on multi-modal corridors, with each mode performing to its potential. This has generally meant road transport taking the lion's share of short-distance freight, inland waterways continuing to move bulk freight where waterways allow, and rail taking the major share of long-distance freight (i.e. over 500-750 kilometres). High-speed passenger rail in a limited number of countries resulted in a significant shift from passenger cars and also attracted passengers from air services over distances up to around 750-1 000 kilometres.

From the workshop discussions, it became clear that policy objectives and directions are changing. In some locations there has been a significant break from the past. Of course, many factors have been involved. In the short term, developed countries are focused on competitiveness and growth, as they seek the rapid recovery needed to deal with deficits, debt and unemployment. Investment in trade-related infrastructure is seen as an important driver of GDP, trade and productivity growth. Infrastructure's contributions to these and other objectives (such as quality of life) are being seen as increasingly important and needing to be fully reflected in infrastructure programmes and evaluation processes.

The increasing importance of economic growth and trade competitiveness has been matched by the growing importance of environmental and sustainability objectives, combined with concerns over CO<sub>2</sub> emissions that have also had a clear impact. In most cases it is commonly accepted that there needs to be a greening of transport. The changing policy objectives are clearly affecting the opportunities and challenges facing international gateways and trade corridors in relation to the movement of freight.

The changes are evident in the case study examples below, which illustrate a more proactive pursuit of the new and more **strategic** policy directions and broader policy objectives, and greater use of transport technologies with lower environmental impacts.

## Benefiting from future economic and trade growth

Representatives from national ministries and other organisations involved in the workshops generally anticipated a relatively slow recovery and then steady growth in the global economy in the medium term (i.e. over the period to 2030) and in the longer term (beyond 2030). Participants were less positive about the prospects for growth in the short term, recognising the time that will be required to recover from the recent recession. Importantly, there was wide recognition that the growth would not be the same everywhere – strongly differentiated growth was expected between developed and developing countries, for example.

Despite the lower economic growth expected in developed countries, case study examples highlighted how the gateways in both developed and developing countries are likely to benefit from future economic and trade growth. Scenarios do vary. For the Port of Rotterdam in the Netherlands for example, the most positive scenarios see total cargo volumes increasing significantly in the future, from 421 MT in 2008 to at least 600 and possibly over 700 MT in 2030. Container volumes could increase even faster, from 132 MT in 2008 possibly to over 300 MT in 2030. Meanwhile in the least positive scenarios, overall and container volumes could be very much lower than these levels.

Other factors can come into play and create a virtuous circle with trade growth, a point illustrated by France's gateway ports. In the medium term, increasing purchasing power in France and neighbouring European countries can be expected to lead to increasing import volumes. Export demand can be expected to increase with global population growth and as economic development – particularly in Asia – increases demand for France's export products (e.g. agricultural and manufacturing/technology).

Mention was made in the case studies of how Copenhagen looks set to benefit from the Fehmarn Belt rail and road link once completed: regional economic activity and trade with Germany should increase and the city's improved position as an "inland" hub between Germany and Sweden should yield further benefits. And the European economy's expected tilt eastward in the next decade should prove advantageous for Austria and Switzerland, providing greater opportunities both for exports of goods and services as eastern European countries grow and develop, and for sourcing the goods and services they need from lower cost countries in that region. In addition, proximity to greatly increased trade flows along the Mediterranean suggests there will also be opportunities for Austria and Switzerland to benefit from the increasing growth of China and India, as well as other developing countries.

Some very strong growth is forecast in demand for strategic gateway infrastructure generally, due to the global economic and trade growth outlook. There may also be some increase in the concentration of interregional flows at the major gateways. One reason is that the larger container vessels with capacities of up to 15 000 TEUs in shipping fleets – which need very deep water draft and high volume port handling capacity – have increasingly fewer gateways able to meet their requirements.

## Increasing competitiveness

In light of expected increases in international trade, many countries are focusing on the need for greater competitiveness across critical aspects of national economies. Investment in trade-related infrastructure is generally seen as an important driver of GDP, trade and productivity growth.

In France for example, the Ports Reform legislation adopted in 2008 aimed to improve the competitiveness of the seven large French Ports (Bordeaux, Dunkerque, Le Havre, La Rochelle, Rouen, Nantes-Saint Nazaire, Marseille). In a January 2010 Progress Report, the government communicated some of the tangible results from the changes made as well as further opportunities. Consideration was given to alternative structures, but a port authority structure was chosen as the roles and responsibilities involved correspond closely to public functions (safety, security, etc.). Other reasons included the relatively short-term horizons of many private sector operations and managers and the considerable investments that the ports required to be competitive in the new context and over the longer term. As well, it was not thought likely to be attractive to cede existing port land to the private sector, by way of full privatisation.

The drive for competitiveness is not without its challenges, many of which relate to improved productivity and performance. The Port of Le Havre, whose Strategic Plan was discussed in Chapter 3, has the ambition to double its container traffic to 6 million TEUs by 2020, increase its market share in the north European range up to 9% by 2015, and increase use of mass transit modes for hinterland traffic to 25% by 2020. These targets are indeed ambitious and will require exceptionally good planning, co-ordination and execution – as well as adequate and timely funding. In effect, a clearly developed strategy will be needed as well as a carefully developed implementation plan outlining how such improvements can realistically be achieved.

The strategic plans for Marseille Fos are also ambitious, particularly as regards container handling. The target for container traffic is to exceed 2 million TEUs by 2013 and reach 5 million by 2020. Another objective is to raise the port's European ranking from 20<sup>th</sup> position in 2007 to 15<sup>th</sup> position in 2013 and enter the top 10 rankings in 2020. A further target is to increase Marseille Fos' market share of European port container handling, from 1.7% in 2008 to 3% in 2013, and 6% in 2020.

## **Green Transport Policy**

Environmental concerns and sustainability objectives figure strongly among the policy drivers for many countries. This is certainly the case with Austria's new Infrastructure Strategy, discussed in Chapter 3, and Denmark's "Green Transport Policy" Agreement (Box 3.2) enjoys wide political support. Much attention has been paid to the modal shift of freight onto rail – in Istanbul for example, with the Marmaray rail tunnel allowing more direct rail freight connections between European and Asian continents; and Switzerland's heavy vehicle tax, a measure to greatly reduce transalpine crossings.

## **Better structures and organisation**

National/state and local governments have often had primary responsibility for major gateway and inland transport infrastructure. The governments and their ports mostly retain primary responsibility for port infrastructure provision and regulation – as well as inland roads and rail transport infrastructure – with major infrastructure funded directly from government budgets.

The workshops highlighted that better structures and organisation can help deliver the funding and financing needed, and are important for delivering many other important outcomes.

“Landlord port” models are widely used – the Port of Rotterdam is an example – with terminal infrastructure and freight/logistics services provided on a competitive basis by private operators. As a further step, corporation structures may be used to create opportunities for ports to become fully self-financing, removing reliance on budget funding. Good projects still need to be established on the basis of good planning and evaluation, with merit-based ranking.

Denmark is generally using a traditional government authority or fully government-owned corporation model as the organisational structure adopted to oversee projects and deliver the investment or funding needed. A government model is being used to manage the investments in the Infrastructure Fund, which is delivering over DKK 98 billion (EUR 12 billion) over the period to 2020. Funding from general taxation, sales of assets and savings on budget allocations are being channelled into the Infrastructure Fund.

Some rather different business models could be needed in other settings.

In the High North, the development of new mines means there are likely to be requirements for new and extended rail track and bulk ore rail freight services in both Finland and Sweden. This would place additional demands on existing infrastructure and also require new infrastructure. Meeting these needs would allow the ore to be moved efficiently and reliably to processing plants, ports and final destinations.

International experience suggests that decisions on resources-related transport infrastructure improvements are increasingly likely to be taken on a commercial basis – i.e. in the expectation that the industries involved will meet the full costs of the infrastructure improvements and services they need. Such approaches could become important in the High North if the resources-related infrastructure needed cannot be funded by public sector providers (e.g. government-owned freight rail operators) alone. In some countries, resource companies themselves sometimes assume responsibility for providing the transport infrastructure and services they require.

In a number of countries and settings, the outlook and changing expectations have led to transformational reforms – as illustrated by France’s ports reforms. Some of the key proposals in France’s “Port Reforms Report 2007” were mentioned earlier, such as transferring the operation of their port terminals to private sector operators. Giving effect to these strategies has involved replacing all references to “public service” in the ports code with a “competitive activity” approach, setting a time frame within which the transfers of specified facilities needed to take place (three years for containers and dry bulk), and requiring each port to develop a strategic plan within six months for its terminal operations.

## **Better funding and financing**

In countries with major ports that depend on government funding, there are real concerns that, given the post-crisis fiscal situation, future funding of gateway and inland transport infrastructure from traditional budget sources could “dry up” even as infrastructure needs increase quickly.

The case studies highlighted the high-quality funding and financing arrangements in place in a number of countries. Most emphasised that these arrangements have been centrally important to getting strategic infrastructure built, and even assured the necessary degree of continuity during the most severe recession since the 1930s.

### ***Denmark, Copenhagen – Green Transport Policy***

It was mentioned above that the Government of Denmark, with broad parliamentary support delivered by the Agreement on Green Transport Policy, decided in 2009 to invest more than DKK 160 billion (around EUR 22 billion) in the country’s infrastructure over the period to 2020. The total investment package is split between the Infrastructure Fund and two separate project-specific funds created for the two largest projects previously approved, as follows:

- the Infrastructure Fund was established to fund the major share of investments in roads and railways in the coming years; it will deliver over DKK 98 billion (EUR 12 billion) over the period to 2020;
- the separate project-specific funds established for the fixed Fehmarn Belt Link and the Metro Circle Line will together deliver approximately DKK 60 billion (*ca.* EUR 10 billion) over that same period.

As a result, projects that have been decided on over the period to 2020 are fully funded, provided there are no serious cost overruns.

The sources of these Danish infrastructure funds are important to their stability and security:

- The long-term strategic **Infrastructure Fund** is financed out of general tax revenues, sale of state-owned assets, and savings on approved projects where there is investment under-spend (e.g. where network modernisation leads to savings in expected future maintenance).
- **Metro funding** – the separate funding for the Metro project comes from user fees and from the sale of public assets (power stations) as well as from land value capture and property taxes. Around half the funding for the Metro project is expected to come from “other” (i.e. non-user) sources.
- **Fehmarn Belt link funding** is based on the model used for the Danish fixed links that has been very successful, involving a government-owned corporation established under the corporations law, a government-secured loan, and financing via user fees. The European Commission supports the project; up to 30% of the costs for constructing the fixed link may be granted. The fixed link costs will be repaid by road and rail users.

### ***Switzerland: Alpine Crossing Exchange and longer term challenges***

While Switzerland’s infrastructure funding system has worked well, there would appear to be room for improvement in pricing and related arrangements.

The government is currently considering 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.

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.

A further consideration is that mobility pricing is likely to be needed on the roads as well.

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.

Many other countries face similar challenges, and may also need a completely new mobility pricing system before 2030.

## **Infrastructure development**

The case studies showed there is already pressure in many places to improve existing infrastructure and to develop new infrastructure able to meet expected future demand over the period to 2030 (and beyond). This is not surprising given that international gateways and trade corridors are now very important to the economies of all countries – delivering services vital to national and regional competitiveness, productivity and employment – and will be even more important in future. It is also not surprising because the planning, approval and development of such important infrastructure can take 20 years – and its useful life may be 50 years or more.

### ***Gateway capacity expansion***

According to the case studies, management anticipates that future growth in demand will require improved capacity and the efficiency of the gateways themselves.

The Netherlands provides an example. In 2008, the Rotterdam Port Authority began construction of Maasvlakte 2, a land reclamation project which – after almost two decades of preparation – will increase the port area by 20% (2 000 hectares, of which 1 000 will be lettable sites). The first containers will be handled in 2013.

In 2009, the authority invested around EUR 350 million, around half of which was invested in the existing port area and the other half on Maasvlakte 2. The Port Authority's Annual Report advised in 2009 that the project entered a new phase as planning preparations had been completed. The authority let a contract in 2009 for "Sea defences and first port sites", at a value of almost EUR 1.1 billion, and the construction of the sea defences got under way.

With Port 2000, France's Port of Le Havre has new large capacity to handle containerised trades. Since 2007, 2 100 metres of additional quay have been added. Investments scheduled by the Grand Maritime Port of Le Havre over the period 2009-2013 will account for around EUR 700 million. With the final stage, expected in less than ten years, the container capacity of the Port of Le Havre will have trebled. Meanwhile, the Port of Marseille Fos' first priority is to increase its container throughput, and capacity will need to expand if it is to do so. Priorities include delivering Fos 2XL terminals to the concessionaires in 2010. The authorities will carry out studies and invest EUR 106 million in initial work on Fos 3XL and 4XL, needed before 2020.

The estimated cost to build all basic infrastructure projects currently in the pipeline in Belgium is around EUR 332 million per year. Under the Port Infrastructure Financing – Port Decree, the funding available for future investments in new basic infrastructure (which is 100% government funded) – under current policy – is EUR 17 million per year. There is a large gap between future needs and current funding.

### *Inland transport connections – capacity*

Many countries recognise the importance of their major gateway ports and airports in their national policy frameworks and support the planning and development of the infrastructure required. However, most countries do not assign the same priority to the key inland rail, road and waterway connections required to move freight between the gateway ports and the cities and industrial areas in their hinterlands.

Case studies highlighted some countries that do devote considerable attention to inland transport requirements. One is the Netherlands, which recognises that a major challenge will be the size of the expected increases in rail freight volumes from the northwestern ports. Some scenarios have the Port of Rotterdam anticipating greatly increased throughput volumes by 2030. A large portion of the increase could be in container volumes, which could increase as much as threefold. Also in the Netherlands is the Betuwe line, a 160 kilometre-long double track rail line that connects the Port of Rotterdam to the Dutch-German border. Dedicated to freight and equipped with ERTMS (the European Rail Traffic Management System), the Betuwe line was inaugurated in 2007. The overall TEN-T project cost was EUR 4.7 billion. The planned capacity of the line was around 200 trains per day. The track on the German side has not yet been upgraded, and at present, actual usage is around 200-300 trains per week. Current restrictions are due to signalling problems and other difficulties.

France's ports are developing new infrastructure to improve their services (particularly in the field of multi-modal transport) and assist in introducing new services (by local rail operators). The National Freight Initiative launched by the government in September 2009, with a EUR 7 billion financial assistance package, will contribute to a significant increase in rail services to French ports.

The Austrian presentation highlighted a number of points: hinterland connections play an important role in the Austrian economy, improvements are necessary to maintain the competitiveness of Austria as an inland country, and sustainable modes of transport like rail and inland waterways will necessarily play the most important roles in future hinterland connections.

In Switzerland, 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 a modal shift away from road transport. However, significant increases in the next ten years – i.e. before the major Swiss and neighbouring countries' rail improvements are completed – might put considerable pressure on long distance rail services along these corridors.



### ***Improved international connections***

As the case studies demonstrated, the focus for some infrastructure development was on improved international connections. Thus the truly transformational Øresund Bridge – with the road and rail connections it provides between the Danish and Swedish side of the Øresund Sound – will promote further integration of the previously separate urban development areas on both sides. The Fehmarn Belt Link will greatly improve freight and passenger connections between Denmark and Germany as well as improved connections – and so reduce modal share carried by road – between Germany and Sweden. And the Marmaray project's tunnel under the Bosphorus will provide an uninterrupted railway connection between Asia and Europe.

## **Infrastructure management**

### ***Increasing focus on lower impact modes***

Countries have set some ambitious targets for increasing the use of lower impact inland modes. As revealed earlier, the Port of Rotterdam's target shares for 2035 are: inland waterway, 45%; road, 35%; and rail, 20%. The improved rail services offered by the Betuwe line should provide a boost to rail freight between the Port of Rotterdam and inland activity centres and present one of the most important opportunities for improving the efficiency, reliability and modal share of inland rail connections along the important trans-European corridor between Rotterdam and Genoa. Ambitious targets have been set for non-road modes (other than air freight) at the Port of Le Havre, to increase its market share from 14% to 25% of (total) freight cargo traffic by 2022. And the Strategic Plan for the Port of Marseille Fos has set some ambitious targets for increasing use of lower impact inland modes. The targets are for the inland waterway share to rise from 4.7% to 10%, and the rail share to rise from 13.7% to 30% by 2013.

With regard to inland multi-modal terminals, the Port Authority of Rotterdam initiated the concept of a Container Transferium, to improve the accessibility of the container terminals at the Maasvlakte and to relieve the pressure on the A15 in the port area (reducing congestion and improving air quality). The Container Transferium aims to transport containers between the sea terminals and a location in the immediate hinterland of Rotterdam. Containers are transported in groups between the sea terminals and the Container Transferium on an inland vessel. The Container Transferium is part of the Port of Rotterdam in the (nearby) hinterland, with integrated information exchange, customs clearance and chain security.

### ***Freight priority***

One of the difficulties in offering competitive rail freight services in Europe is that freight rail suffers from passengers having priority over 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, given the space and geographical limitations, even if the European Commission has signalled its intentions and increased the prospects of some action being taken.

In France, any proposed improvement to rail services to the ports will have to contend with congestion on jointly used passenger/freight rail tracks throughout the rail networks. An example that affects the Port of Marseille in particular is the congestion on rail lines near Lyon, due in large part to passenger rail volumes. A possible new rail bypass to the west of Lyon through Clermont-Ferrand is under consideration but may not be assigned the priority needed to secure funding for some years.

Specifically in relation to rail, it is important to focus on the problems that giving absolute priority to passengers causes for rail freight. Realistically, at some times and in some locations, it will be important for rail freight to be given priority over passenger services. Where this is important to meet the objectives set for rail freight – but the priority is not accorded – consideration needs to be given to separate freight rail tracks and rail freight bypasses that are worthwhile, on a benefit-cost assessment basis. In relation to sources of funds, some of the tunnels under consideration for passenger rail are very expensive – and more balanced outcomes may produce better overall results (e.g. with the Lyon freight rail bypass and Le Havre rail built earlier).

### *Dealing with increased transit traffic*

Freight traffic across the Alps by road and rail has increased significantly. In 1980, there was around 15 million tonnes via Austria; by 2008, the volume had increased to 50 million tonnes. In 2008, the share by road was 71.5% and the share by rail was 28.5%. The bulk of the freight travelled along the Brenner Pass corridor. Austrian efforts to improve the rail infrastructure are focused on projects such as the Brenner Base Tunnel, Semmering Base Tunnel and Koralm railway line. Challenges for the future include the need to consider a better charging regime to improve environmental outcomes. Clearly, the Swiss legislative framework for limiting transalpine crossings by road transport will be important in the short to medium term in limiting and reducing road transport volumes and their adverse impacts on sensitive Alpine areas. Austria is also planning to give consideration to additional measures that might be needed in ecologically sensitive areas – such as Alpine Transit regulatory schemes.

Related to expected increases in rail volumes between Denmark and Germany and between Copenhagen and Sweden, the challenge will be to ensure that cargo is carried more sustainably, with energy, the environment, accessibility and road safety centrally important. In response to an expected increase in transit volumes, the specific challenge will be to ensure that rail transport investments are made where rail freight has the greatest potential – including international shipments and transit freight over relatively long distances (e.g. 300-500 kilometres or more). A further possible challenge in the medium and long term could be the degree of competition between passenger and freight rail for use of rail tracks.

### *Increasing reliability*

In many cases, increased traffic volumes are leading to increasing congestion, particularly on inland connections by roads and rail freight. In the future, as congestion levels increase, reliability is likely to shrink.

One of the greatest challenges for all ports will be to improve the reliability of inland transport connections as cargo volumes increase. Maintaining and improving reliability is going to require a major step up in the management of the infrastructure, to ensure its capacity is protected. This will be a priority issue for container traffic, where larger vessel

sizes will add to the numbers of containers arriving at port terminals each time – increasing the volumes to be handled on inland transport.

### ***Sustainable mobility***

Mobility is to be promoted, but to what extent?

Denmark’s Capital Development Plan, 2008 (prepared not by the Danish authorities but by the advisory Capital Regional Organisation) raised expectations with regard to mobility that would be challenging for any transport authority: “mobility for all citizens, irrespective of where they come from and where they are going to, and irrespective of income, as well as to lower the strain on the environment”. The “Green Transport Policy” Agreement sets out principles that seem more balanced and provide clearer guidance for the development of a vision and integrated transport plan for the Greater Metropolitan Area. A further challenge is to ensure that the vision and the transport plan are fully integrated with the Øresund Region, which is clearly so important to the growth and development of the Greater Copenhagen Area.

### ***Managing congestion in urban areas***

Congestion in urban areas can have a serious impact on business productivity as well as on quality of life in the city, both of which are important to its competitiveness. Congestion can affect international connections and inland connections to and from the major port. Traffic congestion can affect the productivity and performance of many gateway ports in or close to major metropolitan areas.

Generally, the levels of congestion deemed acceptable rise somewhat as cities grow. In large urban areas, road congestion needs to be managed as demand increases, to prevent congestion becoming “excessive”. Not doing so can lead to chronic congestion or wasteful infrastructure investment (e.g. to meet peak hour demand).

The challenge here is to find the right balance between infrastructure investment (e.g. to remove bottlenecks) and the key actions available to protect the capacity of the roads. These key actions are access controls (such as limiting through traffic), parking controls (to moderate and spread demand) and road/congestion pricing (if and where appropriate). Whichever approaches are taken to manage traffic congestion, rail and public transport needs to be improved first – to ensure high levels of accessibility and services in congested areas.

The expectations reflected in the project documents relating to Turkey – which include that there will be no increases in private car passengers across the Bosphorus by 2025 and reduced congestion in Istanbul – seemed very optimistic. The levels of car ownership are expected to increase five times in Turkey from 2000 to 2025.

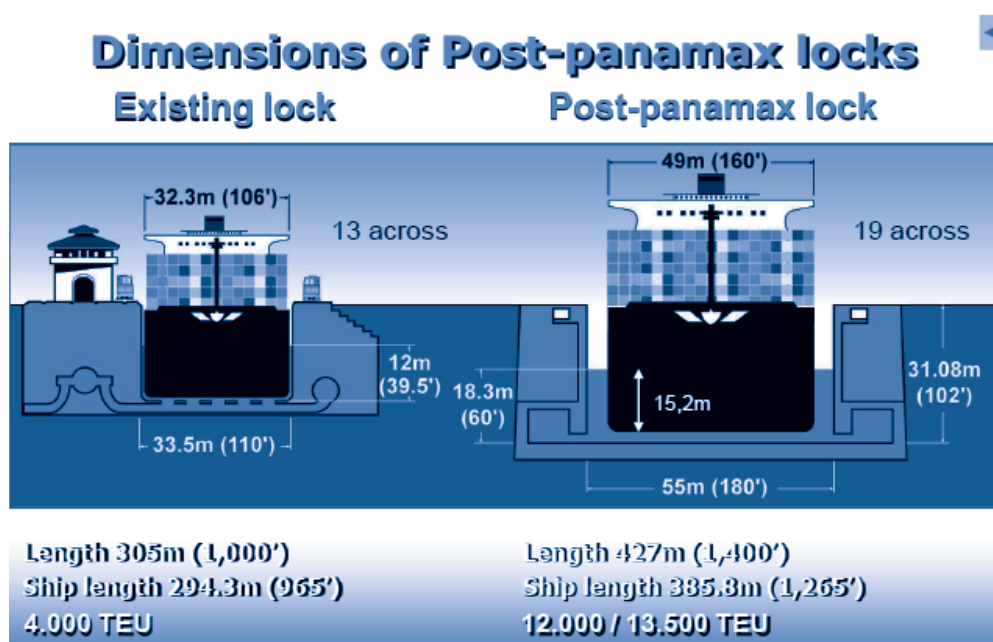
In most major metropolitan areas, increases in transit shares of the magnitude projected would not be possible, even with truly draconian actions to restrict the usage of private vehicles and to restrict vehicle parking. In Istanbul, the geographical layout of the city and the likely capacity restriction on direct road travel to the central areas together suggest they may be possible. However, achieving such outcomes would most likely require related action to promote the use of the Marmaray rail services and strong complementary action taken to discourage increases in the use of private vehicles and other road-based transport. As an example, it could be important to have active traffic management on bridge crossings, on access routes to central areas and on major

arterials – as well as tight controls on parking – to promote rail travel without a serious increase in the duration and geographic spread of road traffic congestion.

### New technology aimed at improving efficiency and reducing adverse impacts

There has been little change in maritime transport’s underlying technologies, but there has been a big change in the capacity of the container ships being deployed, as illustrated in Figure 5.1.

Figure 5.1. Increasing size and capacity of container vessels



Source: Mersin Port Workshop presentation based on Mersin Steering Committee, November 2009.

This increase in vessel size will be one of the other important developments that will influence future outcomes. The move from 8 500 to 12 500 TEU vessels can be expected to save 20-30% of the costs for the maritime part of the journey. (Maersk Shipping Lines placed an order for container ships in March 2011 that was for even larger vessels, with 18 000 TEU container capacity. The first deliveries are expected in 2013 and 2014.) Of course, such cost savings will only be available for ocean shipping services via those gateway and trans-shipment ports at which the new large container vessels call.

Currently, the “heavy lifting” involved in inland transport is mostly handled by waterway, rail and roads, although pipelines are also used for some bulks such as petroleum. No totally new technologies are available to actually **move** the liquid, dry bulk and container freight inland in the volumes required. In the future, roads, rail and inland waterways are expected to continue to carry the load. However, higher capacity vehicles are available for use in road freight, rail freight and waterway sectors than are being used.

Where new technologies will be available is in helping improve the management and operational performance of the different modes (as well as improving the overall performance) of the multi-modal transport system from the viewpoint of providers and users. Examples include:

- new cargo and vehicle tracking technologies – which can help improve reliability and productivity;
- vessel management technologies (such as Vessel Management Systems) – which help maritime safety and security services perform their important roles;
- new rail technologies (such as the European Rail Traffic Management System) – which will ensure consistent standards and operating practices across national borders;
- new gateway port and airport technologies – for multi-modal terminal and container operations.

### Improving evaluation processes

The workshops on strategic infrastructure brought into focus several important aspects of evaluations that need to be reconsidered when undertaking benefit-cost assessments (BCAs) and other assessments.

First, strategic infrastructure can be expected to have a useful life of 50 years or more. Evaluations need to capture the long lives involved via longer evaluation periods.

In conjunction with this change, further consideration needs to be given to how best to assess the importance of contributions to long-term objectives (including contributions to green growth and CO<sub>2</sub> reductions in the very long term, i.e. 2030-2050 and beyond). The very long periods involved in the case study projects – and the importance of the contributions they can make to priority objectives such as green growth and reducing CO<sub>2</sub> emissions in the long term – suggested lower discount rates should be used (as the UK *Stern Review* did) for assessing strategic infrastructure investments in the future.

Many of the opportunities and challenges identified related to external linkages to inland markets that fall under the responsibility of other parties. Clearly, greater consideration needs to be given to the wider regional and network effects of gateway projects and their inland connections, taking into account their network value from a user perspective and likely impacts on supply chain performance and user demand.

As well, the evaluations need to be undertaken from an international perspective – rather than (or as well as) from a national perspective. They should also identify the **dynamic** effects of the strategic infrastructure – as was done for the Fehmarn Belt link (see the Copenhagen case study) – as well as the **static** effects (such as productivity benefits) on which most BCA are commonly based.

National visions and long-term plans for strategic infrastructure development (with consistent policies, co-ordinated developments and aligned networks) are essential factors in the long-term infrastructure planning, evaluation assessments and funding and financing required. Providing for future economic growth and competitiveness are centrally important to such national frameworks and evaluations.

## Greater policy coherence

### *Co-ordination of policy on cross-Alpine traffic*

Some greater coherence in cross-Alpine traffic policy could be useful with respect to the approaches being pursued in Austria, Germany, Italy and Switzerland. Austria and Switzerland are in discussions but to date have not adopted a co-ordinated uniform approach. Separate work is being undertaken on the TEN-T projects. Even though the different legal frameworks involved might limit the options available, a joint approach by Austria and Switzerland alone relying on a corridor approach may not achieve the desired results.

Most of the cross-Alpine freight has origins and destinations in Germany and Italy. A joint network-based approach would seem better suited to the strategic objectives of increasing rail freight modal shares – including to and from the major ports – and limiting cross-Alpine road transport movements. It would seem important for all four countries to be involved to ensure policy coherence. The European Commission could take an effective role as well.

### *Greater use of the Mediterranean ports*

The possibility that the Mediterranean ports could carry increasing shares of European gateway port traffic in the future was raised in several of the case study workshops. Clearly, the Mediterranean ports are at a competitive disadvantage compared with the northwest European ports for much European inland freight transport. However, improvements are possible, and workshop participants advised they would welcome greater use of the Mediterranean ports.

The barriers for Italian ports include inefficient port operations. The Italian ports in particular are improving but still regarded as being 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 ports' market shares among 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 striving to improve their efficiency and their infrastructure, so that their performance is continuously being improved.

No doubt the performance of the Italian ports is interlinked with the performance of Italian inland transport. Until a few years ago road freight was greatly preferred in Italy, and freight rail was not seen as a priority. Consequently, the Italian rail freight services 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. Over the past few years, important investments have been undertaken to close the gap with rail freight services of other EU countries, and help provide a good inland transport system.

Since the workshops, 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 – offshore terminal*

In September 2010, the President of the Venice Port Authority announced a proposed offshore terminal (at a depth of 20 metres) off the Venetian coast. This would allow the handling of up to 3 million TEUs a year “of the container traffic between Europe and the Far East and also between Europe and the Eastern Mediterranean”. It would depend 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 EUR 1.38 billion for the offshore platform and EUR 310 million for terminals in Marghera. The offshore terminal could be “fully operational within five years”.

### *Piraeus Port*

In October 2010, while on an official visit to Greece, the Chinese Premier made reference to Chinese container terminal operators having to 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 Port to 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 30-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 million TEUs per annum include super post Panamax quay cranes and the draft dredged to 14.5 metres. Rijeka is indeed well placed in relation to the emerging economic centres of Central Europe. The intention is that it become a trading gateway for Hungary, the Czech Republic, Slovak Republic, 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 policy co-ordination could be useful.





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