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Report on the International Conference Environmentally Sustainable Transport: Is Rail on Track? 25th-26th October 2001, Eskilstuna, Sweden

4-5 November 2002

This is the final report on the International Conference on Environmentally Sustainable Transport, co-organised with UIC and hosted by the Swedish Railway Administration (Banverket). It also includes the Eskilstuna Declaration on Rail Transport, as adopted at the conference. The powerpoint presentations given at the conference are provided in the Annex as a separate document.
Please note that it is available in pdf format only.

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FOREWORD

The Environment Policy Committee of the Organisation for Economic Co-operation and Development (OECD) completed in 2001 a major project on Environmentally Sustainable Transport (EST) involving a dozen member countries. The project's aims were to characterise EST, to chart new policy pathways towards EST, and to develop policy guidelines for the attainment of EST. The EST Guidelines were elaborated by the OECD's Working Group on Transport and endorsed by OECD Environment Ministers at their meeting in Paris on 16th May 2001. The Ministers further called upon the OECD to assist in implementation of the EST Guidelines and dissemination of the EST concept.

In response to this, the OECD is holding regional workshops and conferences as a sequel to the OECD EST project in order to address critical issues for implementation of the EST Guidelines, barriers for achieving EST and policies to overcome them. This conference "Is Rail on Track?" was part of this initiative. The conference was organised by the OECD Environment Directorate and the International Union of Railways (UIC) and hosted by the Swedish National Railway Administration, Banverket (BV). It sought to address barriers to the implementation of EST Guidelines and explore policy options to overcome them, focusing on rail's contribution to EST.

The objectives of the conference were:

- to address present and future demands for rail transport in the context of progress towards EST;
- to highlight innovative solutions, promising options and approaches in the fields of technology, mobility services and freight logistics; and
- to provide new insights and to highlight opportunities for business and industry in the development and deployment of sustainable transport systems by examining practical examples and innovations in passenger and freight movement from different OECD countries.

Over 60 participants attended the conference including representatives of transport industries, operators and services, governments, NGOs, international financial institutions and the media. A number of promising and innovative initiatives in both passenger and freight rail transport were presented and lively discussions were conducted.

The conclusions and lessons learned from the conference provided the basis for developing the *Eskilstuna Declaration on Rail Transport* which was discussed, revised and adopted at the conference (see Annex 1). Conference participants believe that widespread use of the Declaration will help keep rail on track towards achieving EST.

The Declaration and other EST project-related documentation are available on the Environment Directorate's web page: http://www.oecd.org/env/transport/.

This report has been prepared and approved by the OECD's Working Group on Transport under the Environment Policy Committee.

This report is published on the responsibility of the Secretary-General of the OECD.

ACKNOWLEDGEMENT

The OECD would like to acknowledge the important support provided by the Swedish National Railway Administration, Banverket (BV) which hosted the conference. The contribution of the International Union of Railways (UIC) as the co-organiser of the event is also acknowledged. The commitment and support of the staff of these organisations, in particular Lars. B Johansson, Environment Manager of BV and Chairman of the UIC Environment Working Group, and Karin Rosander, Information Manager at BV are greatly acknowledged.

Particular thanks go to the speakers and panellists who participated in the conference. The participation and contribution by the various speakers, discussion leaders and rapporteurs are also acknowledged.

The report was prepared by Masako Kuwata of the National Policies Division of the Environment Directorate, assisted by Richard Gilbert (consultant, Canada) and Peter Wiederkehr of the National Policies Division of the Environment Directorate, who had the principal responsibility for organising the conference and lining-up the speakers. Editing, layout and logistical support was provided by Cecilia Cerredo-Willliamson and Adam Troman.

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EXECUTIVE SUMMARY

Achieving environmentally sustainable transport is one of the major challenges that OECD countries are facing. To this end, a new target-oriented approach is needed that places environment and health at the top of the policy agenda. Rail-based systems for the movement of people and goods will have an important role to play in the effort to make transport more sustainable.

The OECD Environmentally Sustainable Transport (EST) Project has articulated a clear, comprehensive, and positive vision of sustainable transport in the year 2030. It has proposed policy pathways for implementing the necessary changes based on detailed case studies involving fourteen OECD countries and the Central European region. The important role of railways in achieving EST has been highlighted throughout the project. Most important is the requirement that movement of passenger and freight increase by more than a factor of three by 2030 compared to today's levels. EST will induce changes and provide new opportunities for transport industries and operators, new mobility services, and better and more balanced access for people to places, goods, and services. The lessons learned from the EST project and the resulting EST Guidelines served as background to this international conference focusing on rail-based transport and its critical contribution to the attainment of EST.

Participants at the conference recognised that rail is expected to contribute to achieving EST, while it should also meet its own challenges and overcome its own negative aspects. Technical, economic and legislative measures are required to address the noise and emission problems of rail. Rail should become more competitive by providing attractive and innovative services, including multi-modal solutions for passenger and freight transport. To put rail on track, not only rail interests, but all stakeholders are required to act proactively. Government should introduce fair pricing, which involves internalisation of the external costs of road traffic. The media is expected to play an important role to communicate the advantages of rail and influence acceptance of measures towards EST. Appropriate government strategies and effective partnership between public and private sectors are the keys to finance the high cost of infrastructure investment which is a major impediment to the development of rail transport.

The conclusions reached and lessons learned from the discussions provided the basis for developing the *Eskilstuna Declaration on Rail Transport*, which was discussed, revised, and adopted at the conference (see Annex 1). The Declaration includes the advantages, challenges, areas to be improved, possible solutions and recommendations concerning rail transport in the context of EST.

Conference participants agreed that widespread dissemination of the *Declaration* will help keep rail on track towards achieving EST.

Environmentally Sustainable Transport

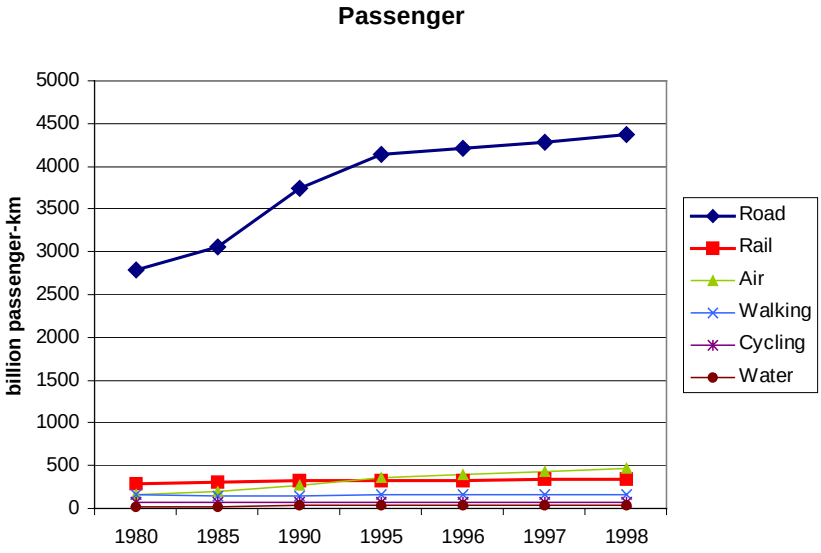
Is Rail on Track?

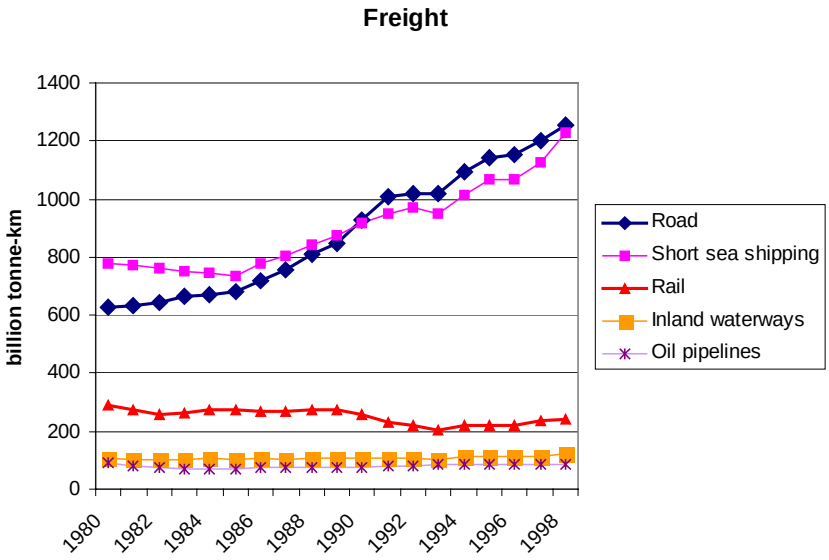
1. BACKGROUND

1.1 Context

Developing sustainable transport systems is a major challenge for OECD countries at the outset of the 21st century. Transport is indispensable to economic prosperity and sustainable development. It contributes 4-8% of GDP and 2-4% of the labour force in OECD countries. On the other hand, important transport trends continue to move away from, rather than towards, environmental, social, and economic sustainability. As Figure 1 shows, transport activity for passenger and freight, in particular road transport, has grown continuously and is the dominating mode in Europe.

Figure 1. Transport Trends in Europe

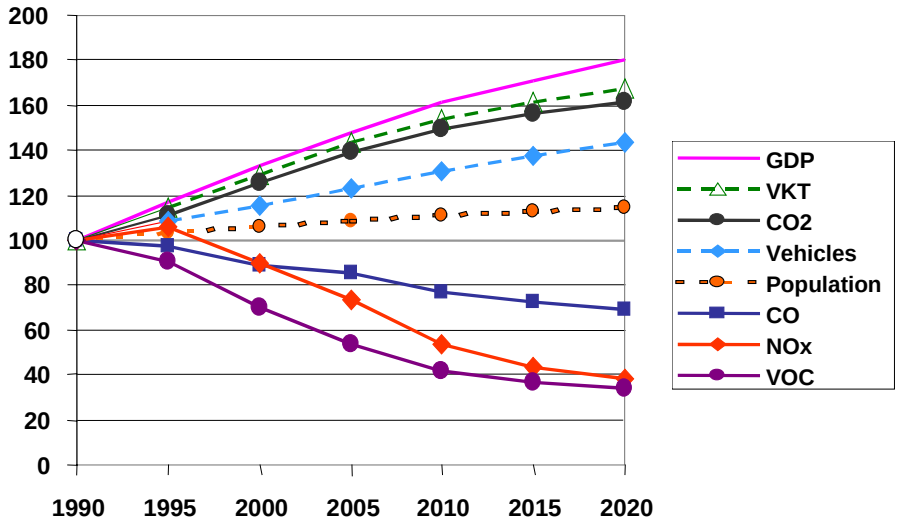




Source: European Environment Agency, 2001

Gains achieved through improvements in fuel efficiency technology have been offset and energy demand in transportation already accounts for more than half of world oil demand. While emissions of some major air pollutants, such as CO, VOCs and NO_X, from motor vehicles are likely to decrease due to stringent controls in the OECD area, emissions of greenhouse gasses, in particular CO_2 from transport, are projected to grow continuously (see Figure 2). "Business-as-usual" (BAU) is no longer a viable option. Innovative solutions that go beyond it must be sought and implemented.

Figure 2. Projected Trends of Economic and Motor Vehicle Pollution Indicators in the OECD

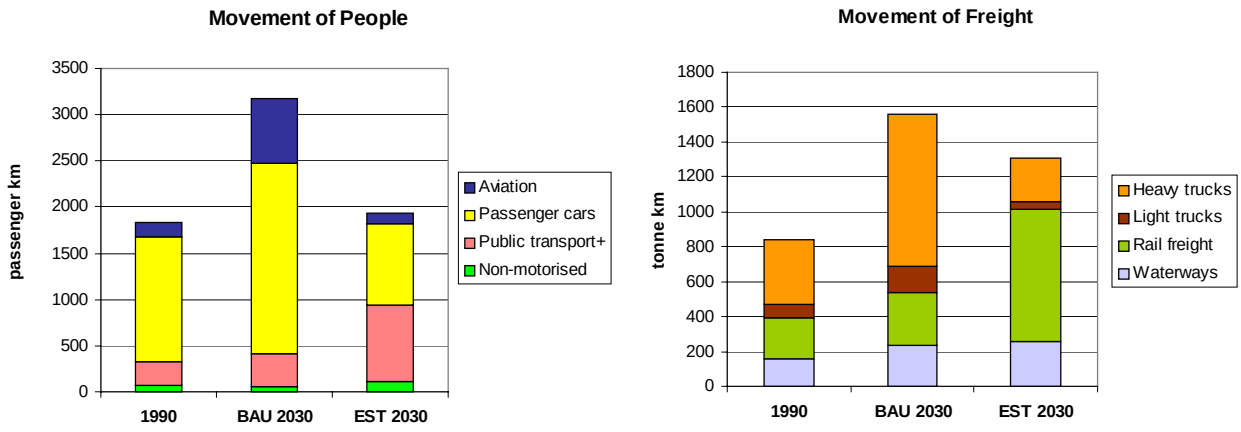


Source: OECD Environmental Outlook, 2001

Recognising this need, the OECD has completed the multi-year project on Environmentally Sustainable Transport (EST). The EST project articulated a clear, comprehensive, and positive vision of sustainable transport in the year 2030 (OECD, 2000). It proposed policy pathways for implementing necessary changes, based on detailed case studies involving fourteen OECD countries and the Central European region.

EST will provide new opportunities for transport industries and operators, new mobility services, and better and more balanced access to places, goods, and services. The important role of railways in these processes was highlighted throughout the project. As Figure 3 shows, EST in 2030 is characterised by a large shift from less sustainable modes (road and aviation) to more sustainable modes (rail and waterways) accompanied by a relative decrease in transport activity in unsustainable modes and a significant increase in other modes compared to current levels and to the projected business-as-usual (BAU) trend. One of the conclusions drawn from the project is that EST in 2030 assumes growth in total transport activity of some 21% compared to 1990 levels, but with emphasis on more environmentally-sound modes. Rail-based systems for the movement of people and goods will have an important role to play in the effort to make transport more sustainable.

Figure 3. Comparison of Transport Activity Changes in the EST Scenario and the Expected Trend ("Business-As-Usual")



Source: OECD 2002, Policy Instruments for Achieving EST: Report on Phase 3 of the EST Project

The lessons learned from the EST project and the resulting EST Guidelines (see Box 1) served as background to this international conference, which focused on rail-based transport and its critical contribution to the attainment of EST. The lessons include the following: strategies should focus on integrated rather than ad-hoc solutions, on system approaches rather than unit solutions, and on transport chains rather than single modes.

Box 1: The EST Guidelines

The EST Guidelines were endorsed by OECD Environment Ministers at their meeting in May 2001 to assist governments at all levels in the development and implementation of strategies towards EST.

Guideline 1. *Develop a long-term vision of a desirable transport future* that is sustainable for environment and health and provides the benefits of mobility and access.

Guideline 2. *Assess long-term transport trends, considering all aspects of transport*, their health and environmental impacts, and the economic and social implications of continuing with 'business as usual'.

Guideline 3. *Define health and environmental quality objectives* based on health and environmental criteria, standards, and sustainability requirements.

Guideline 4. *Set quantified, sector-specific targets* derived from the environmental and health quality objectives, and set target dates and milestones.

Guideline 5. *Identify strategies to achieve EST* and combinations of measures to ensure technological enhancement and changes in transport activity.

Guideline 6. *Assess the social and economic implications of the vision*, and ensure they are consistent with social and economic sustainability.

Guideline 7. *Construct packages of measures and instruments* for reaching the milestones and targets of EST. Highlight 'win-win' strategies incorporating, in particular, technology policy, infrastructure investment, pricing, transport demand and traffic management, improvement of public transport, and encouragement of walking and cycling; capture synergies (e.g., those contributing to improved road safety) and avoid counteracting effects among instruments.

Guideline 8. *Develop an implementation plan* that involves the well-phased application of packages of instruments capable of achieving EST taking into account local, regional, and national circumstances. Set a clear timetable and assign responsibilities for implementation. Assess whether proposed policies, plans, and programmes contribute to or counteract EST in transport and associated sectors using tools such as Strategic Environmental Assessment (SEA).

Guideline 9. *Set provisions for monitoring implementation and for public reporting on the EST strategy*; use consistent, well-defined sustainable transport indicators to communicate the results; ensure follow-up action to adapt the strategy according to inputs received and new scientific evidence.

Guideline 10. *Build broad support and co-operation for implementing EST*; involve concerned parties, ensure their active support and commitment, and enable broad public participation; raise public awareness and provide education programmes. Ensure that all actions are consistent with global responsibility for sustainable development.

1.2 Sectoral Overview

Rail transport trends

The share of rail transport, both for passenger and freight transport, has declined in recent decades in all OECD countries, except in the US where rail freight has been growing rapidly. The current market share of passenger transport by rail accounts for 6% of passenger travel in OECD countries. For freight transport, rail makes up 8% in the EU and 33% in OECD countries including the US where rail is dominant in the freight transport market. It is projected that rail freight will increase by 40% in the period to 2020 in absolute terms, although it is expected that rail will continue to lose market share in freight transport.

Rail has traditionally been suited to transporting large and regular loads of freight over long distances while road transport has catered for freight transport demand flexibly, providing door-to-door services at a relatively low cost. Although the demand for long distance freight has generally increased in OECD countries, changes in market demand towards smaller loads, higher speeds, and more reliability of delivery have resulted in a decrease in rail share and an increase in road transport (primarily road haulage) share in the freight market. Heavy investment in road infrastructure, combined with relatively early deregulation of the road transport industry, has favoured road transport even more.

Table 1 provides a comparison among selected OECD countries in terms of the distribution between road and rail transport. Road transport carries more than rail for both passenger and freight transport except for freight transport in Canada, the United States and Korea. In Canada and the United States, road transport is enormously dominant for passenger transport, amounting to around 200 times as much as rail. On the other hand, rail is responsible for more than road for freight transport in the two countries. The ratio of rail to road for freight transport is 7 to 3 in Canada and 6 to 4 in the US. Japan's situation contrasts with that of North America. In Japan, although road transport is a major mode for both passenger and freight transport, rail plays a more pivotal role for passenger transport and less for freight transport relative to other countries. The ratio of rail to road for passenger is 3 to 7 while that for freight is 1 to 9 in Japan. Road transport is also dominant in Europe; however, dependency on road transport is moderate relative to passenger transport in North America and freight transport in Japan. On the average, rail accounts for approximately 7% of the sum of rail and road passenger transport and 21% for freight in Europe. It should be noted that the ratio of rail freight to road freight in Austria is almost 1 to 1 and that Switzerland has higher share of rail both for passenger and freight transport relative to other European countries.

Table 1: Transport Volumes – Road vs. Rail – in Selected Countries (1999)

Countries	Passenger Transport (billion passenger-km)				Freight Transport (billion tonne-km)		
	Rail (A)	Road (B)		Rail share (A)/(A+B) (%)	Rail (C)	Road (D)	Rail share (C)/(C+D) (%)
		Cars	Buses				
Canada	2	423	14	0.5%	335	152	68.8%
United States	23	4025	246	0.5%	2046	1555	56.8%
Japan	385	725	89	32.1%	23	307	7.0%
Korea	29	94	76	14.6%	10	9	52.6%
Australia	10	257	17	3.5%	127	127	50.0%
Austria	8	62	15	9.4%	15	17	46.9%
Belgium	8	106	11	5.6%	7	37	15.9%
Denmark	5	61	9	6.7%	2	10	16.7%
Finland	3	55	8	4.5%	10	26	27.8%
France	67	700	43	8.3%	52	183	22.1%
Germany	63	768	76	6.9%	71	278	20.3%
Italy	46	726	97	5.3%	24	202	10.6%
Netherlands	14	148	15	7.9%	4	33	10.8%
Norway	3	48	4	5.5%	2	13	13.3%
Spain	20	294	34	5.7%	12	231	4.9%
Sweden	7	93	10	6.4%	19	33	36.5%
Switzerland	13	78	6	13.4%	10	21	32.3%
United Kingdom	46	617	45	6.5%	18	153	10.5%

Source: OECD Environmental Data 2002

Environmental advantages

While rail cannot suit every kind of demand for transport, it does have a number of advantages in terms of environmental impacts, in particular energy consumption, emissions, climate change and land-take.

Rail is on average more than three times as energy efficient as road. While road transport is responsible for 24.9% of total energy consumption in the EU, rail accounts for only 0.8% in spite of the fact that much rail transport is fuelled by oil at present.

Regarding air pollution, rail is less polluting than road transport. At the local level, road transport is the main contributor to air pollution in urban areas. For a number of pollutants, motor vehicles are the single largest source of total emissions in OECD countries. In 1997, motor vehicles accounted for 89% of CO emissions, 52% of NO_x emissions and 44% of VOC emissions in OECD countries.

CO_2 emissions which lead to global climate change are one of the key concerns of the 21st century. The transport sector is responsible for 30% of total CO_2 emissions in OECD countries. Road transport is the transport mode accounting for most CO_2 emissions. In terms of freight haulage, road freight causes on average 190g of CO_2 per tonne-kilometre while rail causes only 30g per tonne-kilometre. Road, for both passenger and freight, is responsible for as much as 84% of CO_2 emissions from transport in the EU while rail accounts for only 1%.

Transport infrastructure, mainly roads, consumes about 24-30% of land in urban areas and just under 10% in rural areas in OECD countries. Road networks occupy 93% of the total land area used for transport in the EU. Rail is responsible for 4% of land take and airports for less than 1%. Passenger cars require about 3.5 times more land take per passenger-km than railways.

2. THE CONFERENCE

The conference was held on 25-26 October 2001 in Eskilstuna, Sweden. It was organised by the OECD Environment Directorate and the International Union of Railways (UIC) and hosted by the Swedish National Rail Administration, Banverket (BV). Over 60 participants included representatives of transport industries, operators and services, and governments. There were also participants from NGOs, international financial institutions, and the media.

The objectives of the conference were these:

- to address present and future demands for rail transport in the context of progress towards EST;
- to highlight innovative solutions, promising options and approaches in the fields of technology, mobility services and freight logistics; and
- to provide new insights and to highlight opportunities for business and industry in the development and deployment of sustainable transport systems by examining practical examples and innovations in passenger and freight movement from different OECD countries.

The conference discussed, revised, and adopted the *Eskilstuna Declaration on Rail Transport*, included here as Annex 1. The declaration sets out challenges and opportunities for rail in progressing towards EST, and points to possible solutions.

The conference was composed of eight plenary sessions, detailed in the next section. The conference programme is provided in Annex 2, available abstracts are provided in Annex 3 and a list of participants appears in Annex 4. Powerpoint presentations are provided in Annex 5 as a separate document.

3. CONFERENCE SESSIONS

3.1 Keynote Address

The keynote address was made by Kjell Larsson, Minister of Environment of Sweden. Mr. Larsson noted that today's transport is not sustainable, but that rail offers some hope. He referred to several things that have to be done to strengthen the contribution of rail. They include increases in the flexibility of rail operations, further investment in rail infrastructure, greater harmonisation of standards among countries, and improved co-ordination between rail and road transport. He also spoke of the need for innovation in rail technology and for internalisation of the external costs of transport, perhaps through a kilometre tax on road transport. Mr. Larsson highlighted many signs of progress, including an increase in rail-related investment in Sweden and IKEA's commitment to rail.

3.2 Session 1: Is rail on track towards Environmentally Sustainable Transport (EST)? Barriers and challenges to EST and how to overcome them

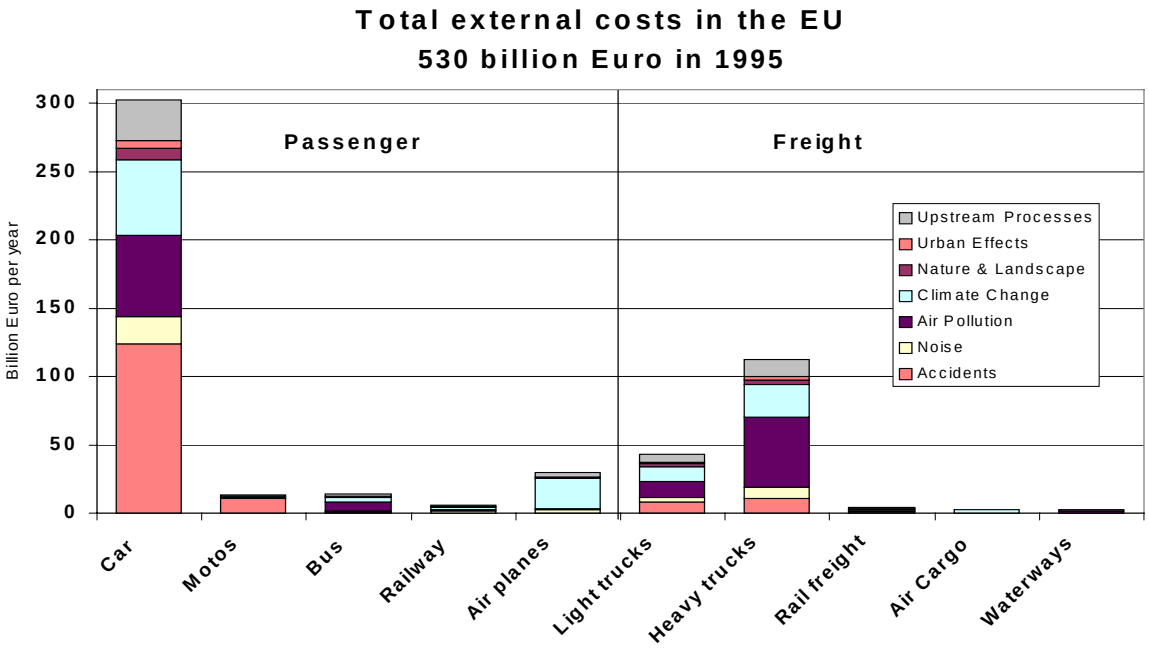
This session comprised introductory speeches by representatives of BV (Swedish National Railway Administration, Banverket), UIC (International Union of Railways), OECD, and CER (Community of European Railways). It introduced the objectives, goals, and visions required for the railway sector to move towards EST. It also noted some of the major technological, societal, economic, and institutional challenges and barriers to moving towards sustainable transport. Means of addressing the challenges and overcoming the barriers were suggested with a view to deepening the discussion of these matters during the conference.

External costs and modal split

The transport sector puts ever-increasing pressures on the environment. It is the largest source of CO_2 emissions and consumes more than 60 percent of the oil used in OECD European countries. Transport's external costs amounted to EUR 530 billion in the EU in 1995 which equals 7.8% of the EU's GDP. Road transport is responsible for over 90% of the total external costs of transport, while rail is responsible for around 1.6% (see Figure 4). If this trend continues, it is estimated that external costs in the EU from transport will rise 42% by 2010.

Rail transport has great potential to support sustainable mobility because of its low emissions and energy use. Although noise and vibration from rail transport remain problematic, rail transport can make ready use of renewable energy and thus the external costs of rail transport can be reduced even further.

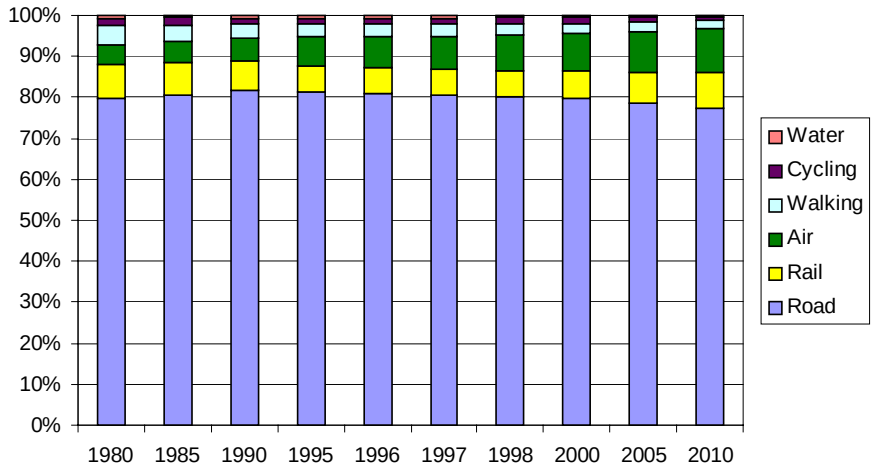
Figure 4. Externalities from Transport in the EU



Source: INFRAS/IWW, 2000

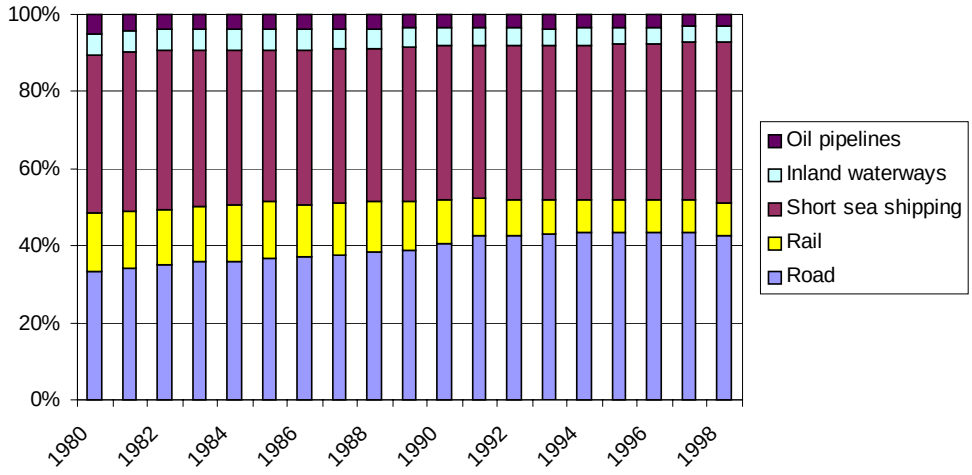
In spite of the advantage of rail transport in terms of external costs, rail has only a small part of market share. In 1998, road accounted for 80% of market share in passenger transport in the EU and 43% in freight transport while the corresponding market share for rail was 6% and 8% (see Figure 5 and Figure 6). Two reasons for this are given: the lack of fair pricing involving internalisation of external costs from road transport and the priority given to domestic over international rail transport.

Figure 5. Modal Split for Passenger Transport in the EU



Source: European Environment Agency, 2001

Figure 6. Modal Split for Freight Transport in the EU



Source: European Environment Agency, 2001

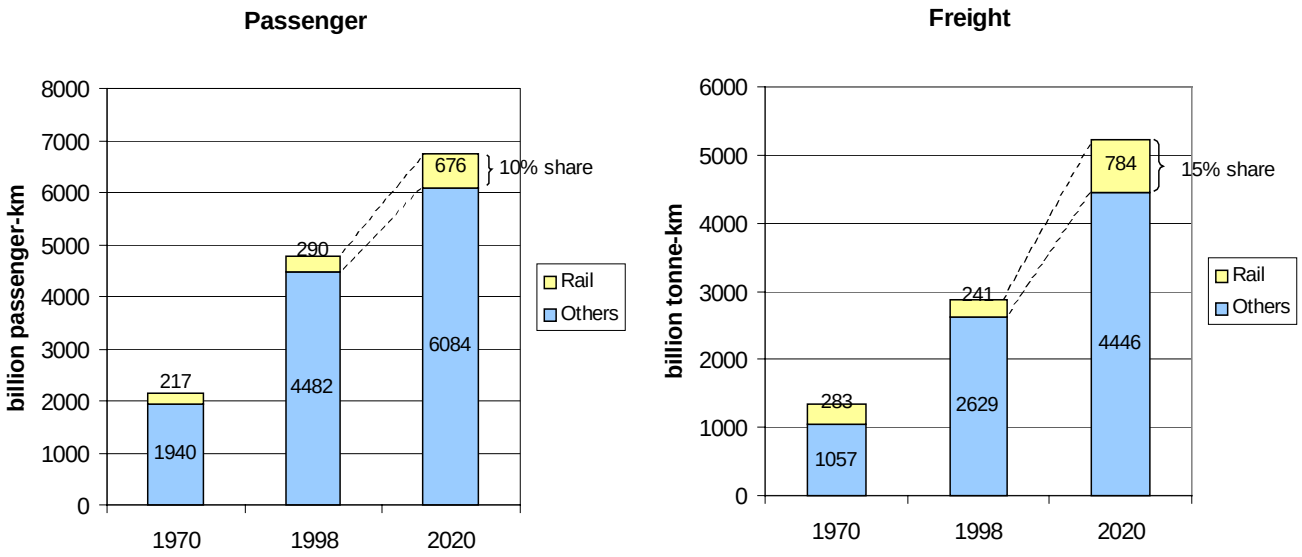
Railway strategy development

While policy makers are addressing these problems, the railway industry should develop competitive services. Also, Customers may have some responsibility for choosing environmentally acceptable transport solutions.

It was suggested that an overall strategy for rail is required which includes collaboration with all relevant stakeholders, open communication about the impacts of railways, both negative and positive, and organising and co-ordinating international activities to promote and implement sustainable railway transport solutions.

Measures and approaches are required that will ensure a significant increase in rail's modal share over next decades. This is recognised in the recent EU White Paper and in the activities of the OECD and UIC. "A Joint Strategy for European Rail Research 2020", jointly prepared by UNIFE, UIC, CER and UITP, states that to achieve a 10% market share of passenger traffic and 15% of freight traffic in the EU in 2020, rail should more than double its passenger kilometres from 290 billion to 676 billion and more than triple its freight tonne kilometres from 241 million to 784 million (see Figure 7). Recognising this situation, the EU White Paper recommends a shift in transport mode split, expansion of infrastructure and road charging, and use of revenues for cross-modal funding and development of European transport.

Figure 7. Projected Transport Volume and Rail's Market Share in the EU



* Passenger transport does not include tram and metro transport (in 1998, tram and metro transport was 50,000 million passenger-km)

Source: UNIFE, UIC, CER, UITP, 2001

Conclusions from Session 1

- Transport is one of the most challenging sectors in the quest for environmental sustainability because of increasing dependence on road transport and the historical correlation with the economic growth. BAU should be no longer an option. New measures and approaches as well as strong political initiatives are needed to promote rail and achieve EST.
- A major recommendation is the introduction of fair pricing among different modes, specifically involving internalisation of the external costs of road traffic. Some of the revenues from the new pricing regime should be applied to developments of rail transport. Collaboration among all stakeholders including rail customers is required, as well as an international perspective on rail transport.
- Specific questions were raised for the subsequent discussions: *Is major expansion of rail transport feasible? What investments will be needed? How can the expansion be financed?*

3.3 Session 2: Panel on stakeholder requirements for railways: Demands and expectations

This session included presentations by representatives of railway industry (**Bombardier** and **Alstom**), the Swedish railways (**GreenCargo**), and a public transport organisation (**UITP**: Union Internationale des Transports Publics). They discussed requirements for railways regarding technologies, social and environmental issues, as well as users' demands regarding level and quality of service, flexibility, and overall performance.

Requirements for railways

The presentation of **UITP** showed that increasing car dependence has led to urban sprawl, congestion, and more road accidents while rail transport has a lot of advantages over private cars, e. less land-take, less energy-use, and lower emissions. The advantages of rail should be promoted and rail and other public transport should be made more competitive and attractive than private car use. The major challenges for rail is promoting the attractiveness of rail and providing prices that are more competitive and how to cope with increasing demand and resulting adverse environmental impacts.

Customer demands and integrated strategies

Rail industries must meet customer demands to become competitive in the market. **UITP** stressed that as urban sprawl progresses, total door-to-door journey time becomes increasingly important to customers. Shorter journey time would required better accessibility, seamless travel, one-stop-shop ticketing, intermodality, integrated information and co-ordinated operations.

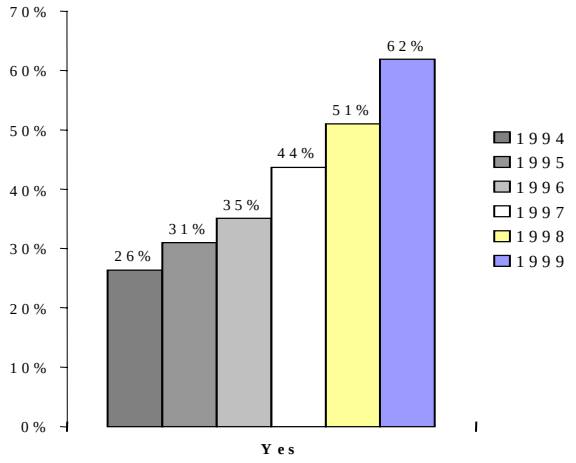
To meet these demands while reducing environmental impacts, integrated strategies should be developed. Track sharing is a key to seamless travel. It can make it possible to operate various trains in terms of speed, size, service distance, etc. and thus, can enhance rail's flexibility and competitiveness. Improved management measures should also be employed to avoid use of environmentally harmful materials and promote use of recyclable materials. Attractive services, such as high-speed trains should be developed further. In addition to the rail industry, transport authorities as well as manufactures should develop strategies. The strategies of transport authorities should be clear and solid and include urban regeneration alongside with public transport improvements. They should also enhance interchange and intermodality, such as the linkage between railways and tramways, buses, etc. Manufactures should develop standard designs of rolling stock and make technological improvements that result in reduction of weight, energy consumption and noise.

Business opportunities

A Swedish railways company, **GreenCargo**, clearly stated the environmental requirements as new business opportunities among other customer demands to be met. The service to be provided can be categorised at four levels: minimum demands, increased demands, demands requiring proactive suggestions for new solutions, and demands from new customers. GreenCargo recognised that environment is a new factor, on top of safety and quality requirements, which allows companies to differentiate themselves and helps to gain new customers. Figure 8 shows a result from a Swedish survey which supports the company's view. According to the survey, 62 per cent of shippers answered "yes"

when asked whether they consider environmental aspects in choosing a transport and logistic supplier in 1999 while only 26 per cent of them answered yes to the same question in 1994. This result suggests that environmental issues can create business opportunities to gain new customers.

Figure 8. Growth of Environmental Demands from Customers in Sweden



Source: Magnus Swahn, GreenCargo

Conclusions from Session 2

- Passenger rail transport should become more competitive in relation to private cars. To this end, rail should provide more attractive services that enable door-to-door solutions at competitive prices with reduced environmental impacts.
- Inter-modality, reliability, accessibility and competitive prices are the key features. Well co-ordinated information also helps increase competitiveness of rail. Rail's favourable environmental impacts are providing new business opportunities, which are backed by increasing consumer sensitivity to environmental issues.
- While rail continues to endeavour to enhance its competitiveness, the advantages of rail must be analysed and communicated to the public at large with a view to raising public awareness.

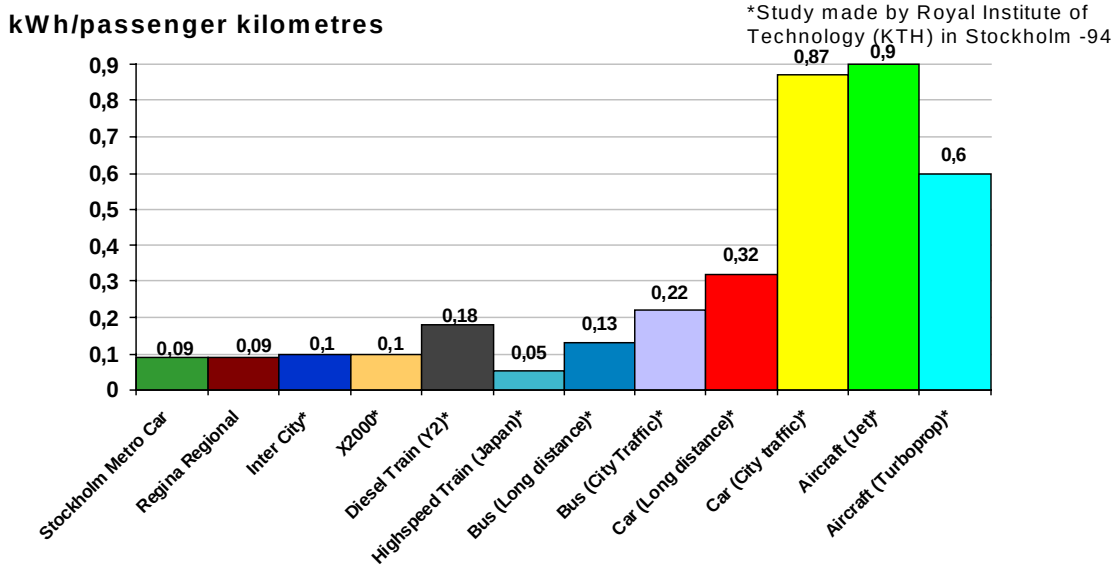
3.4 Session 3: Environmentally Sustainable Transport Systems: Railways contribution – Long-term prospects and technologies

This session comprised presentations by representatives of the **German Federal Environment Agency**, **UNIFE** (Union des Industries Ferroviaires Européennes), **Nordic Rail Group**, and the railway industry (**Bombardier**). The presentations focused on the specific contributions and challenges of railways in relation to sustainability requirements and how railways can respond to these challenges. The session also provided an overview of visions, initiatives, and strategies in relation to the critical issues concerning sustainable development of the railway sector.

Energy consumption

One of the advantages of rail over cars is its low energy consumption. Figure 9 is a Swedish study in 1994, which shows rail's advantage over cars and aviation in terms of energy consumption. According to the study, conventional trains in Sweden, including Stockholm metro, new regional trains (Regina), and inter city trains, consume only 0.1 or less kWh/passenger kilometres while city traffic cars and jet aeroplanes consume some 0.9 kWh/passenger kilometres. Even diesel trains consume less than cars except for city buses. Moreover, energy consumption can be reduced even further. Technological improvement in locomotive energy efficiency as well as non-technological means, such as improvements in driving style contributes to the reduction in energy consumption.

Figure 9. Energy Consumption: Rail vs. Road and Air Transport in Sweden

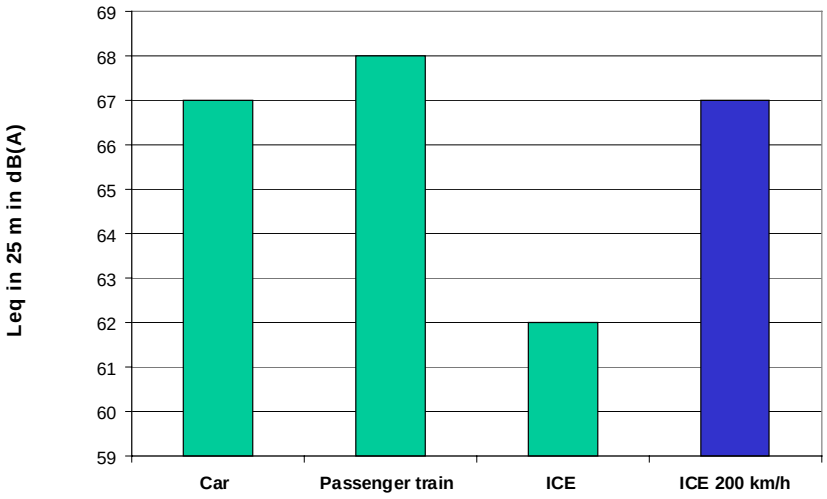


Source: Michael Schemmer, UNIFE

Noise

Negative aspects of rail transport were also highlighted, noise in particular. Passenger trains as well as freight trains can cause more noise than trucks. As shown in Figure 10, conventional passenger trains in Germany can cause more noise than cars using the same performance criteria (moving 1,000 people at a speed of 120km/h). Meanwhile, it should be noted that ICE (German high-speed rail system) trains, in particular new ICE trains, cause the same or much less noise than cars because of technological improvements. For freight transport, however, trains cause more noise than trucks in Germany when carrying equivalent loads at comparable speeds (see Figure 11). Technical, economic, and legislative measures are needed to address this problem. Smooth wheels and tracks should be required, and wagons with lower noise levels can be introduced. International co-ordination of noise regulations is needed. Harmonised and interoperable noise-related infrastructure charges could be applied to existing rail fleets.

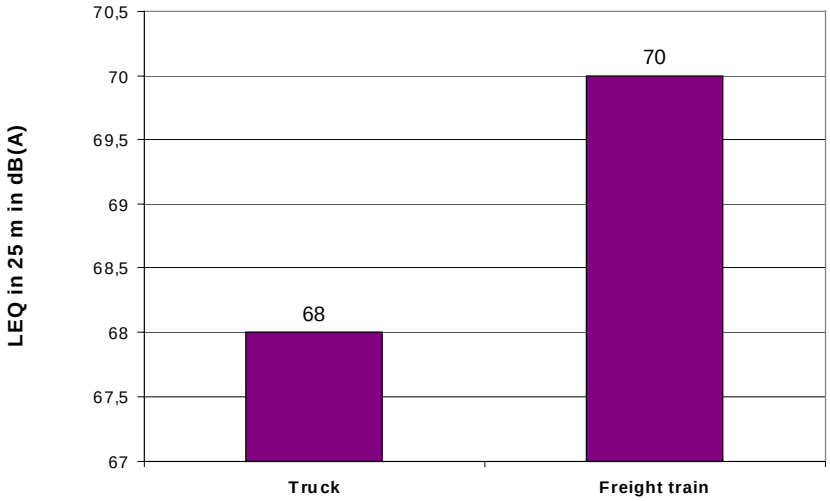
Figure 10. Noise Exposure: Passenger Trains vs. Cars for Long-Distance Traffic with the same Transport Performance (120km/h, 1000 persons-km)



* ICE: high-speed rail system in Germany (see page 29)

Source: Axel Friedrich, Federal Environment Agency, Berin

Figure 11. Noise Exposure from Freight Vehicles: Rail vs. Roads with the same Transport Performance (80km/h, 1,000 tonnes-km)

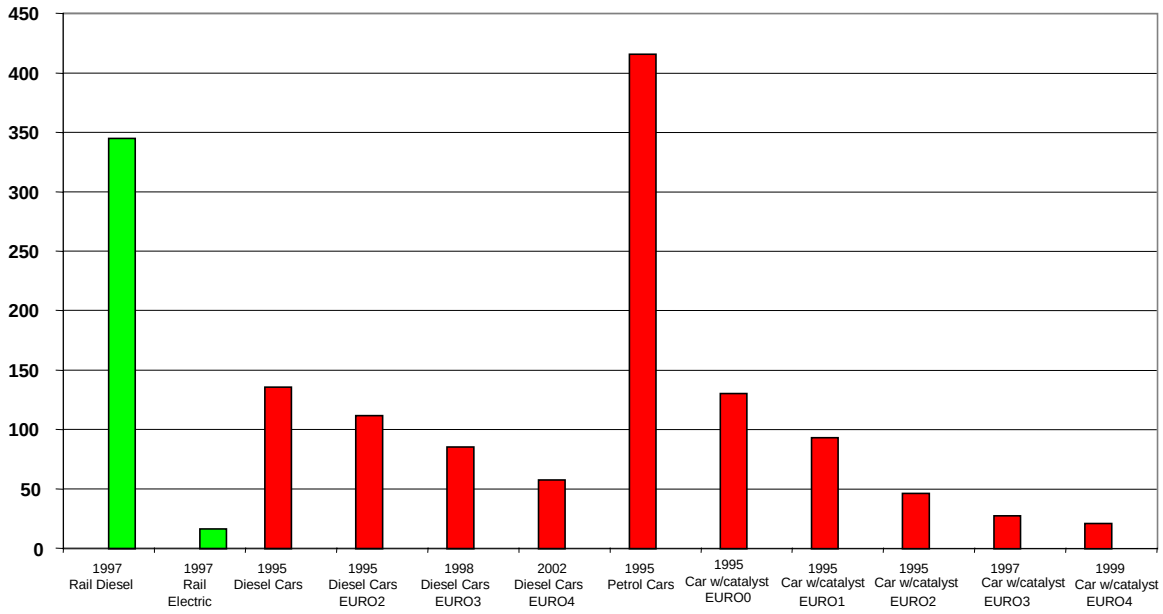


Source: Axel Friedrich, Federal Environment Agency, Berlin

Local emissions

Local emissions were pointed out as another negative aspect of rail transport. Figure 12 demonstrates that diesel trains can have higher NO_X emissions per seat- and tonne-kilometre than diesel trucks and cars with catalytic converter. This occurs mainly because of the absence of emission standards for diesel locomotives. Also, the figure shows that emission levels of petrol cars with catalytic converter reach NO_X emissions as low as emission of electric trains, which are the lowest contributor.

Figure 12. NO_X Emissions: Rail vs. Road (per seat kilometre)



Legend: Specific total emissions in mg per seat km for passenger transport: for German Railways (DB AG), average values for 1997; for petrol and diesel passenger cars according to emission standards and year of entry into force.
Source: Results of European TREMOD model, UBA (German Environmental Agency), in co-operation with vehicle industry (VDA), oil industry (MWV) and DB AG, October 1999

* Car w/catalyst means car with catalytic converter.

Source: Axel Friedrich, Federal Environment Agency, Berlin

Long-term vision of Swedish rail industry

The vision of the Swedish rail industry for 2030 includes an increase by 100% in the capacity and environmental performance of rail transport. In particular, infrastructure is to be developed with proper environmental consideration. Heavy freight haulage and rail freight infrastructure systems on special routes will be introduced. Rail terminals will be placed close to industries, logistic centres, and harbours. Institutional barriers were noted including long planning processes and year-by-year government budgeting.

Concept of Eco-Efficiency

A rail manufacturer, **Bombardier**, presented eco-efficient trains for sustainable rail transport, and touched on the need for environmental performance indicators. These, together with standardised designs and an accepted definition of 'eco-efficiency' will facilitate the flow of business information and enhance communication between customers and suppliers. Also required are environmental management systems for production processes and standardised software that can facilitate this.

Conclusions from Session 3

- Rail is expected to contribute to achieving EST, and governments and industry have made many efforts in this direction, involving not only technological improvements in infrastructure and rolling stock but also promotion of communication between customers and suppliers. However, many challenges are still to be overcome, notably concerning noise and emissions of locally acting pollutants.
- Harmonised regulatory standards, as well as technical, economic, and legislative measures are needed to overcome these challenges. Also, support from entire society for public investments in rail infrastructure is required in order to increase share of rail. To this end, elaboration of the concept of eco-efficiency and clear communication to the market play a pivotal role.

3.5 Session 4: Sustainable passenger transport: Integrated rail-based mobility

This session included presentations on high-speed rail services and integrated mobility services and innovative passenger railway services. Representatives of **Sveland-Link** (University of Linköping) and **Central Japan Railways** demonstrated specific examples of high-speed rail services. **Mobility CarSharing, Switzerland** described innovative services involving inter-modal linkages between railways and car-sharing with an examination of their environmental impacts. Mobility centres for multi-modal travelling were presented by **Mobilito, Salzburg**.

High-speed rail development

Box 2: High-Speed Rail

Japan:
The world's first high-speed rail system was Japan's Shinkansen, which started operation between Tokyo and Osaka in 1964 in order to meet the growing demand in the corridor. The line layout was designed for 250 km/h, which was a very high speed at the time. The construction of the line was completed in October 1964, in time for the Tokyo Olympic Games. The Shinkansen network has expanded across Japan since then to a present total length pf 2,175 km. 260 million passengers are transported each year and 600 trains are operated each day. The tracks for Shinkansen use the European standard gauge (1,435 mm) instead of the Japanese standard (1,064 mm), providing a technical barrier to interoperability between Shinkansen and conventional trains. To overcome this, Japan has been developing "Gauge Changing Train" technology. Also, Japan is developing magnetic levitation (maglev) technologies and systems that employ magnetic forces to lift, propel, and guide a vehicle over a specially designed guideway, eliminating wheels and many other mechanical parts. In 1999, the maglev train recorded the world fastest speed of 552km/h on its manned test course.

France:
France became the second nation to introduce a high-speed rail system with the opening of the TGV Paris-Lyon line (410 km) in 1983. This reduced travel time from Paris to Lyon from 4 to 2 hours. Continuous expansion has made the TGV a nation-wide high-speed rail network. In 1985, the TGV Atlantique line (280 km) with branches to Tours and Le Mans was constructed. Between 1992 and 1994, three new operations were launched, TGV Nord (Paris-Lille, Paris-Calais), TGV Sud-Est (Paris-Lyon-Satolas airport and Valance), and TGV Interconnections, which links TGV Nord, Sud-Est and Atlantique lines. The TGV Méditerranée line with a branch from Paris to Marseilles and Nimes was opened in 2001. Finally, TGV Est (European) between Paris and Strasbourg with an extension to Metz and Saarbrücken will be opened shortly. Using fully compatible systems within the existing network is one of the TGV's advantages.

Germany:
Germany introduced its Inter-City Express (ICE) high speed system in 1991 with the construction of lines between Hanover-Würzburg (327 km) and Mannheim-Stuttgart (100 km). In 1998, the Hanover-Berlin line (263 km) was opened. There are many other new lines currently under construction, including the Cologne-Rhine/Main line, the Nuremberg-Ingolstadt-Munich line, the Karlsruhe-Offenburg or Cologne-Aachen line, and the Mannheim-Saarbrücken line. A characteristic of the German high-speed rail system is its design for mixed use. For the most part, it is used by freight trains at night while being reserved for passenger traffic during the day. Germany is also developing maglev technologies (different from Japan's system), planned to operate between Hamburg and Berlin by 2010.

Spain:
In 1986, Spain launched the development of high-speed rail with the 471 km long Madrid-Seville link. The project was completed in time for the opening of the World Exhibition in April 1992. A second high-speed line between Madrid and Barcelona is to be gradually opened for service between 2002 and 2004. New lines are also planned from Madrid to Valencia and Valladolid as well as an extension from Cordoba to Malaga. In principle, high-speed trains are restricted to these lines due to the gauge difference between them and conventional lines. However, a new technology of variable-gauge Talgo trains on the Madrid-Seville line allows high-speed trains to operate on conventional lines.

Italy:
In Italy, a new Rome-Florence Direttissima line was planned in 1970 and gradually put into service between 1976 and 1992. In 1994, the Rome-Naples line was launched and then the Bologna-Florence line in 1996. These lines are expected to open in 2003 and 2007, respectively. Also, the Milan-Bologna line is under construction. Once completed, this programme will make it possible to travel from Milan to Rome in 2 hours 50 minutes and Rome to Naples in 1 hour and 5 minutes.

Belgium:
Belgium plays the role of a hub in the Paris-Brussels-Cologne-Amsterdam (PBKA) network. The line from the French border to Brussels was opened in 1997 and links directly to the TGV North line. As a result, it takes only 1 hour and 25 minutes (soon to be reduced to 1 hour and 20 minutes) from Paris and 2 hours and 45 minutes from London to Brussels. The PBKA network continues to expand with the construction of the Louvain (Brussels -Bierset (Liege)) line and the line between Antwerp and the Dutch border as well as the Liege-Aachen line.

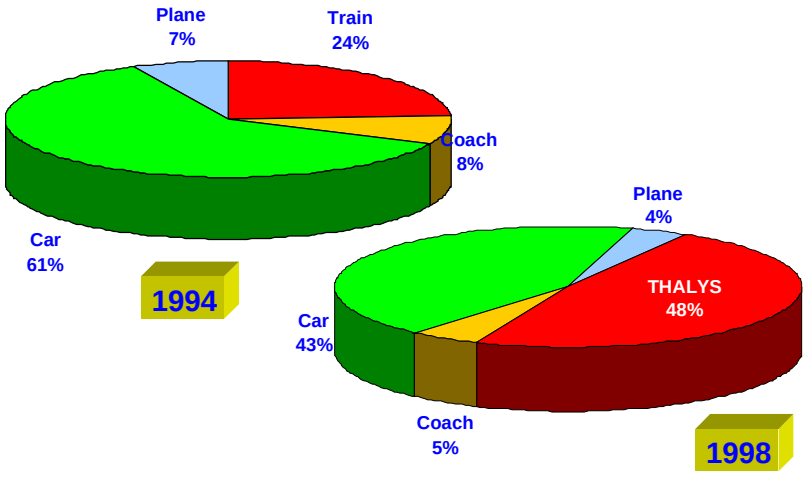
United Kingdom:
In 1994, the United Kingdom, in co-operation with France, initiated the London-to-Paris high-speed rail service (the EUROSTAR) using the privately constructed and operated Channel Tunnel. A passenger line, the Eurostar, directly links London and Paris or Brussels. The new line currently under construction between the Channel Tunnel and London will be opened by 2007; it will reduce travel time between London and Paris to 2 hours and 30 minutes. The first half of the construction will be completed in 2003, and will shorten the journey time between London and Paris to 2 hours 40 minutes and London and Brussels to 2 hours 20 minutes. The new high-speed line will be built using the European standard gauge, which is wider than that of the conventional British network.

Journey	*Journey Time (conventional line)*	*Journey Time (High Speed)*
Tokyo-Osaka	6 hr	2 hrs 30 minutes
Paris-Lyon	4 hrs	2 hrs
Madrid-Seville	6 hrs	2 hrs 15 minutes
London-Paris	5 hrs 15 minutes	3 hrs
Paris-Brussels	2 hrs 35 minutes	1 hr 25 minutes
Berlin-Hanover	3 hrs 45 minutes *	1 hr 34 minutes
Hanover-Würzburg	3 hrs 45 minutes	2 hrs
Rome-Florence	3 hrs	1 hr 35 minutes

* 1998: including border stops
Source: High Speed Rail - success and challenges -, UIC, 2001

The rapid growth and promising aspects of high-speed rail traffic in Europe were pointed out. Figure 13 reveals that the introduction of **Thalys (high-speed train) between Paris-Brussels** in 1997 led to an increase in rail's share and a reduction in the share of road and air traffic in this area.

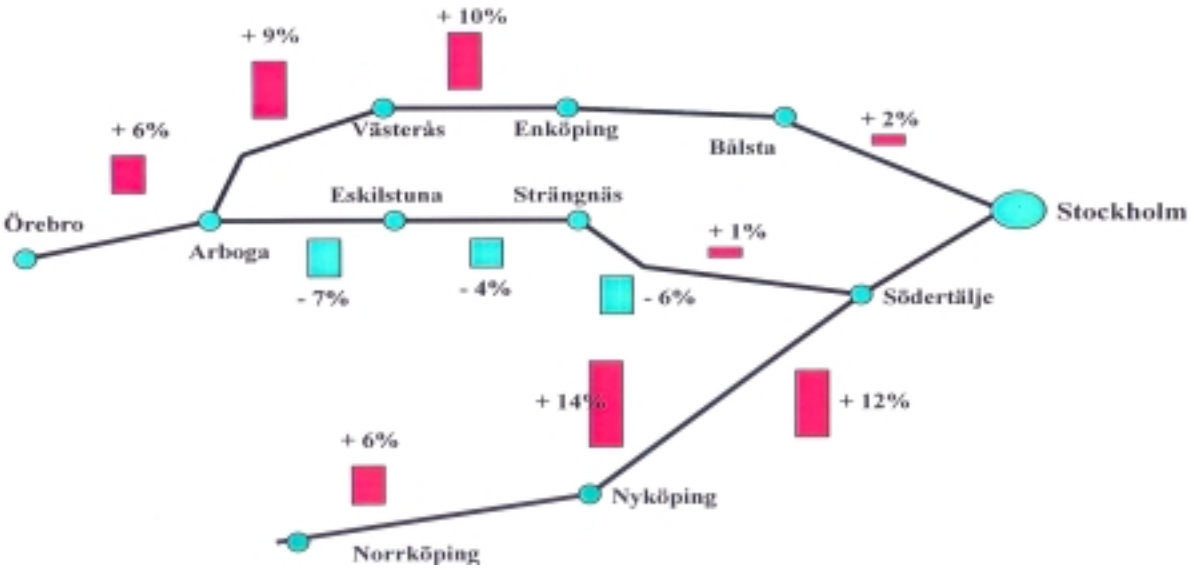
Figure 13. Modal Split for Journey from Paris to Brussels (passenger-km)



Source: Gunther Ellwander, UIC

The case of **Svealand-Link in Sweden** shows that rail can provide better service than competing road transport. The introduction of Svealand-Link (Stockholm – Södertälje – Eskilstuna - Örebro) resulted in a reduction in road transport on a parallel road (Stockholm-Örebro) by 4 to 7% while road transport on other roads increased by 10-14 % (see Figure 14). Moreover, the electricity used by trains on Svealand-Link was produced without emissions of CO_2 and other air pollutants. It was environmentally labelled and brought about 5,600 tonnes of CO_2 reduction on the new part of the line.

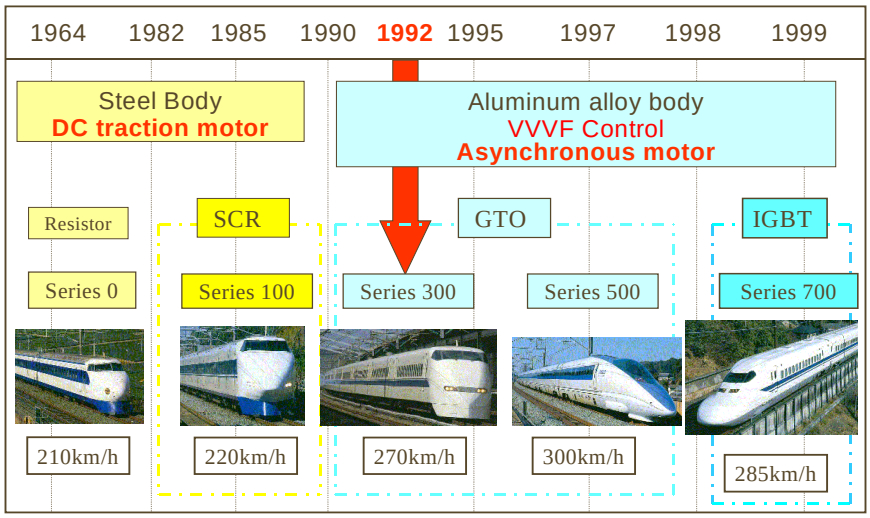
Figure 14. Change in Road Transport in Mälar Valley



Source: Lars Johansson, University of Linköping

Technological developments in **Japanese Shinkansen** (high-speed trains) have demonstrated that high-speed rail can achieve low levels of noise, ground vibration, micro-pressure waves, and energy consumption while assuring extremely high levels of reliability (no casualties, 0.3 minutes annual delay per train, etc.). Figure 15 shows the evolution of the Shinkansen system. Since introduced in 1964, continuous improvements in rolling stock and infrastructure have been made. Development of less and more powerful motors, i.e. DC traction motors, together with the introduction of aluminum alloy bodies, has led to higher speed and lighter weight (see Figure 16 and 17).

Figure 15. Evolution of High Speed Trains (Shinkansen) in Japan



Source: Takahide Saito, Central Japan Railways

Figure 16. Improvement of Traction Motors

	DC traction motor (Series 100)	Asynchronous motor (Series 300)
Weight	825kg	390kg
Rated Output	230kw	300kw

Source: Takahide Saito, Central Japan Railways

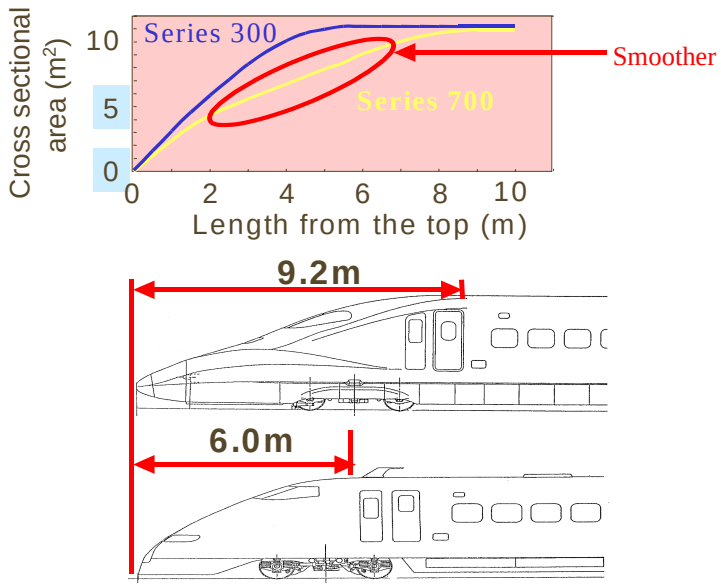
Figure 17. Reduction of Weight

Also, better design of rolling stock to reduce air resistance and improvements in soundproofing walls have decreased noise levels. Installation of 10-metre-long buffers at tunnel inlets and improvement in leading head shape have reduced micro-pressure waves and thus, air drag in tunnels (see Figure 18 and 19)

Figure 18. Noise reduction: Buffer for Tunnel Inlet (10m length)

Source: Takahide Saito, Central Japan Railways

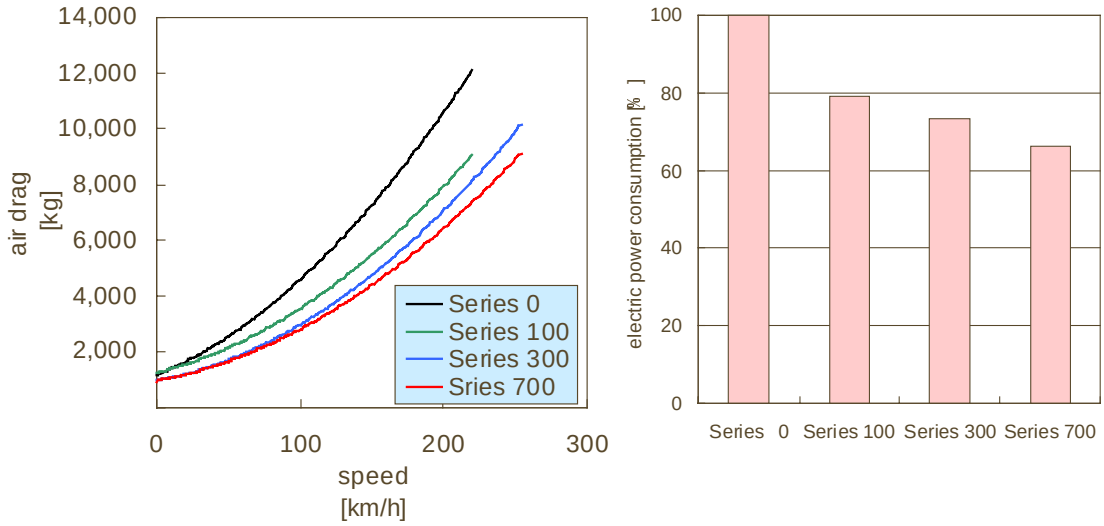
Figure 19. Noise reduction: Improvement of Leading Head Shape



Source: Takahide Saito, Central Japan Railways

All these efforts have led to the achievement of higher speed with less energy use and environmental nuisance. The latest model of Shinkansen consumes 35% less energy than the original model while reaching higher speeds (see Figure 20).

Figure 20. Development of Energy Conservation of Shinkansen

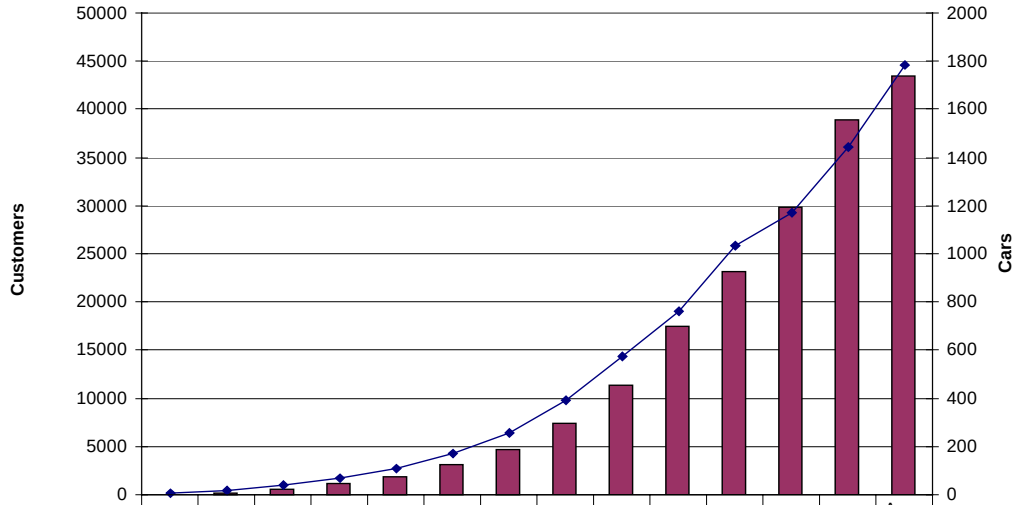


Source: Takahide Saito, Central Japan Railways

Integrated mobility services – example from the Carsharing scheme in Switzerland

Many innovative services are emerging. In particular, car-sharing schemes continue to grow and promising new services linking public transport and access to individual motor vehicle have been introduced. Figure 21 shows the rapid growth of **Mobility Carsharing, Switzerland**. Today, it has more than 44,000 customers and 1,700 cars. It presented its new service involving railways and car-sharing schemes, offering 400 cars at 75 train stations (see Figure 22). Use of low-environmental-impact cars for a car-sharing scheme has even more favourable consequences. The average environmental impact from a car used by Mobility Carsharing is about CHF 55 million while that for Switzerland in general is about CHF 68 million over its 150,000 km life cycle (see Figure 23).

Figure 21. Development of Mobility CarSharing in Switzerland



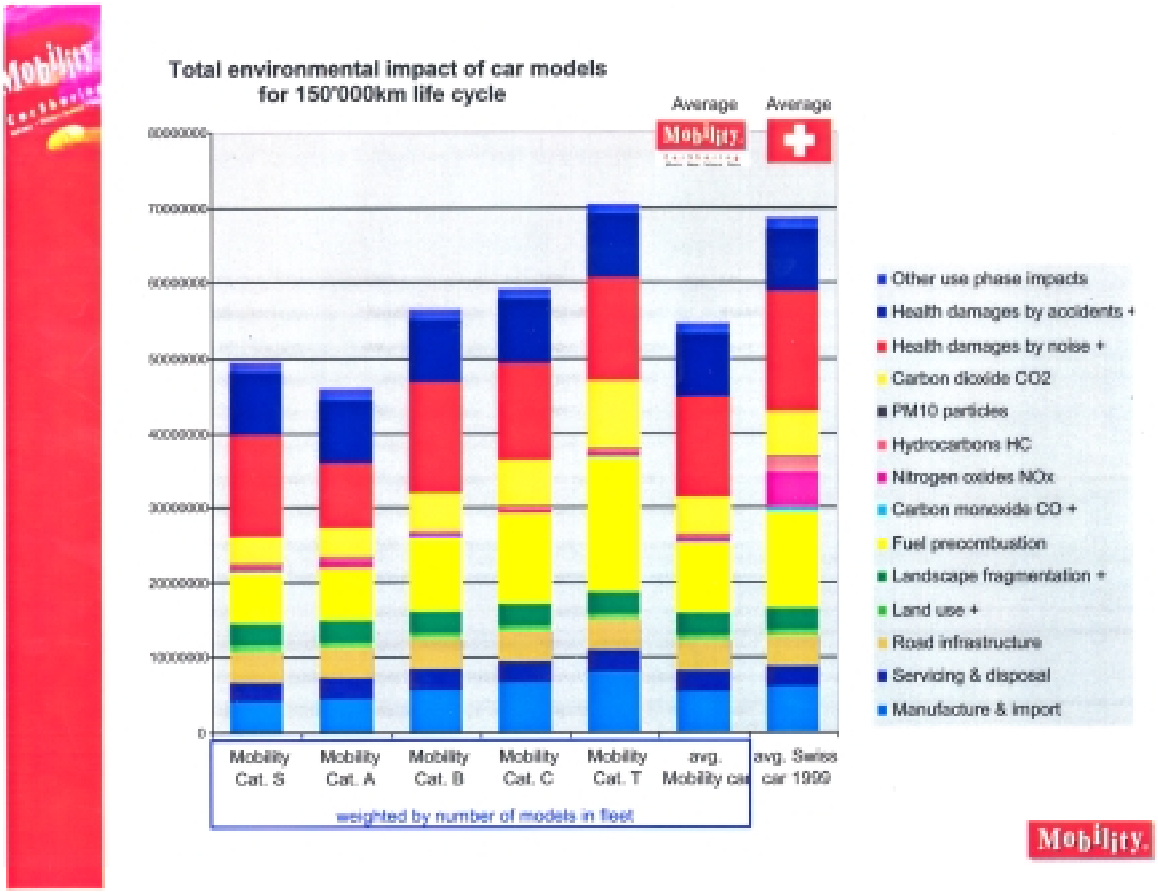
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Aug. 2001
Customers	58	174	530	1069	1849	3143	4662	7332	11308	17435	23109	29800	38913	43442
Cars	6	17	39	67	107	169	258	393	576	761	1033	1170	1444	1783

Source: Sabine Ziegler, Mobility CarSharing

Figure 22. Example of Integrated Mobility Service (RailLink by Mobility Carsharing)

Source: Sabine Ziegler, Mobility CarSharing

Figure 23. Life-cycle Environmental Impacts by the Fleet Used by Mobility CarSharing

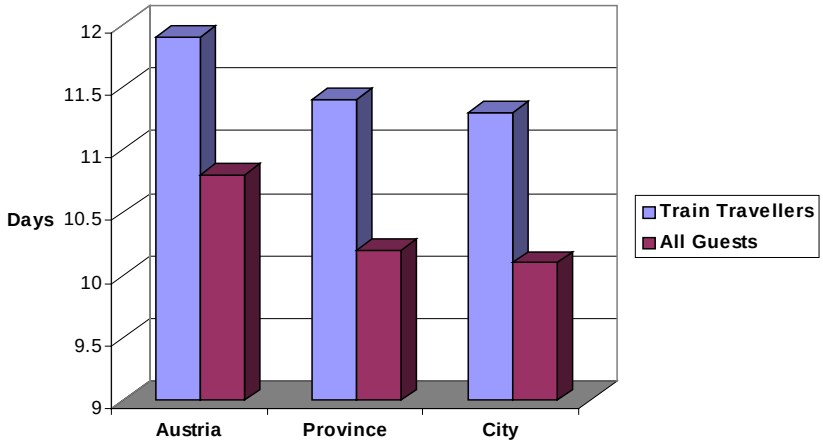


Source: Sabine Ziegler, Mobility CarSharing

Mobility information centres

The recently established Austrian mobility information centre, "**mobilito**" in Salzburg, provides a promising example of integrated mobility packages and transport information systems. Mobility centres for multi-modal travelling (e.g., for car-free tourism) provide customers with comprehensive services and information on public transport, allowing customers to use sustainable transport means for their travel needs. Figure 24 shows that train travellers using "mobilito" stay more than one full day longer than average customers.

Figure 24. Average Length of Stay for Train-Travelling Guests using "mobilito" service



Source: Stephan Maurer, mobilito

Conclusions from Session 4

- Numerous innovative services are emerging in passenger transport. In particular, new products that link public transportation and private cars show promise (e.g., integrated mobility services of public transport and access to individual motor vehicles).
- By providing better quality services, rail can become competitive with road and air transport. Providing integrated information and seamless services is the key to overcoming many of the barriers faced by rail. Public investment in rail as well as better information systems for public transport also enhance the competitiveness of rail and encourage customers to use rail transport.
- Technological development can solve many of the environmental problems, including noise and vibration, caused by high-speed train systems. Continuous improvements are required and encouraged.

3.6 Session 5: Sustainable freight transport: New concepts and business opportunities

This session comprised presentations on rail development in North America (**City University of New York)** and examples from Sweden (**IKEA-Rail** and **GreenCargo)**, and Germany (**DB Netz)**. They described innovative railway freight concepts and combined transport solutions involving new technologies, infrastructure and logistics, management of multi-modal freight transport chains, and regional, cross-border, combined transport arrangements. The importance of development of rail infrastructure was highlighted.

Box 3: Network Utilisation Rates

The need for capacity expansion of transport infrastructure depends on demand growth and the surplus capacity of the existing infrastructure. It is difficult to measure the current surplus capacity from aggregate data, however, the network utilisation rate can provide some insight. This rate is obtained by dividing transport volume (passenger-km or tonne-km) by network length, indicating how heavily the network is used for transporting people/goods per km length.

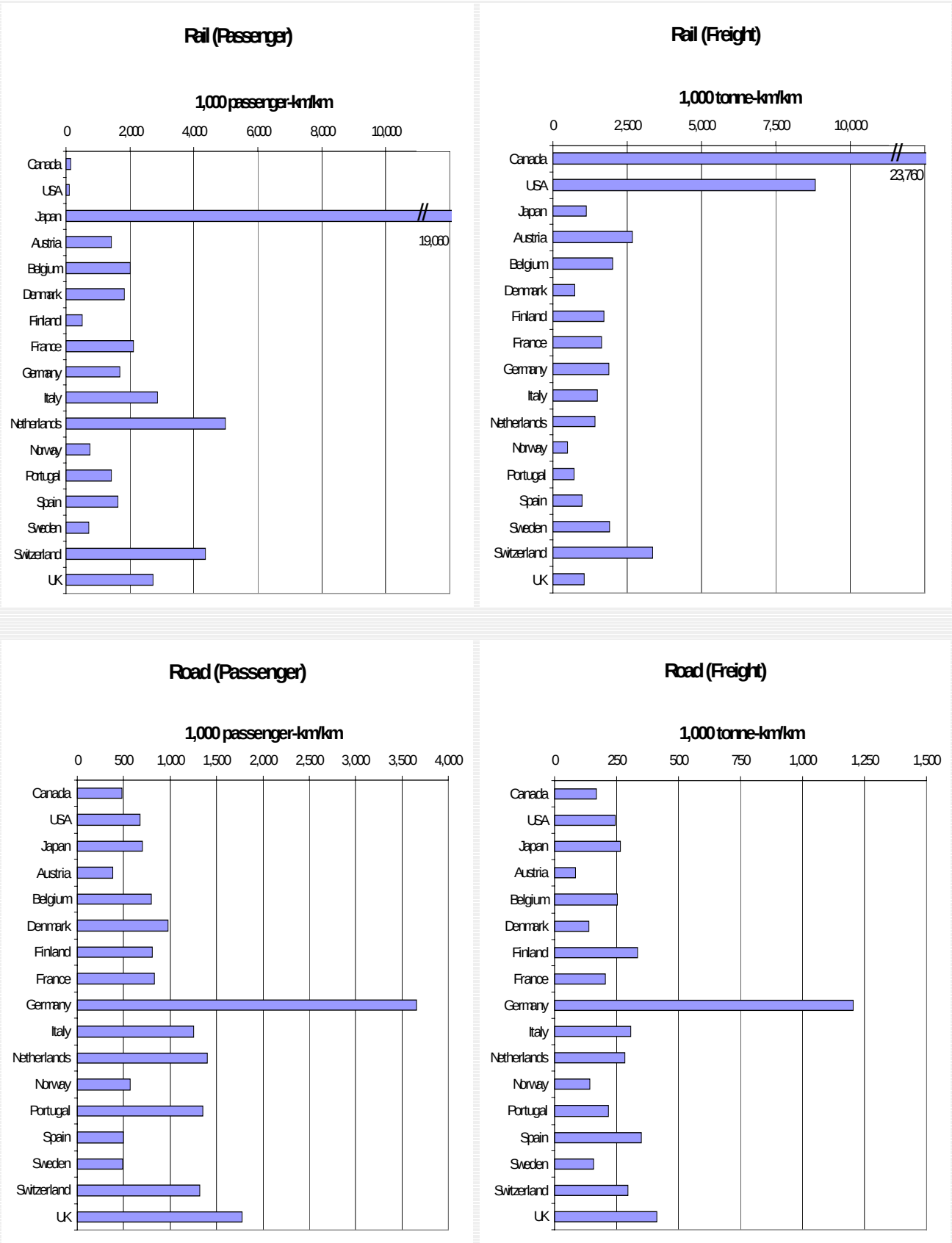
Below is a series of four figures indicating the network utilisation rates of rail and road transport for passenger and freight transport in selected countries. Please note that no distinction has been made between passenger transport and freight transport in terms of the network length. Thus, the same network length has been used to obtain both passenger and freight network utilisation rates.

As shown in the above left figure, Japan's passenger rail network utilisation rate is by far the highest. It is some 19 million passenger-km/km and over 10 times as high as the average rate for other countries. Netherlands and Switzerland follow Japan, and the U.S. has the lowest rate (0.14 million passenger-km/km), followed by Canada. As the two figures on the left show, the network utilisation rates for passenger rail transport are much higher than those of road transport, except for Canada, the U.S., Germany and Finland. It should be noted that Germany's road passenger transport rate is the highest of all countries (3.7 million passenger-km/km) and is twice Germany's rail passenger rate (1.7 million passenger-km/km).

As for freight transport, the network utilisation rates of rail freight transport exceed those of road transport in all countries. The average network utilisation rate of rail freight is 3.3 million tonne-km/km while that of road freight is 0.3 million tonne-km/km (see the two figures on the right-hand side). In Canada, the rate for rail freight is 24 million tonne-km/km, which is more than 140 times that of road freight and 12 times as high as the average rail freight rate in the rest of the countries. The U.S. has the second highest network utilisation rate for rail freight transport (9 million tonne-km/km). Germany's rate for road transport is the highest (1.2 million tonne-km/km), followed by UK (0.4 million tonne-km/km), though is still less than its rate for rail freight (1.9 million tonne-km/km).

As stated above, in Europe, network utilisation rates for rail are higher than those of road transport for both passenger and freight transport except for the passenger transport in Germany. The rate for German road freight is the highest but is still lower than the rate for its rail freight. Road transport has a higher network utilisation rate than rail for passenger transport in North America while the situation for freight transport is the opposite. In Japan, rail transport is heavily used for passenger transport while the rate for rail freight is below the average rate for other countries, even when Canada is excluded.

Network Utilisation Rates of Rail and Road Transport in Selected Countries (1999)



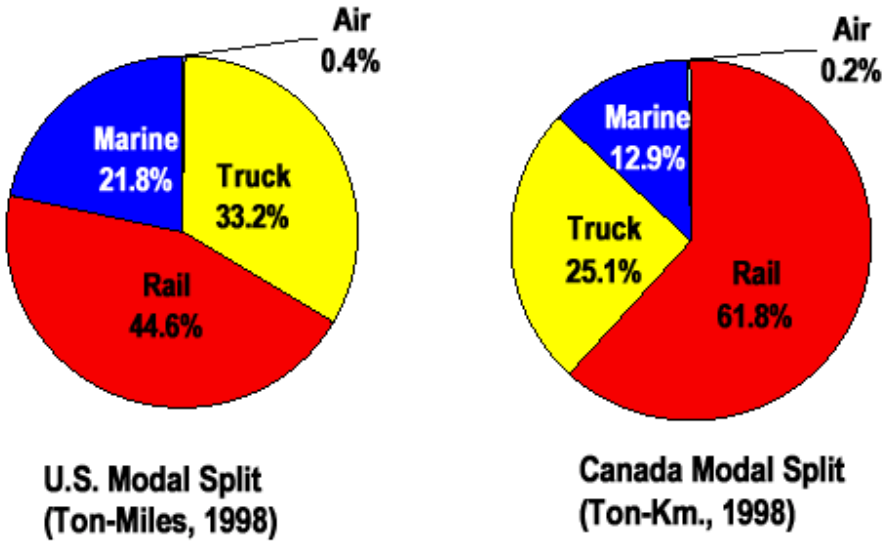
Source: OECD Environmental Data 2002

Rail freight development in North America

The success of **rail freight transport in North America** was led by deregulation, which divided the industry into major carriers and niche carriers. Figure 25 shows the modal share of rail for the US and Canada. Rail carries more freight than any other mode in North America and rail tonne-miles grew by 39% in the U.S. in the 90s (see Figure 26). There were many improvements in efficiency in the 1990s— e.g., widespread use of double-stacked trains— resulting in 16% fuel efficiency growth in the 90s in the U.S (see Figure 27). However, rail's share of freight has declined, in part due to shortage of capacity. The challenge for the 21st century is how to fund modernisation and development of North American railroad infrastructure. To meet this challenge, a new infrastructure development model is needed for railroad's future contribution to EST in North America.

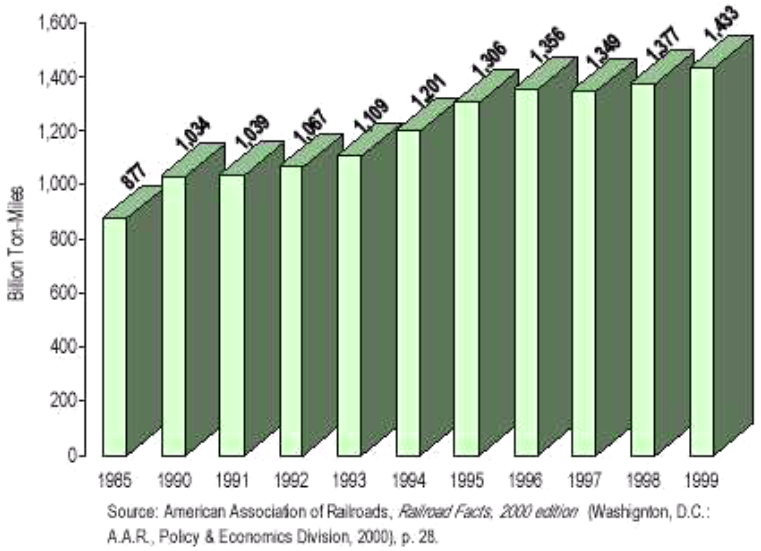
The Alameda Corridor Project in Los Angeles offers one model of infrastructure development involving a public-private partnership. In this project, a special purpose authority was created to work with ports, cities, state, the US Department of Transportation (DOT) and railroads. US$ 1.2 billion of its cost is financed from bond revenue and US$ 1.295 billion USD from public grants.

Figure 25. Modal Split of Freight Transport in North America in 1998 (tonne-km)



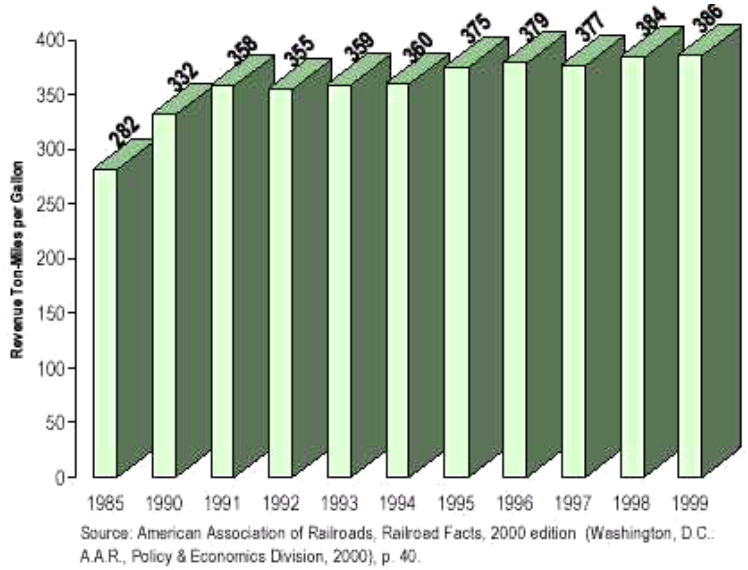
Source: Anthony Perl, City university of New York

Figure 26. Growth of Rail Freight in the U.S. (tonne-miles)



Source: Anthony Perl, City university of New York

Figure 27. Improvement of Fuel Efficiency of Railways in the U.S. in the 1990s



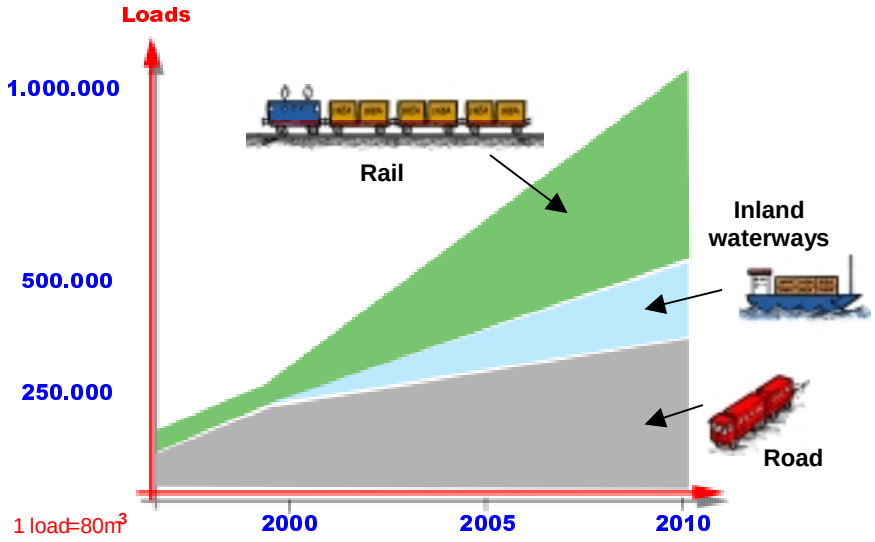
Source: Anthony Perl, City university of New York

Rail-based logistics – examples from Sweden

Organisational and logistical examples of short- and long-haul freight transport in Sweden were presented. **IKEA Rail** expects a considerable increase in its transport in the EU from 20 million m^3 to 80 million m^3 in 2010 (see Figure 28). To respond to this, IKEA Rail increased its competitiveness by securing transport capacity and achieving high quality and effectiveness that resulted in low prices, meanwhile minimising possible environmental impact. A major impediment for expansion has been the cost of infrastructure. It

accounts for 33% of the cost of the first line, which exceeds the cost of operation. Harmonisation of regulations across countries is required to reduce it.

Figure 28. IKEA European Transport Volume



Source: Christer Bejibom, IKEA-Rail

In response to customer needs, the **Swedish Rail Service GreenCargo** offers reliable railway logistics, door-to-door service, and environmentally sustainable performance. For example, it offers an overnight delivery service of parcels that results in not only significant reductions of environmental impacts but also provision of new logistical solutions while assuring reliability. New logistical solutions— i.e. development of special wagons fitting for high-speed rail transport, reduction of lead-time, and facilitation of information transfer via Electronic Data Interchange— improve cost efficiency as well as ensure the information flow throughout the delivery process.

Another example that helps its customers to improve supply management in an environmentally sustainable manner is an arrangement with a steel company (Ovako Steel). GreenCargo delivers steel from Hofors (Sweden) to Dijion (France) 5 days a week, while Ovako Steel has centralised its stocking function in Dijion for 18 SKF-plants. Delivery from Dijion central stocking to Austria, Italy, France, Germany, the Netherlands and Spain is within 48 hours by lorry. As a result, Ovako Steel reduced its lead time by 8 days and reduced tied-up capital.

Integrated freight transport services – example from Germany

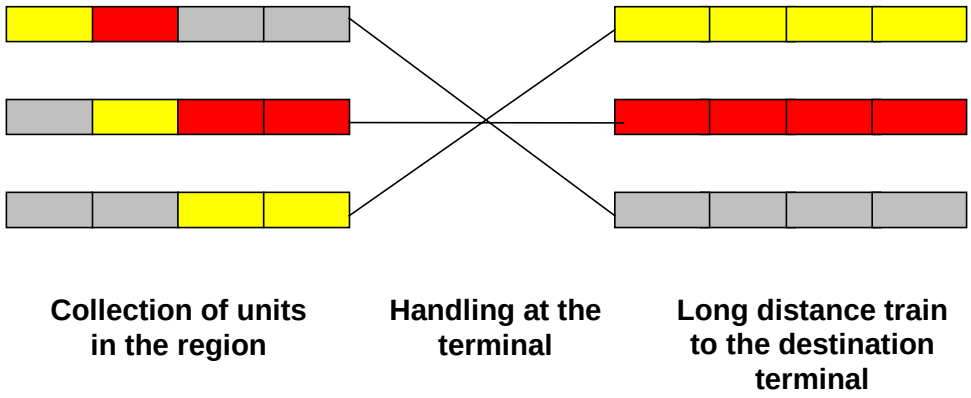
There are numerous opportunities for combined transport in the European freight market, in particular after liberalisation. Table 2 shows that railway freight is projected to increase by 100% in Germany by 2005, accounting for 24% of its freight transport market share. Meanwhile, there is much room to improve the efficiency of logistics. One example is use of a hub-and-spoke system which allows a centralised terminal to handle a variety of units in a region and sort them according to destination (see Figure 29). Figure 30 shows an example of multi-modal freight transport centres in Germany that facilitate combined transport and change the modal-split in favour of rail.

Table 2: Freight Transport Forecast to 2015 in Germany

	Freight transport	Railway freight	Share of railway
1997	371 billion tonne-km	73 billion tonne-km	19.6%
2015	608 billion tonne-km	148 billion tonne-km	24.3%
	+ 64%	+ 100%	+ 24%

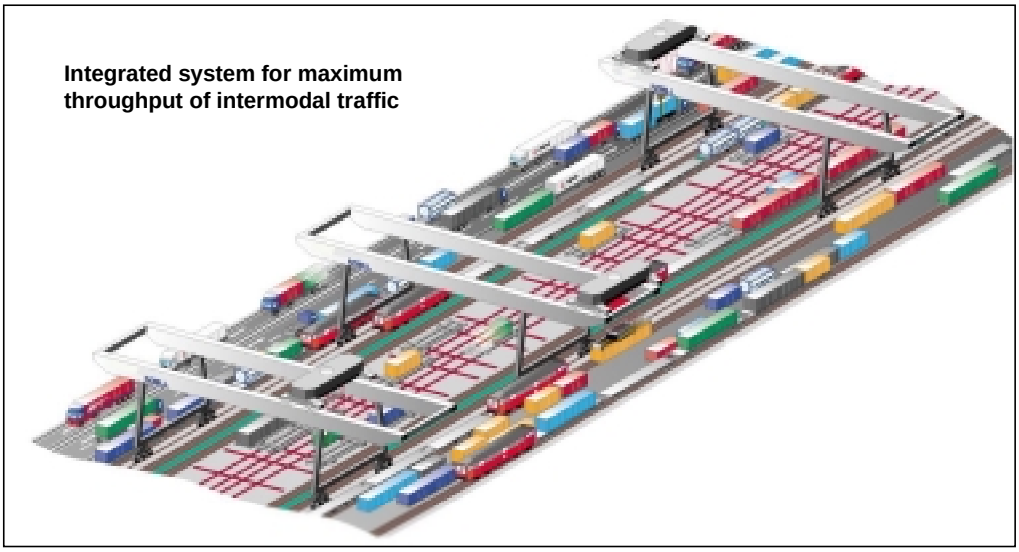
Source: Gerhard Schmidt, DB Netz

Figure 29. Efficient logistics –Hub and Spoke System-



Source: Gerhard Schmidt, DB Netz

Figure 30. Integrated System of Inter-modal Traffic



Source: Gerhard Schmidt, DB Netz

Conclusions from Session 5

- Examples of innovative railway freight concepts and multi-modal freight transport services, such as multi-modal freight transport centres, demonstrated that rail freight can be competitive providing timely and good services and that there are many business opportunities for increasing rail freight, especially in the EU. North America has already high share of rail freight due to the deregulation of freight transport.
- The main challenges lie in the expansion and modernisation of infrastructure. New infrastructure development and financing schemes—including public-private partnerships—can help meet growing demand for rail freight while being cost-effective.
- International harmonisation of technical standards is also crucial to reduce the cost of infrastructure when expanding railways across borders.

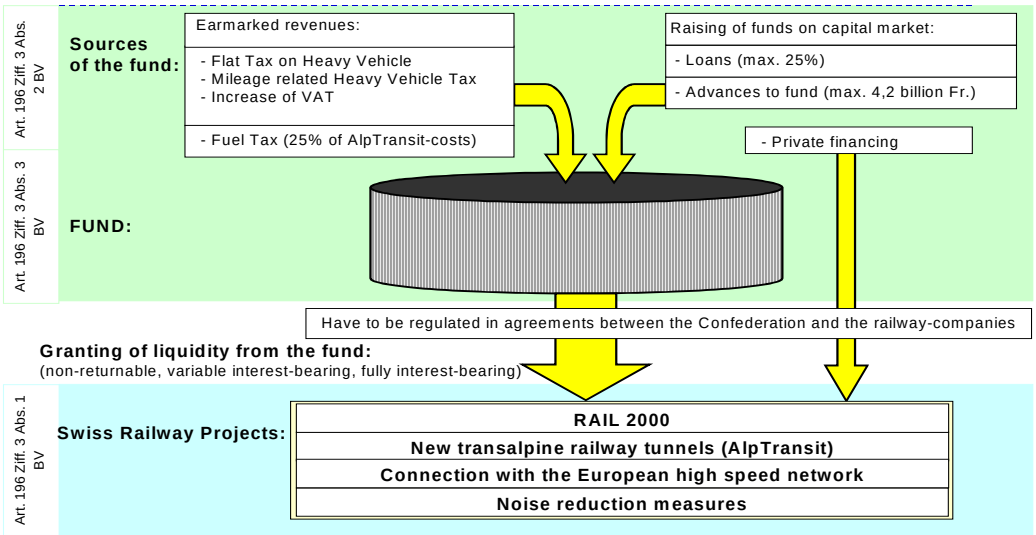
3.7 Session 6: Financing rail in an EST system: Impacts on employment and environment

This session comprised presentations by representatives of the **Federal Office of Transport, Switzerland (UVEK)**, **EIB (European Investment Bank)**, **the Ministry of Industry Employment and Communication, Sweden**, and the **Ministry of Land, Infrastructure and Transport, Japan**. Specific needs for investment in technology and infrastructure, their impacts on employment and environment, as well as the broader economic benefits of modern, highly performing rail-based systems were presented. In addition, the presentations examined the role of international financial institutions and governments in providing funds for infrastructure, increasing competition among rail operators, and implementing efficient charge systems for the use of infrastructure.

The NEAT project in Switzerland

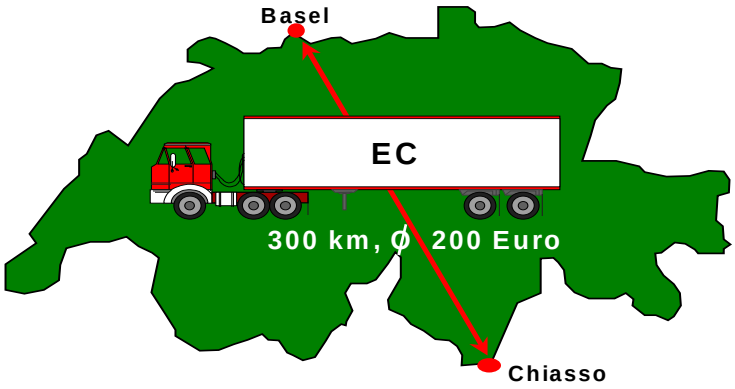
The huge investment programme of the Swiss government for the **New Alpine Transit (NEAT)**, including construction of new trans-Alpine railway tunnels, required innovative financing schemes to realise it. The programme had four sources of funds, notably, earmarked revenues from a heavy vehicle tax (HVF), fuel taxes, earnings from capital markets, and private financing (see Figure 31). The HVF scheme plays the most important role in this project. Under this scheme, the level of fee is dependent on distance travelled, which is set according to the vehicle's weight class and emission category. The maximum level is set so that the resulting price for a transit on the Basel-Chiasso route does not exceed EUR 200, which is estimated to cover the external costs from heavy vehicles (see Figure 32). Two-thirds of the income from the mileage related HVF, that is to say, some CHF 1 billion (EUR 680 million), will flow into the financing of the fund. This investment programme will create more than 15,000 new jobs while improving the efficiency of the rail industry by introducing competition.

Figure 31. Railway Projects Fund in Switzerland



Source: Alain Zentner, Federal Office of Transport, UVEK

Figure 32. Mileage Related Heavy Vehicle Tax in Switzerland

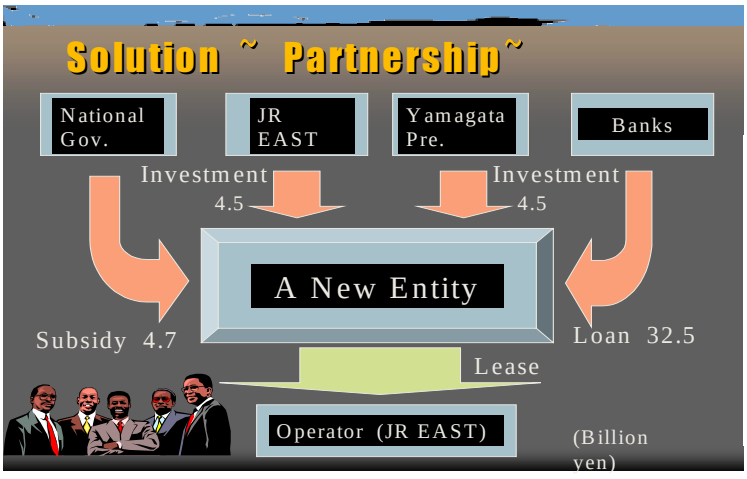


Source: Alain Zentner, Federal Office of Transport, UVEK

Japanese case studies of Shinkansen infrastructure programmes

Case studies of the Japanese high-speed railway (**Shinkansen**) infrastructure programmes demonstrated the importance of partnerships in financing the projects. Partnerships of international organisations, different levels of government, and the private sector make huge projects possible. Figure 33 illustrates the financing scheme for Yamagata Shinkansen Line. Under this scheme, a new body was created in order to raise funds for the infrastructure and lease it to an operator (JR East). This project was funded by a subsidy from the national government (JPY 4.7 billion or EUR 41 million), investments from the local government (4.5 billion JPY or EUR 39 million), investment by the JR East (JPY 4.5 billion or EUR 39 million), and loans from banks (JPY 32.5 billion or EUR 281 million). The separation of the financing infrastructure from the operation/use of the network was key to making huge infrastructure investments possible for Shinkansen.

Figure 33. Financing Scheme for Yamagata Shinkansen

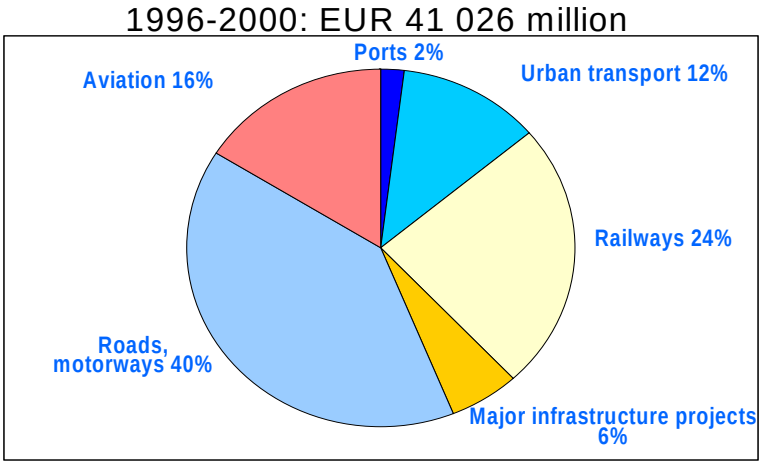


Source: Shigenori Hiraoka, Ministry of Land, Infrastructure and Transport, Japan

Financing European Infrastructure Investment

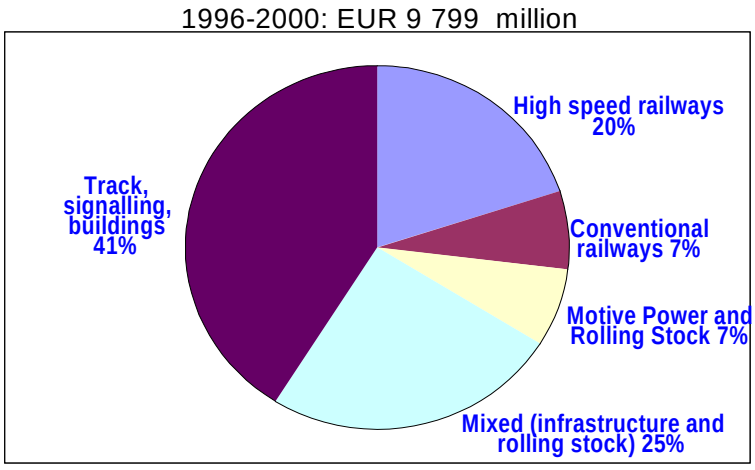
The European Investment Bank (EIB) is a large lender in the transport sector in Europe. It provides EUR 146 billion lending between 1996 and 2000 and EUR 35.6 billion in year 2000. The transport sector accounts for 28% of total lending, which amounted to EUR 41billion during the same period. As shown in Figure 34, within the EUR 41 billion going to the transport sector, a 24% (EUR 9.8 billion) was lent to railways and a 40% to roads and motorways. The major part of the lending to the railway sector was directed towards infrastructure investments (see Figure 35).

Figure 34. EIB Lending to the Transport Sector



Source: Lars Nordin, European Investment Bank

Figure 35. EIB Lending to the Railway Sector



Source: Lars Nordin, European Investment Bank

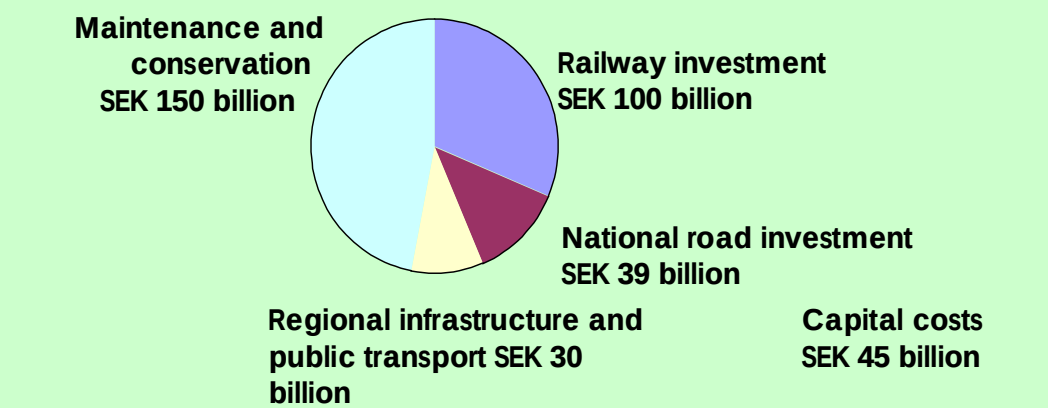
EIB's role and environmental requirements for transport infrastructure investment were highlighted in its presentation. To secure sufficient support from the EIB, governments are required to put in place

environmentally sound regulatory structures and policies, including pricing systems and technical quality standards. All projects should contribute towards improving environmental impacts and human health, including preservation, protection, and improvement of the natural and urban environment, protection of human health and enhancement of the quality of life, and promotion of measures at international level to deal with regional and global environmental problems. To achieve fair competition and sustainable mobility in the transport sector, the need for an integrated approach in planning and funding transport infrastructure, greater support for interoperable rail systems, and harmonised transport related tax-systems were noted.

Long-term transport infrastructure investment plan in Sweden

The Swedish government has developed a plan for financing the investment for long-term transport infrastructure (see Figure 36). In this plan, the Swedish government will invest SEK 100 billion (EUR 11 billion (SEK 1 = EUR 1.092)) over 10 years. The Swedish case demonstrates that a strong government initiative and commitment are indispensable for overcoming the institutional problems of year-by-year government budgeting systems in order to expand rail capacity.

Figure 36. Swedish Government's Planning Framework for 2004-2015



Source: Peter Fäldt, Ministry of Industry, Employment and Communication, Sweden

Conclusions from Session 6

- The difficulty in financing the high cost of infrastructure investment is a major impediment to the development of rail transport. Innovative ways of financing have been demonstrated in Switzerland where performance-related heavy-duty fees aimed at internalising external costs of road freight will be used to partly finance large new rail infrastructure investments.
- Not only national governments but also local governments and international organisations can play pivotal roles in financing. The keys to success are appropriate government strategies and effective partnerships between public and private sectors.
- Rail can create many long-term jobs. Successful financing of transport infrastructure is necessary for the attainment of EST and also desirable in terms of other societal goals.

3.8 Session 7: Panel on the role of media, NGOs, and government in promoting EST

This session comprised presentations by and discussions among members of a panel of politicians, media representatives, and representatives of NGOs.

Main points

- One of the challenges of rail is how to shift customers' preference from road to rail. Rail should offer better services to attract customers. Integrated door-to-door service involving inter-modal services is a key to success. High speed is not the only solution.
- Fair pricing of transport by government is necessary to change customers' behaviour and put rail on track. Strong political initiatives to introduce integrated transport systems are also needed. Rail plays an important role in the attainment of sustainable transport but it cannot solve all the problems.
- Communication of the EST Guidelines to the broader public is strongly recommended, recruiting the media where appropriate. Education is also very important.
- Some panellists favoured emphasis on reducing car ownership in order to reduce car use; others did not.
- Technological innovation alone will not lead to appropriate solutions. Demand management will help decouple environmental pressures from growth in the transport sector.

Conclusions from Session 7

- Each stakeholder plays a critical role for sustainable transport. Rail should make an effort to increase its competitiveness. Governments should take strong initiatives in introducing appropriate policies. Media can strongly influence acceptance of measures to improve the environment and moving towards EST.
- The important question to be asked is when can we achieve EST, not whether EST is realistic.

4. CONCLUSIONS AND THE DECLARATION

At the beginning of the conference, three important questions were raised: *Is major expansion of rail transport feasible? What investments will be needed? How can the expansion be financed?* The conference presentations and discussions provided positive answers to these questions, with the qualification in each case that much effort would be required to move rail forward. The main conclusions drawn from the conference are as follows:

- **Rail is expected to contribute to achieving EST**. In addition, **it can create many long-term jobs.** However, road transport is still the dominant mode. One of the major challenges rail is facing is a bias in favour of road transport due to lack of internalisation of the full environmental and social costs of road transport.

- **New measures and approaches are needed to promote rail,** including

  - **Government should introduce fair pricing**, specifically involving internalisation of the external costs of road traffic, to put rail on track.
  - **Rail should become more competitive** in relation to private cars by providing attractive services at competitive prices in the context of EST. Inter-modality, reliability, and competitive prices are the key.
  - **The role of media** is important to influence acceptance of measures to improve the environment and moving towards EST. The advantages of rail must be communicated to the public at large.
  - **International co-operation** in terms of regulatory standards, operation and research for railways is needed; national organisation of railways is still a major barrier to progress and increasing modal share.

- **Rail should work to reduce its negative aspects**, in particular noise and emissions of locally acting pollutants. To this end, technical, economic, and legislative measures are needed.

- **Rail's favourable environmental impacts are providing new business opportunities**. Numerous innovative services are emerging in passenger transport; in particular, integrated rail-based mobility services that link public transportation and private cars are promising. The liberalisation of the European freight market further encourages innovative railway freight concepts and combined transport solutions.

- **The difficulty in financing the high cost of infrastructure is a major impediment** to rail transport meeting growing demand for rail freight. **The keys to success are appropriate government strategies and effective partnerships between public and private sectors**. To achieve fair competition and sustainable mobility in the transport sector, the need for an integrated approach in planning and funding transport infrastructure, greater support for interoperable rail systems, and harmonised transport related tax-systems were noted.

The conclusions and lessons learned from the conference provided the basis for the *Eskilstuna Declaration on Rail Transport* (see Annex 1). The declaration is organised along the following issues: advantages, challenges, possible solutions and recommendations for rail in the context of EST.

Advantages

- Generally, lower environmental impact of rail transport
- Greater potential for future use of renewable energy sources

Challenges

- There is still a bias in favour of road transport due to the lack of internalisation of the full cost of such transport.

Areas to be improved

- Higher energy efficiency, lower noise and vibration levels, and less land-take
- More efficient management and operation, along with significant expansion of rail use

Possible solutions and recommendations

- Multi-modal solutions for passenger and freight transport are recommended, including integrated mobility services, combined transport and multi-modal platforms.
- Integration of financial and other decision-making tools for transport and environment is required.
- Clear policies are required to direct investment world-wide to sustainable transport modes. They include the removal of environmentally harmful subsidies and introduction of performance-related taxation and pricing of different transport modes.

Conference participants believed that widespread dissemination of the *Declaration* will help keep rail on track towards achieving EST.

Annex 1

Eskilstuna Declaration on Rail Transport

Conclusions from the Conference on EST, 26 October 2001

Developing sustainable transport systems is a major challenge for OECD countries at the outset of the 21st century, especially as important transport trends continue to move away from sustainability objectives. Road transport grew enormously during the 20th century; at its end, only a third of the world's freight transport and a sixth of its passenger transport was by rail. Railways will gain market share, if the right decisions are taken to change the trend (OECD Environmental Outlook, 2001). Moreover, rail-based transport for both passenger and freight will be key components of sustainable transport systems.

The OECD's project on Environmentally Sustainable Transport (EST) highlighted the importance of railways in achieving EST and stressed the need to change modal split significantly in favour of sustainable modes. The EST Guidelines, endorsed by OECD Environment Ministers, call for an integrated approach in which all transport modes contribute to sustainable development through timely technological advances, infrastructure organisation and investment, sustainable operations and demand management. At present, even when much rail transport is fuelled by oil, its environmental impact is far below that of other modes in terms of emissions and climate impacts. In the long term, energy for rail-based transport systems will increasingly come from renewable energy sources. This will reinforce ways of living that can allow present and future populations to live comfortably and within nature's limits.

The challenges to rail are many. Decoupling environmental pressures from growth in the transport sector was asked for by OECD Ministers. Prominent is the continuing growth in road transport of goods and people. Barriers to rail expansion include biases in favour of road transport due to lack of internalisation of the full environmental and social costs of road transport. The relative costs and benefits of road and rail transport should be more carefully evaluated. In particular, the benefits of road transport are not usually weighed against its damage to human and ecosystem health and their impact on economic well being. Rail pays its way—its unpaid costs are low—but falls short of making its full contribution because the benefits of rail are not properly assessed. Road does not pay its way. This could be remedied, at least in part, by the introduction of a distance and performance-related kilometre charge for heavy duty vehicles.

Rail services will play a key role in a sustainable transport policy. This implies both significant expansion of rail and more efficient management and operation. Improvements should be made to the energy efficiency of rail vehicles. Local pollution from rail should be reduced by controlling emissions and fuel quality, particularly where high-sulphur oil is used. Rail noise and vibration, notably from freight trains and high-speed trains should continue to be reduced by better design and maintenance. Although rail uses less land than road transport, further reductions are possible in rail's use of land, especially in urban areas.

Road and rail both have their place, and are complementary. The advantages of each can be combined in effective multi-modal solutions for passenger travel and freight transport. These solutions require improved logistics and organisational changes more than technological breakthroughs. Current best practices in integrated mobility services, combined transport, and multi-modal platforms for freight and passenger movement must be applied more widely.

Ensuring that rail contributes its full potential towards achieving sustainable transportation will require the integration of financial and other decision-making tools for transport and environment so that *sustainability criteria are applied in transport decision-making at all levels*. Clear policies are required to direct investment worldwide to sustainable transport modes, including the removal of environmentally harmful subsidies and introduction of appropriate taxation and pricing of different transport modes.

Adopted at the International Conference on Environmentally Sustainable Transport, *Is Rail on Track?*, Eskilstuna, Sweden, 26th October, 2001, organised by the OECD and UIC, and hosted by Banverket (Swedish National Railway Administration).

Annex 2

Conference Programme

25th October, 2001

KEYNOTE ADDRESS

Kjell Larsson, Minister of Environment: "EST for Sweden and the Role of Railways".

Session 1. Is Rail on Track towards Environmentally Sustainable Transport? Barriers and Challenges to EST and How to Overcome them

- **Bo Bylund**, Director-General, National Railway Administration (BV): *The railways' vision of sustainable development.*
- **Ms. Joke Waller-Hunter**, Director, OECD Environment Directorate: *Implementing OECD's Environmental Strategy and EST Guidelines – the contribution from railways.*
- **Gunther Ellwanger**, Director, High-Speed Rail Division, International Union of Railways: *Environmental activities of UIC*
- **Lars Johansson**, Environmental Manager, BV, and Chairman of UIC Environment Working Group: *Railways strategies for sustainable transport.*
- **Ms. Anna Ottavianelli**, Head of Community of European Railways: *the EU White Paper on Transport and its implications for railways.*

Session 2. Panel on Stakeholder Requirements for Railways: Demands and Expectations

Moderator: **Richard Gilbert**, Centre for Sustainable Transportation, Toronto:
Introduction on major barriers to EST and how to overcome them

Panel Discussion with representatives from
- railway industry:
  Staffan Håkansson, Bombardier;
  Jean-Claude Raoul, Alstom, Paris.
- railway operators:
  Magnus Swahn, GreenCargo, Sweden
- public authorities:
  Roger Torode, UITP, Brussels

Session 3. Environmentally Sustainable Transport Systems: Railways Contributions - Long-term Prospects and Technologies

Chair: **Bo Bylund**, BV, Stockholm.

- **Axel Friedrich,** Federal Environment Agency, Berlin*: Reduction potential for noise and diesel emissions from railways in Europe*
- **Michael Schemmer**, UNIFE Environment Committee: *Strategy of the railway industry-technologies, infrastructure and organisation*
- **Bent K. Johansson**, Chairman, Nordic Rail Group: *Railway's vision for 2030 – Outlook, finance and environmental backcasting*
- **Ms. Åsa Ander**, Bombardier, *RAVEL Project - Eco-efficient trains for sustainable rail transport*

Session 4. Sustainable Passenger Transport: Integrated Rail-based Mobility

Chair: **Gunther Ellwanger**, High-Speed Rail Division, UIC, Paris.

- **Sabine Ziegler**, *Mobility CarSharing* Switzerland, Lucerne,: *Integrated mobility services - Swiss Railways-Mobility CarSharing agreement and Rail-Link Initiative*
- **Prof. Lars Johansson**, University, Linköping: *Svealand-link - Environmental benefits of fast feeder trains*
- **Stephan Maurer,** mobilito**,** Salzburg, *Integrated mobility and travel information centre*
- **Takahide Saito**, Central Japan Railways, *The Tokaido Shinkansen - the past 36 years and future prospects of environmentally friendly high-speed rail system*

Session 5. Sustainable Freight Transport: New Concepts and Business Opportunities

Chair: **Joke Waller-Hunter**, Environment Directorate, OECD, Paris

- **Anthony Perl**, City University of New York*, Innovative rail freight solutions in North America*
- **Christer Beijbom**, IKEA, Sweden: *IKEA-Rail - image, efficiency and economy*
- **Gerhard Schmidt**, Terminal Operations, DB Netz, Frankfrut: *Perspectives for combined transport in the European liberalised freight market*
- **Magnus Swahn**, Green Cargo, Sweden: *New freight concepts – Green Cargo*

26th October, 2001

Session 6. Financing Rail in an EST System: Impacts on Employment and Environment

Chair: **Jacques Cornet**, UIC, Paris.

- **Alain Zentner**, Federal Office of Transport, UVEK, Bern: *the Swiss NEAT investment programme - Economic and employment effects*
- **Lars Nordin**, EIB, Luxembourg: *IFIs role and environmental requirements for transport infrastructure investment*
- **Peter Fäldt**, Ministry of Industry, Employment and Communication, Sweden*: Financing transport infrastructure investment for the next decades in Sweden*
- **Shigenori Hiraoka**, Ministry of Land, Infrastructure and Transport, Japan: *Financing high-speed railway infrastructure in Japan.*

Session 7. Panel on the Role of Media, NGOs, and Government in Promoting EST

Moderator: **Anders Jonsson**, Journalist, Stockholm

The role of media people for promoting EST and environmentally friendly rail transport

- **Markus Liechti** T&E, Brussels.
- **Claes Pilé**, SNF, Stockholm
- **Karin Svensson-Smith**, MP, Sweden
- **Anders Wijkman**, MEP, Sweden
- **Eva Gleissenberger**, Federal Ministry of Environment, Austria
- **Anders Johansson,** Dagens Nyheter, Sweden

Session 8. Conclusions and Adoption of the Declaration

Chair: **Ms. Joke Waller-Hunter**, OECD, Paris

CLOSING REMARKS: Jacques Cornet, UIC, Paris

ANNEX 3 AVAILABLE ABSTRACTS

INDEX

SESSION 1: IS RAIL ON TRACK TOWARDS ENVIRONMENTALLY SUSUTAINABLE TRANSPORT? BARRIERS AND CHALLENGES TO EST AND HOW TO OVERCOME THEM

Opening Remarks

Gunther Ellwanger, Director, High-Speed rail Division, UIC

The increase in greenhouse effect is undoubtedly one of the most serious problems facing mankind in the 21st century.

Transport is central to the problem. Emission levels are increasing faster than technological progress due to the total dependency of road and air transport on oil and to continuing growth in traffic. Despite the overall objectives for reducing emissions decided at the Kyoto Conference, emissions in the transport sector continue to increase.

Rail transport has great potential to support sustainable mobility. Trains, which produce minimum levels of green house gases are more energy-efficient than other modes and, by using electricity, can easily adapt to renewable sources of energy.

Railways have always made efforts to reduce their impact on the environment. For 10 years a special WG on Environment and a network of Environment Co-ordinators from UIC have been monitoring its activities. Special emphasis should be put on energy consumption (air pollution, climatic changes) and noise reduction. (UIC Noise Action Plan)

In 1998 the UIC Agenda 21 called the Oslo Declaration was signed including:

- Reduction of CO_2
- Efficient use of energy
- Noise reduction
- Support of polluter-pays principle
- Vegetation management
- Reduction of soil, water and air pollution
- Recycling

The most important step towards sustainable mobility will be the internalisation of external costs. The internalisation of the external costs would, firstly, remove a certain amount of traffic altogether and, secondly, improve the position of railways in the market, generating a certain shift of traffic to rail mode.

The EU White Paper on Transport and its implications for railways

Ms. Anna Ottavianelli, Head of Community of European Railways

The White Paper on Common Transport Policy ("*European transport policy for 2010: time to decide*" - COM(2001) 370, 12 September 2001) starts with an analysis of trends in transport as unsustainable, both from the point of view of environmental effects and the magnitude of external costs. It further considers the impact of progressively-increasing congestion (particularly on the roads) and the inability to cater to ever-increasing capacity needs there.

It endorses a number of arguments put forward by the railways in calling for the removal of regulatory and fiscal distortions in the transport market, and the introduction of pricing systems which reflect external costs.

The White Paper represents a sharp break from the "predict and provide" policy towards the road sector, in what, up to now, has seemed a difficult political context.

The paper comprises four sections, dealing with different aspects of policy:

- Shifting the balance between transport modes, through more effective regulation of the road sector, implementing the second package of railway legislation, and controlling the growth of air transport. Promotion of intermodal linkages also features here.
- Elimination of bottlenecks, particularly in relation to freight, and stressing intermodal means. Expansion of infrastructure oriented to modal shift on environmental grounds is seen as important.
- The third "pillar" focuses on customers and users of the transport network. Charging according to costs caused by individual users is advocated. This is a crucial element of the proposal, and the aim is to reduce the huge external costs generated by transport. Improving the user-friendliness of environmentally-friendly modes (e.g. integrated ticketing, quality charters, co-ordinated timetabling) is the second element of this strategy.
- Finally, it addresses concerns related to globalisation, by adjusting the European transport network to cope with the impact of enlargement (new infrastructure programme) and greater involvement of the EU as such in international transport regulation (e.g., shipping safety, aviation).

From the railways' point of view, efforts to achieve more customer need to go hand in hand with adjustment of the relationship between the modes if their full potential to reduce environmental costs in the transport sector is to be achieved. The railways welcome the recognition of this fact by the Commission and stand ready to play their role in the transport system of tomorrow.

SESSION 2: PANEL ON STAKEHOLDER REQUIREMENTS FOR RAILWAYS: DEMANDS AND EXPECTATIONS

Introduction of major barriers to EST and how to overcome them

Richard Gilbert, Centre for Sustainable Transportation, Toronto

This brief introductory presentation will link the work of the EST project on barriers to attainment of EST and gaps in knowledge to the topic of the panel discussion.

Chapter 4 of the report on Phase 3 of the EST project is entitled *Barriers to Attainment and Gaps in Knowledge*.

The chapter identifies and discusses 19 types of barrier to attainment of Environmental Sustainable Transport, grouped in three categories: individual barriers (9); societal barriers (6); and technological barriers (4).

These are the individual barriers: lack of awareness of the need for change, cognitive dissonance, lack of concern for future generations, fear of change and thus resistance to change, attractiveness of present transport modes, absence of transport alternatives, resistance to collective alternatives, car ownership, and lack of adequate professional advice.

These are the societal barriers: political factors, institutional barriers, ongoing societal trends, urban form, methodological barriers, and professional barriers.

These are the technological barriers: costs and lead times for development of appropriate technology, lack of common standards, inappropriate safety requirements, and barriers associated with telecommunications.

As well**, numerous gaps in knowledge** were identified.

The Member country expert teams involved in the EST project drew the following conclusions concerning barriers and gaps in knowledge:

- Lack of relevant knowledge is itself a major barrier to attainment of EST, whether technical knowledge that could enable needed improvements in vehicles, fuels, and infrastructure or knowledge about human behaviour and societal organisation that could help policy-makers secure needed changes.

- Individual and societal factors predominate in the consideration of both barriers and gaps. There is a major question as to whether policy-makers are receiving advice from appropriate quarters. Much advice appears to be provided by professions prevalent in the transport sector, such as engineering and economics, whose practitioners may not have relevant training and experience in matters concerning human behaviour and societal organisation, as well as the environmental impacts of transport and sustainability requirements.

- Among the largest barriers to change is the comfort and efficiency provided by present transport arrangements in OECD Member countries. There is not the evident need for change in systems that many regard as mostly satisfactory. Simple warnings of future distress appear insufficient to impel change.

- Two things are required. One is a better understanding of how to make potential future distress relevant to present circumstances. The other is a more appealing vision of sustainable transportation, its benefits and advantages.

- Even if these conditions for change were met, there could still be substantial resistance. Present transport practices have a formidable momentum that has deep psychological, social, and technological characteristics.

SESSION 3: ENVIRONMENTALLY SUSTAINABLE TRANSPORT SYSTEMS: RAILWAYS CONTRIBUTIONS – LONG-TERM PROSPECTS AND TECHNOLOGIES

Strategy of the railway industry- technologies, infrastructure and organisation

Michael Schemmer, Chair of Environment and Transport Working Group in UNIFE/ Vice President of EHS and QA for Bombardier Transportation

Since 1999, the Environment & Transport Working Group in UNIFE has provided a forum to exchange knowledge and best practices regarding environmental aspects of rail vehicles, and to act as an interface with external stakeholders. Here, it is a platform to share information with politicians, other industry, customers, and sub-suppliers with respect to environmental issues and concerns around rail transport. Important results of the WG achieved so far are: work on the Nordic Environmental Manual and other joint activities with the UIC environmental group, and EU-funded RAVEL and RAVEL follow-up projects.

Primarily, the WG is focusing on improving the environmental impact of rail transport. Activities are triggered by both the demand-side (i.e., customer requirements and legislation) as well as by initiatives of the rail industry on their own. Starting from the environmental aspects of rail transport, several areas have been identified where improvement is needed: noise, energy consumption, material use/waste/recyclability. Although significant progress could be achieved in most of these areas, there is still room for improvement. Here, it is the task of UNIFE's WG Environment & Transport to initiate and co-ordinate respective joint R&D projects or initiatives. This results also in collaboration with other sectors within UNIFE, e.g. dealing with interoperability, safety, and rail policy as well as with groups outside rail industry.

Whereas innovation should not be limited by finding the least common denominator with competitors, there are on the other hand requirements for co-operation regarding environmental improvement. Given the importance of sub-suppliers and consortia projects, there is a growing need for involving sub-suppliers in a harmonised way, as well as agreement on indicators for environmental performance as well as standards for data exchange and communication in general with customers and suppliers.

RAVEL Project - Eco-efficient trains for sustainable rail transport

Ms. Åsa Ander, RAVEL Project Manager, Bombardier Transportation

The total amount of transport in the global economy is growing and one unavoidable effect of this is negative environmental impact. Rail transport might be considered as the environmentally preferred solution but never the less, does have an environmental impact. It might be small but it is not negligible. All modes of transportation must in the end change if we want an overall sustainable transport system. Air and road transport are, from an environmental viewpoint, constantly improving their performance; rail must do the same to retain a competitive advantage.

The environmental impacts from rail transport depend on both the operation of the trains and the trains themselves. A reduction of the environmental impact will thus best be achieved through a dialogue between railways and vehicle manufacturers. This dialogue started almost 10 years ago and has become more and more intense over the years. Effects thereof are that stricter environmental requirements are appearing on the market and companies such as Bombardier Transportation are explicitly working with Design for Environment (DfE).

The overall goal of DfE is improved eco-efficiency, i.e. taking into account both financial costs as well as environmental costs. The World Business Council for Sustainable Development has defined the term in these words:

> *Eco-efficiency is reached by the delivery of competitive-priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life cycle, to a level at least in line with the earth "estimated carrying capacity".*

However, to support design and evaluate products there is a need for a quantifying definition that allows for setting numerical targets and calculating values. The RAVEL project has proposed such a definition as a part of a methodology for managing and optimising the environmental aspects of rail vehicles during the design phase. The methodology makes use of environmental performance indicators (EPIs) to describe technical design aspects that have an impact on the environment.

The indicators are well suited both for communicating environmental requirements from a customer to a supplier, as well as for reporting the environmental performance of either an intended product described in a tender or a delivered product. The same process is valid when looking at the relationship between operator – manufacturer as well as manufacturer – sub-supplier. The RAVEL methodology is intended to support business communication over the entire supply chain. The indicators form a common language that will enable a more efficient process and thus save time and money for all actors.

The RAVEL project started in Nov 1998 and will close with a seminar on "A future sustainable transport system through Rail Vehicle Eco-Efficient Design" in Stockholm 14 Nov 2001. The project has been 50% financed by the EC under the Industrial and Material Program (Brite Euram III). Involved project partners have been SJ and DSB – operators, Bombardier Transportation –vehicle manufacturer, Woodville Polymer Engineering – sub-supplier, ABB Corporate Research and GEP – DfE researchers and consultants and KU Leuven and Chalmers (CPM) – universities.

The project results will be further developed over the coming two years under the umbrella of UIC and UNIFE. It is intended to create a rail sector network with a view to developing an "industry standard" covering e.g. EPIs. Also, it is to improve the software prototype designed by RAVEL so that it will become more robust and user friendly.

SESSION 4: SUSTAINABLE PASSENGER TRANSPORT: INTEGRATED RAIL-BASED MOBILITY

Integrated mobility services - Swiss Railways-MobilityCarSharing agreement and Rail-Link Initiative

Ms. Sabine Ziegler, Mobility Sharing, Switzerland

Background: Mobility CarSharing Switzerland is a co-operative society, registered in Zurich with head quarters in Lucerne and offices in Geneva and Zurich. It operates within Switzerland and provides over 1,700 vehicles of 14 different categories and types at approx. 875 locations (250 at train stations) to its over 44,000 customers. Over the last five years, Mobility CarSharing registered an annual growth of 8,000 customers. It is the largest car sharing company world-wide. Mobility CarSharing Switzerland employs 140 people and 800 temporary persons in charge of the fleet of cars.

In 1997, Mobility CarSharing Switzerland grew out of a merger of the co-operative society ATG AutoTeilet Genossenschaft Schweiz and ShareCom. The extension of combined mobility by extending the existing co-operations within the area of public transport and the improvement of the existing network of Mobility CarSharing Switzerland in the cities and their suburbs are the strategical targets of the co-operative society. In 2000, the company made a turnover of 30 million Swiss Francs. This result was achieved thanks to utilisation fees and 14,2 million driven kilometres or an average of 39,000 kilometres per day by customers.

Analysis of problem: Mobility in an industrialised country, such as Switzerland, is an issue under growing critique from stakeholders. Topics such as congestion in urban areas, depreciation and social exclusion seem to be in everyone's mind, not even mentioning air pollution or growing accident rates. The car seems to have taken an intangible role in our lives. To tackle some of these topics, the concept of a nation-wide carsharing scheme seems to be evident. Carsharing must be seen in conjunction with public transport to trigger new consumer habits from automobile dependency towards a more pragmatic and flexible use of the transport system adapted to the needs at any given moment. The quality of the new product service to replace conventional vehicle use must have out-standing features. Thus, carsharing has developed a high-tech system and a high-variety of services. In addition, there are emerging trends that favour access, where everyone wants the convenience of service without the hassle of ownership is evident.

- Development of combined transit – carsharing passes (collaboration with the national railway SBB – CFF, regional products such as züri mobil in the Greater Zurich Area)
- Collaboration with CarRental schemes for supplementary offers at holiday peaks
- Collaboration with nation-wide retailers (Migros) for offers in business clientele and van hire
- New products as operations provider for the national railway

Objective and timetable: According to the research carried out in1998 CarSharing has a potential of 600,000 customers in Switzerland alone. There are a numbers of drivers with an annual mileage of less than 15,000 kilometres. Getting theses users into "combined mobility", or combining public and private transport, is an intelligent way, and will significantly reduce environmental impacts.

In an international context, Mobility has started to take on the role of operations manager for other projects at local level. In May 2001, the City of Leipzig in Germany was running a carsharing scheme with the name "Edi C" and in autumn of the same year, a pilot project was initiated in the North of Italy: Auto piu is run by a transport consortium owned by 35 communities and will attract new clients to the main public transport routes.

Implementation - Evaluation of results and environmental audits: A detailed LCA according to the BUWAL method (Swiss Federal Environmental Agency) of environmental scarcity (ökologische

Knappheit) was carried out in 2001. The impacts of the carsharing vehicles are less than those of average Swiss automobile fleet.

Mobility has commissioned an in-depth LCA with methodological extensions including noise pollution and damage; PM 10 and social impacts (accidents). We have been able to breakdown these data to the category level. This new method, still to be developed, should be implemented in house as a strategic tool to document our emissions on an annual basis. Besides the corporate communications aspects, we consider this tool as vital with respect to fleet acquisition. With the collaboration of the large retailer Migros, we were able to purchase 75 VW Lupos TDI, which categorised in the cheapest low class. This led to further deepen our ecological dedication.

Integrated mobility and travel information centre

Stephan Maurer, Director, "mobilito", Salzburg

One of Austria's most state-of-the-art customer service centres for public transport is located at the railway station in Bischofshofen in the Salzburg region of Pongau.

As members of the "Pongau ÖPNV" local public transport system, all 25 communities in the region are partners in the "Mobilitätszentrale Pongau GesmbH" (Mobility Management Centre) which is primarily intended to provide services for tourists. Austria's two largest transport companies, Austrian Federal Railways (ÖBB) and the Postbus Company, have been won over as strong active partners.

The Mobility Management Centre and its "mobilito" partners, the group of communities in the "Pongau ÖPNV" local public transport system, are also responsible for commissioning and standardizing timetables in the Pongau region, resulting in a co-ordinated regional public transport system covering trains, buses and scheduled/dial-a-cab group taxis.

The numerous European mobility projects in which "mobilito" is involved prove that the model of "sustainable mobility – car-free tourism" is not only being put into practice in the two model communities of Bad Hofgastein and Werfenweng in conjunction with "mobilito – the mobility management centre in Salzburg".

The main services offered are:

Mobility Planning : "mobilito" plans transport logistics for (large-scale) events and carries them out with external partners.

Mobility in Tourism: Introduction and continuation courses for "sustainable mobility" represent a central component for mobility in tourism. In addition to "mobilito" employees, tourism organisations and transport companies are included in this concept.

Timetable Information Centre: Comprehensive information regarding local public transport systems (ÖPNV) in the Pongau region, information about train travel for the whole of Europe.

Via Internet at www.mobilito.at; by phone, timetable enquiries: 06462/33-030-33 an in person, in the form of individualised advice in "mobilito's" modern customer service centre.

Sustainable and Mobile Holidays in Pongau: "Mobilito – the Mobility Management Centre in Salzburg" matches Pongau's holiday opportunities with the concept of "sustainable mobility" and offers travel guests comprehensive services which meet the requirements of environmental-friendliness and sustainable mobility. Pongau's local public transport system (ÖPNV), called "Pongau Takt", plays a particularly important role in this.

Travel Information: All important information regarding public transport in the area can be found at www.mobilito.at. In addition to the ideal travel connections from holiday accommodations to the popularly visited sights in the region, illustrations of footpaths to and from transport stops are available as well as detailed information about business hours, admission prices, and events.

Café-Bistro "mobilito": In "mobilito's" Customer Service Centre, (travel) guests are offered a café-bistro with coffee, cold beverages and small snacks, as well as travel literature and magazines. Our customers should ultimately feel at home from the time of their arrival until the time of their departure. Travel planning: As a modern customer service centre for local public transport, "mobilito - the Mobility Management Centre in Salzburg" views itself as a competent centre for sustainable and mobile travel within Europe. Train and bus travel, accommodation and restaurants/catering can be booked as well as day trips and group travel.

"Pongau-Takt": The Mobility Management Centre and its "mobilito" partners, the group of communities in the Pongau ÖPNV local public transport system, are also responsible for commissioning and standardising time tables in the Pongau region, resulting in a co-ordinated regional public transport system covering trains, buses and scheduled/dial-a-cab group taxis. "Pongau-Takt" is your BEST

CONNECTION for sustainable and mobile trips to the most beautiful sights in the region.Mobility Advice Centre: The customer service centre for “mobilito - the Mobility Management Centre in Salzburg” is the source for information about all aspects of public transport.

The Tokaido Shinkansen - the past 36 years and future prospects of an environmentally friendly high-speed rail system

Takahide Saito, Manager, London Office, Central Japan Railways

1. The Tokaido Shinkansen (Features of Tokaido Shinkansen)

1) Safety and reliability
2) Mass volume transportation
3) High-speed operation
4) Harmony with the Environment

2. High-speed transportation

The series 300 have applied total lightweight technologies such as aluminum alloy body and AC drive system to realise increased speed. The series 700 has successfully achieved improved quality in terms of riding comfort and quiet cabins.

3.Harmony with the environment

The following should be considered environmental objectives of the Tokaido Shinkasen:

(1) Low noise (2) low ground vibration along the line (3) low micro-pressure waves in passing through tunnels (4) energy conservation in running

To improve aerodynamics noise, an innovative low noise single arm paragraph was developed and the cover to shut the gap between the handrail and side door and, the narrower gap of 5mm between the door and body with sealing rubber were adopted for the series 700.

For resolving micro-pressure waves in tunnels, the nose shape of the train and ground facilities have been improved.

Weight reduction is the key to reduce ground vibration. The total weight of the series 300 and 700 was reduced 30% compared to that of series 0.

Low energy consumption is the most important advantage of railway as a high-speed mass transit system. Energy consumption for the series 700 was largely reduced (by almost 20 %) compared to that of series 0.

4. Conclusion

(1) Thorough improvement of rolling stock and ground facilities contributes to environmental preservation

(2) Activities to reduce noise, ground vibration, micro-pressure wave, energy consumption are important.

(3) Environmental consideration is the crucial point of view for increasing train speeds.

SESSION 5: SUSTAINABLE FREIGHT TRANSPORT: NEW CONCEPTS AND BUSINESS OPPORTUNITIES

Innovative rail freight solutions in North America

Anthony Perl, Visiting Scholar at the City University of New York's Institute for Urban Systems

Moving Freight by Rail in North America: Achievements & Challenges

American and Canadian railroads play a dominant role in the transportation of freight across North America. Not only do trains carry more freight, by weight, than any other mode, but the amount has been growing steadily through the 1990s. Even more promising from an environmental and energy conservation point of view, North American railroads have carried more freight while consuming less diesel fuel, in marked contrast to truck transportation.

The origins of this success story can be found in the significant policy restructuring that deregulated the industry in the late 1970s. During the 1980s and 90s, railroads restructured into profitable mega-carriers and niche carriers that were successful in serving competitive freight markets. They also downsized their trackage to reduce costs and taxes on this privately held infrastructure. But when business boomed in the late 1990s, railroads were hard pressed to build back the infrastructure they had pruned in times of lower traffic levels.

Unlike publicly funded roads, there was no mechanism to redevelop rail infrastructure alongside the renewal of its business practices and corporate organisation. One example of a "custom made" solution to this infrastructure constraint can be seen in the Alameda Corridor Project in Southern California, which offers lessons for future opportunities to enhance rail's contribution to the sustainable mobility of North American freight.

New freight concepts – Green Cargo

Magnus Swahn, Director Quality and Environment, GreenCargo

Background - today's problem within railway transportation

A major problem we face today is a poor specification of customer demands. We need to be very specific regarding the customer's requirements. We are too customised and not commercial enough in our behaviour.

When customer demands are fully specified we are able to develop and offer relevant products. Moreover, it is possible to keep promises as they are well documented.

Major customer demands

In accordance with a survey carried out by a university on behalf of the Swedish Goods Transportation Delegation the demands can be summarised in the list presented below:

Transport time

In-time delivery

Safety and security

Information

Flexibility

Efficiency

In addition to this list Green Cargo has, in accordance with its own experience, noted two more important demands:

Capacity

Price

Are there environmental demands?

Yes, they do exist, but should be seen as complementary to the more basic demands. Good environmental performance is a differentiating factor but can only be used efficiently when the basic demands are satisfied. In my opinion the ranking of demands can be described as in the list below:

1. Safety
2. Quality
3. Service
4. Environment

The railway operators have, however, the opportunity, as no one else, to fulfil basic demands as well as the differentiating demands. We are also able to deliver outstanding sustainability performance

SESSION 6: FINANCING RAIL IN AN EST SYSTEM: IMPACTS ON EMPLOYMENT AND ENVIRONMENT

The Swiss NEAT investment programme - Economic and employment effects

Alain Zentner, Federal Office of Transport, UVEK, Bern

Swiss Transport Policy

To avoid suffocating in traffic jams with their consequences, Switzerland intends to encourage public transport using economic instruments.

This means, first, promotion of public transport and, second, as much of the alpine freight traffic as possible must be shifted from road to rail. Therefore, 4 steps have been undertaken:

The Railways Reform

The main objectives of the railways reform are to increase productivity and efficiency in public transport and to improve the cost-benefit-ratio with the following three measures:

1. The introduction of elements of competition into the public transport system, above all with the advent of free access in goods transport.
2. The division between political and entrepreneurial functions.
3. The introduction of transparency into the financing of public transport and improvement of the control of expenditure.

Emission and Mileage Related Heavy Vehicle Tax

The Mileage-related Heavy Vehicle Tax covers all Swiss and foreign heavy road vehicles over 3.5 tonnes carrying either goods or passengers.

On one hand the MRHVT is based on the number of kilometers covered on Swiss territory, and on the other hand the height of the tax will depend on the emission category Euro 0, I, II.

Bilateral agreement with EU

The main measures of the bilateral agreement with the EU are the harmonization of the Standards and conditions of access in road transport. They include an increase in the weight limit for heavy goods vehicles progressively to 40 tonnes.

Modernization of Railway Infrastructure

The modernization of the railway infrastructure consists in 4 different but complementary projects:

- AlpTransit (two new Alp Crossings)
- Rail 2000 (introduction of the hub principle)
- Connection with the European high speed network
- Noise reduction measures

Financing of the Modernization of railways Infrastructure

A unique worldwide financing model has been developed: A special fund, the so-called fund for large investments in railway transport, has been created for a period of 20 years.

On one hand, this fund is being fed by four different sources. On the other, the fund finances the 4 projects of the Infrastructure modernization (costs of CHF 30.5 billion).

Employment effects

Concerning the employment effects of the Swiss infrastructure projects, a few estimates have been made. The modernization of the railway infrastructures will create on the average 15'000 jobs in Switzerland over the entire construction period.

Conclusion / Outlook

To maintain the long-term quality of the environment as well as the quality of life in the face of growing mobility, the strengthening of public transport is indispensable. By proceeding on this track we believe we can contribute to a sustainable mobility policy.

IFIs role and environmental requirements for transport infrastructure investment

Lars Nordin, Head of Rail and Road Division, Projects Directorate, European Investment Bank (EIB), Luxembourg

1. EIB's activities in the transport sector during the period 1996-2000

EIB is commonly referred to as the "house bank" of the European Union and it is true that the bulk of its financing activities are concentrated in the Union but an increasing amount of its financing is destined towards the accession countries as well as other countries outside Europe. The volume of its lending is impressive by any standard and growing, reaching EUR 35.6 billion in year 2000.

During the period 1996-2000, some 87 percent of the financing was destined for EU, some seven percent to the accession countries and six percent to other countries. Apart from global loans, which are handled by financial intermediaries, the transport sector accounted for EIB's largest sector involvement or 28 percent of the total EUR 146 billion financed. Within the EUR 41 billion going to the transport sector, an impressive 24 percent were lent to the railway sub-sector. While we may all have wanted the railway share to be even greater, we should note that a considerable part of the urban transport and the major infrastructure projects also consist of rail related investments. Within the railway sub-sector, the bulk of the EUR 9.8 billion EIB financing was directed towards infrastructure investments but sizeable amounts were also spent on motive power and rolling stock, station developments and signalling.

There are several reasons why EIB should be involved in the railway sector. First, as a European institution, EIB is promoting EU policy objectives through its lending operations including environmentally friendly means of transport. EIB also offers very attractive financial terms with regard to interest rates, maturities etc. While EIB normally lends up to 50 percent of a project's total cost, we can go even higher for environmentally beneficial projects. Furthermore, we provide service and value-added through our project appraisal of economic, technical, environmental and financial conditions. Finally, EIB's involvement in a project lends credibility to it and attracts other lenders and the Bank is therefore a frequent co-financing partner.

2. The changing environment for railways

It seems that ever since the railway networks expansion peaked some fifty years ago, the railways have been constantly under threat or challenge from competing modes. This is not necessarily bad and the often-requested level playing field is difficult to establish even if one could ever agree on what "level" means. Railways thus have to contend with deregulation and increasing private participation as well as competition from other modes. Technological developments in all modes, e.g. high speed trains and more energy efficient road vehicles change the market shares. European efforts to create an integrated railway system by focussing on Trans-European networks and harmonised signalling systems and power supply are factors working in favour of the railways as are new logistical approaches to achieve just-in-time delivery.

There are a number of Directives specific to the railways, which are about to become effective at the end of this year. They refer to licensing, interoperability and amendments to the famous 91/440 Directive. The Directive on path allocation becomes effective at the end of next year. It requires little imagination to forecast additional Directives in the future and, as long as they have as their aim to boast the railways competitive position, there is no reason to fear them or to hold on to the past.

To make their investments worthwhile, the railways should actively promote a commercially oriented approach and restructuring focussing on areas where the railways have clear competitive advantages such as high-speed networks, high-density commuter traffic, and main freight corridors. Other services should be pursued only if there is a generally recognised need for them. The key word is

efficiency not ownership. The goal is to run an efficient service on commercial principles irrespective of the ownership, public or private. Privatisation in itself should thus never be a goal just a method. The railways should also foster multi-modal integration and support a EU wide approach towards creating a competitive railway system through increased interoperability. Needless to say the investment opportunities need to be carefully selected.

EIB is responding to the railways' needs by developing financial products fit for the purpose; e.g. those developed for the Dutch High Speed Line and the Öresund fixed link. We also increasingly adapt our lending to the specific needs created by the separation of infrastructure and train operations and we are prepared to gradually take more project risk against an appropriate risk pricing.

The focus of our railway lending is primarily on the development of the Trans-European network and key international links, such as Alpine crossings, the Pyrenees, Central Europe, PBKAL, TGV Est etc. Other important areas are motive power and rolling stock and the adaptation of the accession countries to EU standards.

The project quality is of paramount importance for EIB's involvement. This requires that the project is not only technically sound and adapted to real needs but also that it is economically efficient and environmentally sustainable. Financial viability is important especially if there is an interest in having a PPP structure.

3. EIB's environmental due diligence work for the projects it finances

I would now address the third topic of my presentation, and give an account of the various environmental reviews that the Bank carries out to ensure that the projects it finances are environmentally sound. The environment is high on the policy agenda in most countries and in the European Union. Sustainable development is now a "task" of the Union on a par with economic and social development in the Amsterdam Treaty. The Bank, as the long-term lending institution of the Union within and outside the EU, and an instrument of Community policy, has for a long time been interested in environmental issues and environment related lending accounts for about one third of our total lending.

Recent environmental developments at EIB cover: (i) appointment of an "Environmental Policy Co-ordinator" to help focus and direct to the Bank's environmental work; (ii) the publication of an "Environmental Policy Statement" and of "Procedures Guidelines"; (iii) a structured dialogue with ENGOs; (iv) strengthened contacts with national and international institutions; and (v) efforts to promote a heightened awareness of environmental issues within the Bank.

All projects financed by EIB are appraised and have to be economically, financially, and technically viable as well as acceptable to the Bank in environmental terms.

In this respect the Bank considers: (i) the environmental impact of the project after mitigation or compensation; (ii) the characteristics, size and location of the project; (iii) any legal compliance issues; (iv) the quality of Environmental Impact Assessment; (v) the promoter's environmental management capability; and (vi) any major environment related project risk.

EIB targets: (i) the natural environment and its protection, such as waste management and "eco-efficiency" to conserve resources; (ii) the urban environment; (iii) human health and the quality of life; and (iv) the regional and global environment.

The environmental appraisal takes into account a number of Directives regarding environmental assessments, wild bird, habitat and pollution etc. There is no shortage of rules and regulations

During the project cycle, EIB carries out a number of procedures starting with the environmental screening at the pre-appraisal stage, followed by the environmental rating at the appraisal stage and a monitoring classification to apply during the implementation stage.

The environmental screening establishes the extent of the environmental work required ranging from Category A (a full EIA for projects within Annex I of the Directive 97/11) to Category D (no specific assessment for projects outside both Annex I and II).

At the appraisal of a project, its environmental acceptability (A, B1, B2 or C) and risk (high, moderate or low) are assessed. Category C is not acceptable for environmental reasons and thus unsuitable for EIB financing.

Depending on the outcome of this assessment, the monitoring type or scope of monitoring during project implementation is decided (0, 1, 2 or 3).

The result of the environmental appraisal is summarised on an "environmental sheet", which serves as a checklist to assess type, magnitude and significance of environmental effects and proposed mitigation measures and concludes with the assessment of "acceptability". A loan can only be disbursed if the environmental requirements are met. Over the past five years (1996-2000), EIB loans for safeguarding and improving the natural and urban environment in the EU totalled about EUR 26 billion and environmental projects outside the EU were supported with EUR 2.7 billion.

The protection and improvement of the environment are essential to a balanced and sustainable development. The results of the environmental assessment are as far as possible integrated into the economic cost benefit analysis and otherwise expressed in quantitative terms.

The Bank supports the transfer, implementation and enforcement of EU environmental principles and standards, to pave the way for a smooth accession to the Union of new members countries. In the EU, and in the accession countries, all projects financed by EIB should comply with both national and EU environmental law, including the EIA Directive. In other regions, all projects should comply with national law and are judged in the light of local circumstances and standards of EU environmental law.

Concluding remarks

To conclude, I hope to have given you information about: (i) the magnitude of the Bank's overall operations; (ii) the challenges that face the railways and the Bank in improving the attractiveness and the competitiveness of the railways; and (iii) the importance the Bank attaches to improving the overall environment as well as the seriousness with which the Bank executes its environmental due diligence. The environment is an area where there is no shortage of rules and regulations and one has to guard against getting bogged down in bureaucratic or administrative red tape, which can easily happen if good environmental standards are not observed.

I also believe it should be possible to find a way to present all decision makers (i.e. individual passengers and freight customers) with a pricing structure such that it results in them voluntarily selecting the most appropriate transport mode from a socio-economic point of view when they act purely in their own financial self interest. This may be a new twist to the expression "level playing field".

I therefore end with expressing my firm belief that the railways have a very positive contribution to make to our common overall environment. For this and so many other reasons, the railways should have a bright future if they focus their efforts on the areas where they have a competitive advantage. This would also require Governments to put adequate regulatory structures and policies in place. The Bank stands ready to continue to support such positive developments.

Financing high-speed railway infrastructure in Japan

Shigenori Hiraoka, Deputy Director, JR Affairs Office, Railway Bureau, Ministry of Land, Infrastructure and Transport, JAPAN

A. Introduction
   1. Railway Market in Japan
   2. Railway as EST

B. Case Study
   1. Tokaido Shinkansen line: Partnership Between a Railway Operator and an International Organization
   2. Four Authorized Shinkansen lines (Tohoku line, Joetsu line, Hokuriku line, and Kyusyu line): Partnership Among the National Government, Local Governments, and a Railway Operator
   3. Yamagata Shinkansen line: Partnership Among the National Government, Local Governments, and a Railway Operator

C. Investment in Future
   1. R&D of Maglev
   2. R&D of “Gauge Change Train”

D. Conclusions

SESSION 7: PANEL ON THE ROLE OF MEDIA, NGOS, AND GOVERNMENT IN PROMOTING EST

Markus Liechti, Project Manager, T&E European Federation for Transport and Environment, Brussels

The Role of NGOs in Promoting EST

T&E's mission and activities

T&E has a unique role among Europe's environmental NGOs as it is the only NGO network working on transport issues. T&E has 38 member organisations in 20 countries to promote sustainable transport policies at a European level. Large international organisations such as the Community of European Railways, UIC and WWF are associate members.

T&E's activities are based on 2 pillars: Policy work and communication. T&E's main objective is to create a new framework for a transport policy, which enables a transport system consistent with sustainable development. Such a transport system would contribute positively to all three pillars of sustainable development, the economic, social and environmental.

The expertise and credibility of T&E are longstanding attributes for the work done. This is effectively communicated so as to effectively influence decision makers at the European level. Through the T&E network, the work done in Brussels is also supported by the T&E members, who actively contribute to the decision making process in their own countries and who frequently use T&E's material. Communication is not directed to politicians but also to all other stakeholders e.g. trade unions and industry.

The main communication means used by T&E are the Bulletin, which is issued ten times a year, detailed publications on specific issues and the website (www.t-e.nu).

T&E also networks with other environmental NGOs. It is a member of the 'Green G8' for example, the eight largest European environmental organisations that represent more than 20 million people giving a voice for the environment on behalf of EU citizens.

Railways and EST

Transport is far from being environmentally sustainable. The recent TERM report from the European Environment Agency highlights the degree to which the transport system in many areas still is getting worse rather than better regarding its environmental impacts.

Although railways are in many respects the most environmentally sound transport mode, there are nevertheless environmental challenges for the railways. Railways risk loosing some of their environmental advantage as other transport modes, primarily road transport, are improving their environmental performance. The main challenges for railways are noise and air pollution (old diesel locomotives), energy efficiency and land use.

Another challenge for railways is responding to their customer requirements and needs that have to be met with reliable and high quality services. Improving rail services is a precondition to make railways a real alternative that supports an environmentally sustainable transport system.

With the rail infrastructure package, policymakers have provided a basis for the railways to offer improved international freight services. More needs to be done, however, to ensure a level playing field between transport modes and to implement the user pays principle. This is needed to decouple transport growth and economic growth and to make the transport system contribute to sustainable development.

Annex 4

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