



**CONSULTATION ON THE GREEN PAPER FROM THE EUROPEAN COMMISSION
“ADAPTING TO CLIMATE CHANGE IN EUROPE – OPTIONS FOR EU ACTION”**

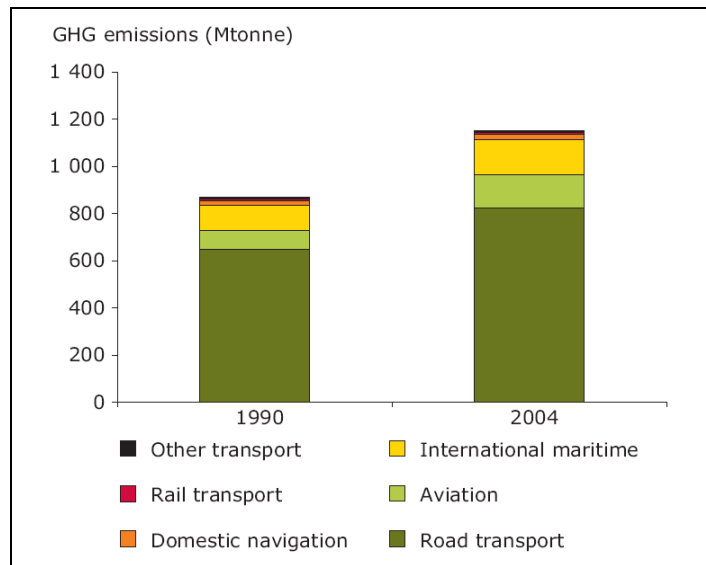
UNIFE POSITION PAPER

November 2007

Introduction

UNIFE, the Association of the European Railway Industries, very much welcomes the opportunity to contribute to the consultation on the adaptation to climate change in Europe.

The commitment of the European Railway supply Industries to more environmentally-friendly products and more sustainable production has been constant in the last decades and will continue in order them to keep their position at the forefront of sustainable mobility. The European Railway Industries provide one of **the least polluting existing transport systems**.



Indeed, the European Railway supply Industries deliver efficient and energy-friendly transport solutions reflecting the mobility needs of the continent and the environmental challenges faced by the EU. According to several independent studies,¹ among the different modes of transport, railways involve the smallest external costs, which are, accidents, air pollution, noise, impact on nature and landscape, up- and downstream processes, urban effects, congestion and climate change. Moreover, as pointed out in a recent study by the European

¹ Cf. IWW/INFRAS, *External Costs of Transport, Update Study, Final Report*, October 2004

Environment Agency, the environmental impact of ever-increasing transport volumes can be significantly reduced by shifting to more environmental-friendly modes², in particular rail.

The United Nation's Intergovernmental Panel on Climate Change³ declared that shifting transport from road to rail is one of the key measures in fighting the negative effects of transport on the environment. Indeed, according to the Panel, there is a 90 per cent likelihood that greenhouse gases emissions are altering the climate and such emissions must peak by 2020.

If the challenges of climate change are dealt with seriously by the involved stakeholders, it will impact the modal split. Rail is offering environmentally-friendly means of transport and is proposing concrete actions for adapting to climate change.

UNIFE therefore warmly welcomes the Commission's approach towards adaptation proposals to climate change in Europe.

This position paper provides an elaborate opinion on the background paper established by the European Commission and when possible, answers directly to the relevant questions listed in the consultation.

a. Climate change will have adverse effects on the railways

Climate change will challenge the design and the equipment of trains

The continuous increase in mobility demands, the need for environmental protection in the context of climate change, and the challenge of economic growth and related mobility needs set the frame for the current and future development of transport in the world. It is evident that the ever-increasing need for transporting goods and passengers is closely linked to the economic competitiveness and growth, while putting enormous pressure on the environment (21% of EU greenhouse gas emissions originate from transport⁴).

The European Rail Supply Industry provides answers to these challenges, by delivering efficient and energy-friendly transport solutions:

- reflecting the mobility needs of different transport segments: urban transport, regional/commuter transport, but also national or international transport, for passengers as well as for freight.
- contributing to addressing environmental challenges

However, means of transport such as railways are weather and climate sensitive and therefore affected by a changing climate. As pointed out in the Green paper on the adaptation to climate change in Europe, risks for damage and disruptions due to storms and floods but also due to heat waves, fires and landslides are generally expected to increase and to affect railway's functioning.

² Idem, p.4

³ Working Group III contribution to the Intergovernmental Panel on Climate Change, Fourth Assessment Report, Climate Change 2007: Mitigation of Climate Change, Summary for Policymakers, p. 14 (available at: <http://www.ipcc.ch/SPM040507.pdf>)

⁴ European Environment Agency, *Transport and environment : on the way to a new common transport policy*, Report 1/2007, p.16

Heat will possibly be the most challenging problem which railways will have to adapt to. Indeed best estimates for global warming in the 4th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 4AR, Working Group I) range from 1.8°C to 4°C compared by 2100 to 1990 levels. This is three to six times the temperature increase the globe has experienced since pre-industrial times.

High temperatures will make the equipment of all trains with air conditioning a must-have. Today, a minority of the EU-27 railway fleet (passenger unit) has air conditioning⁵. The scope for train refurbishment in this area is huge, calling for massive investments from the railway operators' side. These investments are actually crucial if national railway companies want to sustain and increase their customer base. Indeed the risk that people switch from rail to road during heat waves because trains are not equipped with air conditioning is high. This is particularly true because the vast majority of private cars sold today have integrated air conditioning systems.

A consequence of the generalisation of air conditioning in passenger's coaches and driver's cab will be the higher energy consumption of railways. However heat pumps new technologies will be able to bring about total energy savings of around 40 to 50% on air conditioning for a whole year. Therefore adaptation in this field will certainly bring about new economic opportunities including job creation and markets for innovative air cooling solutions.

Even though rail is going to be affected by climate change in the coming decades, it has a potential for operating better under extreme weather conditions than other transport modes. Today, half of the 1142-km railway, stretching from Gormo, in the Qinghai Province, to Lhasa, in the Tibet Autonomous Region, is laid on permafrost. The new locomotive is diesel driven and all the power and auxiliary systems hang under the train. To ensure normal operation in the high altitude and extreme cold, the locomotive incorporates special cold-resistant materials and an air conditioning system. The train is supplied with an oxygen system to provide sufficient oxygen in the cars.

Another famous example illustrating railway's ability to be operated under extreme weather condition is the one of the Ofoten rail line in the Arctic Circle. The Ofotbanen railway was first used in the autumn of 1902. Trains have run since that time transporting iron ore from the mines of Kiruna (Sweden) to the port of Narvik (Norway), where the iron is shipped to the rest of the world. The building of the railway was very demanding, especially because of the difficult terrain and weather conditions (in winter, temperatures can reach -30°C).

b. Research areas and knowledge gaps

The European Railway Industries are a key player in research and innovation

The European Rail Supply Industry is actively taking part in research and cooperating with a range of different actors (research institutes, universities, railway operators and infrastructure managers, etc.).

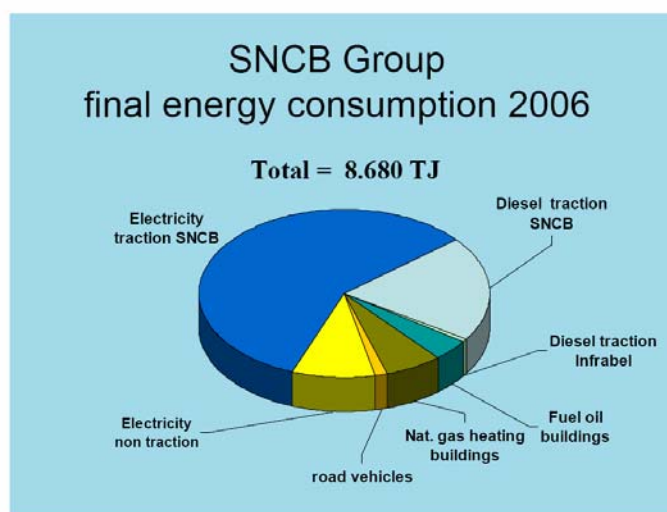
ERRAC, the European Rail Research Advisory Council, plays an important role in this field as a platform for innovation in the whole railway sector. It was set up in 2001 with the

⁵ When air conditioning equipment is considered, passenger units should be distinguished from cabin units (driver's cab), where air conditioning equipment is more widespread (Members States' workplace regulation). For example, almost 100% of drivers' cabs in European high speed trains and up to 90% of drivers' cab in metros have air conditioning today. These figures have to be compared with the much lower ones in passenger units.

ambitious goal of creating a single European body with both the competence and capability to help revitalise the European rail sector and make it more competitive, by fostering increased innovation and guiding research efforts at European level. On December 18th 2002, the European Rail Research Advisory Council (ERRAC) unveiled its Strategic Rail Research Agenda (SRRA) to the railway community. This European rail initiative paves the way for new innovative forms of collaboration, and has been one of the pioneers for the “technology platforms”, which may lead to major joint technology initiatives during the European Commission’s Seventh Framework Programme (2007-2013).⁶ The 7th Research Programme (FP7) will fund projects in the Railway sector for a total amount of €400m. UNIFE is itself coordinating several projects funded by FP6 and also participated to FP5.

Railenergy (FP6) provides with a relevant example of project coordinated by UNIFE. The project started in 2006 and will last four years. The CO₂ emissions from the railway sector are produced :

- directly, by diesel traction and by heating of buildings and facilities.
- indirectly, by electrical traction and the use of electricity in buildings. These emissions are directly produced by electric power plants.



Source: Example of SNCB energy consumption

The energy used for the train traction, as visible in the figure above, accounts for the greater part of a company’s energy consumption, compared to the energy used for lights and heating. Increasing the energy efficiency in traction is, thus, the major factor in reducing CO₂ emissions by railways. RailEnergy aims at addressing energy efficiency of the integrated railway system and at investigating and validating solutions ranging from the introduction of innovative traction technologies, components and layouts to the development of rolling stock, operation and infrastructure management strategies. Inter-relationship of railway sub-systems is highly complex, especially with regard to assessing their consumption of energy. RailEnergy therefore will develop a fully integrated approach as the only way to achieve true energy savings. RailEnergy also aims to generate new validation standards for the energy performance of products and services and to contribute to the European harmonisation process. The overall budget of RailEnergy project amounts to €14.7m (out of which the EC grant is €8M). RailEnergy has 27 partners, including major system integrators, railway operators, infrastructure managers, component suppliers, universities and consultancies from all over Europe.⁷

⁶ For more information, see www.errac.org

⁷ For more information, see www.railenergy.org

“Modenergy” (Modular Urban Guided Rail System Project) is contributing to the MODURBAN general target. This project aims at increasing the energy efficiency of rail as an already environmentally friendly means of transportation by at least 10% while offering an increased level of comfort able to attract more passengers from private cars.

UNIFE believes that cooperation between research, higher education and business should be further encouraged and supports public private partnerships in the field of research.

The listed research areas do not address the most important knowledge gaps

A particular emphasis should be put on the transport research areas. The EU should be able to develop research areas that match with the European policy goal on environment and competitiveness. In order to reach this aim, transport research and development should focus on a sustainable transport mode. Following the EU Transport White paper objectives of modal shift, rail has been identified as the most sustainable transport mode.

In the current 7th Framework Programme for research activities, only a restricted budget has been allocated to the rail transport mode, allowing less sustainable and more polluting transport mode to invest money and gain future market share over the rail sector. In particular, R&D projects at European level should be able to fill the existing gap between a political vision and a business need. The European Rail Industry is looking for R&D projects matching with the ambitious goal of the EC to reduce pollution and to face climate change but it is asking a more concrete approach to the market uptake. In summa, more European R&D projects serving a common goal have to be allocated to rail and they have to take into account the business needs of European industries.

Research results should be made publicly available

The first step in order to achieve broad result communication is a common visible strategy of the different Directorate-General of the European Commission involved at EU level in the climate change issue.

At the moment, the rail supply industry is facing a challenge to understand how the political vision of the EC, with ambitious environment goals could fit in the current R&D Framework Programme, where a consistent part of the budget is allocated to the air and road transport modes. Wide communication needs clear and common goals at European level.

Once the R&D Framework Programme will be able to communicate the common goal of DG Environment, DG Transport and Energy and DG Enterprise through significant allocation of budget for the needs of transport research, the rail industries, through their association UNIFE and the European Technology Platform (ERRAC) will be able to widely disseminate the results of – hopefully – more and more R&D projects implementation in the real market.

c. Role of the different stakeholders in the adaptation process

The adaptation process to climate change needs public financing

The adaptation process will certainly bring about huge investment needs requiring the support of EU spending programs. However, the current consultation does not tackle the financial aspects of climate change adaptation options. Private research has to be financed at the highest levels so as to maintain incentives on rolling stock's manufacturers R&D departments.

The 2006 Mid-Term Review of the White Paper on Transport highlights that the level of investment in transport infrastructure has fallen in all Member States to less than 1% of GDP. Railways being the most sustainable mode of transport, a significant share of the public

investment in transport should be allocated to the rail sector. The 2007-2013 TEN-T budget must be foremost used for railway projects. UNIFE calls upon the Member States to support rail investments so as to adapt to climate change threats and to target a share of rail projects as high as possible among TEN-T in order to develop sustainable public transport.

UNIFE also considers that the environmental performance should be a criterion to grant public funding for new infrastructure projects. UNIFE therefore welcomes the Green Procurement initiative. Today, the European Railway Supply Industry provides with the most environmentally-friendly mode of transport and proposes zero emissions transport solutions. This is particularly relevant in the context of the targets set by the Council to reduce greenhouse gas emissions by 20% by 2020. The ecological performance of the infrastructure is a good criterion to take decisions when deciding to fund a new infrastructure with public money. Money from the EU (structural funds, cohesion fund, TEN-T budget) should be attributed primarily to the most environmentally-friendly infrastructure projects. By taking into account a few indicators, such as greenhouse gas emissions, air pollution, waste, energy consumption, impact on the landscape, etc., public authorities could found guidelines in order to decide on their investments.

EU policy should encourage companies to participate in adaptation actions

The European Railway Industries are active promoters of eco-technologies. To name a few examples, some UNIFE members created energy savers, which enable light rail vehicles to save almost one third of their energy consumption; one of UNIFE members also won the City of Munich's environmental award with its oil-free compressor.

UNIFE supports the EU eco-management and audit scheme (EMAS) initiative. The objective of EMAS is to promote improvements in the environmental performance of organisations in all sectors through the introduction and implementation by organisations of environmental management systems as well as objective and periodical assessment of those systems. Any organisation wishing to take part in the scheme must adopt an environment policy setting out the objectives and principles of its environmental measures, conduct an environmental review of its activities, products and services, and introduce an environmental management system carry out regular environmental audits. However, no incentives are currently available at EU level for companies complying with the EMAS principles. The setting up of an environmental management system is very costly and relies on the goodwill of firms. UNIFE is therefore calling on the European Commission to provide the entities with incentives such as tax relief notably for those applying the EMAS scheme in the field of energy use reduction for production. These savings could then be used as a means of funding technology innovations for the rail industry to adapt to climate change requirements.



The European Railway Industries consider that it should be avoided to pursue regulation for promoting the uptake and the development of eco-innovation and eco-technologies, except

when synergies between reviews of relevant environmental regulation and ETAP objectives could be exploited.

Multilevel actions are crucial and will bring about synergies

UNIFE welcomes the EU initiative of multilevel actions. Multilevel governance is crucial for climate change adaptation, involving all actors from individual citizens to EU institutions.

The private sector has already started to adapt its strategy to climate change threats. This is the case of some multinational companies which have started to work out “carbon footprints” or “carbon labels” of some of their flagship products. Carbon footprints provide a measure of the impact an individual or a company has on the planet whereas a carbon label is an indication of the amount of carbon dioxide emitted as a result of producing goods and services. UNIFE supports such initiatives because it improves consumer’s information and also because it is beneficial for companies to review their manufacturing chain. Indeed, to be able to have carbon labelling, firms first have to scrutinise factors such as their electricity usage, heating, use of materials and any greenhouse gases emitted along the production chain. Undertaking such reviews will help companies to find and solve inefficiencies, such as cutting their energy use.

UNIFE also supports the initiative of a handful of multinational companies to adapt their reporting strategy to environmental concerns. This means that publicly-traded companies disclose their financial risk from climate change in their reporting statement and this though no regulation forces them to do so. This initiative is crucial to make investors aware of the importance of global companies’ sustainability strategies.

The willingness of businesses to be seen as green will hopefully foster a quickening of the pace of environmental awareness in politics and a broader acknowledgement that actions on climate change are necessary and possible while at the same time contributing to economic growth.

UNIFE is the association of the European Rail Supply Industries, based in Brussels. Its members cover a wide range of companies including system integrators, infrastructure, subsystem and component suppliers.

The European Rail Supply Industry generates around €60 billion in revenue per year and directly employs 130 000 people. UNIFE members manufacture 70% of the world-wide production of rail equipment. UNIFE has 19 National Organisations as associated members representing another 900 railway companies.

*UNIFE - The European Railway Industries
221, Avenue Louise
B-1050 Brussels
www.unife.org*

For more information, please contact:

Virginie Poirier
Economic Affairs Manager

*Office: +32 2 642 23 29
Mobile: +32 497 97 29 39
E-mail: virginie.poirier@unife.org*

