

Rail transport

Europe has long benefited from a dense railway network and is the world leader in the supply of railway systems. Employing 1 million people in rail operations and another 250 000 in manufacturing, the European railway sector has a 60% share of the world market and an annual turnover of €95 billion.

Though it spends some €2 billion on research each year, more investment is needed to modernise rolling stock, exploit new business techniques and create intelligent integrated logistics systems, such as roll-on/roll-off interfaces, for Europe's road and water-borne sectors. These are all targets of EU-funded research.

Rail transport offers a viable and competitive means of shifting more cargo traffic away from the continent's crowded roads, thus improving traffic circulation and cutting vehicle-emitted pollution. The EU places particular emphasis on stimulating new investment in trans-European transport infrastructure such as rail, and its current Sixth and forthcoming Seventh Framework Programmes support research efforts to create new methods of interoperability, higher safety standards and the reduction of rail-related noise levels.

Building up steam: a single rail market

The EU's recently launched MODTRAIN project brings together, for the first time, all the main European rail system manufacturers, sub-system suppliers and rail operators. Working towards interoperability of national rolling-stock systems and sub-systems, MODTRAIN offers a radical approach to rolling-stock construction. Its goal of reducing the number of single components in a railway carriage from 1 200 to 120 parts and cutting construction time by more than 50% should give a huge boost to the sector's competitiveness.
www.modtrain.com

Transporting the future

Funding for the Seventh Framework Programme (FP7) is set to rise dramatically in view of the EU's enlargement, and transport is one of its main thematic priorities. Beginning in 2007, the new FP7's transport research goals include:

- the greening of surface transport (reduction of environmental and noise pollution, clean and efficient power trains, use of alternative fuels for transport);
- intermodal shifts and the decongestion of transport corridors (development of intermodal networks, information exchanges between vehicle/vessel and transport infrastructures);
- sustainable urban mobility (new public transportation modes, integrated town planning and transport);
- stronger competitiveness (component, vehicle and infrastructure technologies; cost-effective production systems and infrastructure construction; improved design processes).

Such projects of technological excellence will lead to a cleaner, safer and more secure transport environment for Europe's citizens. And they will strengthen business and industry, thus helping the EU achieve its Lisbon Agenda goals of strong job creation and economic growth.

More information

- **European Research portal:**
www.europa.eu.int/comm/research/transport/index_en.html
- **Directorate-General Energy and Transport:**
www.europa.eu.int/comm/dgs/energy_transport/index_en.html



SURFACE TRANSPORT



This publication was produced by:
**European Commission
Directorate-General for
Research**
E-mail: research@cec.eu.int
www.europa.eu.int/comm/research

Information and
Communication Unit
B-1049 Brussels
Fax: +32 2 295 82 20

© European Communities, 2005 - Reproduction is authorised provided the source is acknowledged.
Printed in Belgium



Researching
the paths ahead

Three modes + four challenges = new approach

The three surface transport modes – road, rail and water-borne – are critical to driving Europe’s employment, prosperity and global exports. Aside from stimulating innovation and knowledge, technological advances in transport will have a positive impact on Europe economic and social integration.

But transport modes also raise major challenges for environment, society and research mainly due to an inexorable rise in transport demand. The EU has targeted four objectives in surface transport research to meet these challenges, namely to:

- improve the *competitiveness* of surface transport manufacturers, operators and infrastructure managers;
- improve the *safety and security* of transport operations and services;
- reduce the *environmental impact* of transport, including emissions and noise;
- increase the *mobility* of people and goods via a better balance between all three surface transport modes.

These goals demand a coordinated approach among all research and transport stakeholders, which is being achieved via the new technology platforms for each transport mode. **ERRAC** – the European Rail Research Advisory Council – has guided EU and national rail research planning since December 2002. **ERTRAC**, the European Road Transport Research Advisory Council, delivered its strategic agenda in January 2005, while the **WATERBORNE** technology platform was inaugurated in October 2004.

- www.errac.org
- www.ertrac.org
- www.waterbone-tp.org

Transporting society

“Efficient transport is a fundamental condition for sustainable wealth and prosperity in Europe by providing it with essential resources and mobility.”
“In this highly regulated sector, efficient knowledge sharing and pooling of resources is now critical.”
“Transport research leads to new products, processes and services, while creating a competitive edge for Europe in the global transport market place. Creation of the European Research Area (ERA) under the Sixth Framework Programme has led to a better pooling of dispersed resources and expertise, thus promoting more substantial and rewarding research initiatives.”
Janez Potočnik - European Commissioner for Research



Road transport

Europe’s road transport sector is huge. More than 12 million jobs are linked to it, which contributes approximately €490 billion in turnover to Europe’s economy each year. The automotive sector alone spends some €19 billion each year on research and technological development, making it the largest private investor in RTD in Europe. Like other industrialised regions in the world, Europe’s economy has grown in parallel with its expanding road transport sector.

But road transport also creates problems for human health, safety and mobility. The EU’s road transport networks and city streets are severely congested, with traffic jams costing Europe 2% of GDP. Every year road accidents kill thousands. Critical infrastructure such as bridges and tunnels are susceptible to terrorist attack and require new thinking about ways to protect them. Most pervasive of all is the problem of pollution. Traffic-related emissions costs Europe 1.7% of GDP or €360 per year for every citizen, not to mention the public health costs of pollution-induced diseases.

EU research programmes are addressing all these problems by designing cleaner and quieter engine technologies, more stringent crash-resistant vehicles and safety-monitoring systems, smoother intermodal transport options to get more vehicles off crowded roads and, finally, intelligent traffic-management networks that save industry and consumers both time and money.

Down with road fatalities!

Road-related deaths are unacceptably high in Europe – a stark statistic that research aims to bring under control. The EU-funded APROSYS project is developing technologies to improve the passive safety of four categories of road users: car occupants, pedestrians and pedal cyclists, motorcyclists and truck occupants.
To achieve this, APROSYS partners are developing new injury criteria and mathematical models of the human body, innovative crash-test dummies for side-impact testing of injuries to female occupants, and intelligent safety systems based on enhanced virtual testing technologies. The final goal? To cut the EU’s annual 50 000 road-related fatalities by 15 000.
<http://www.aprosys.com>



Water-borne transport

Though most consumers do not realise it, maritime transport carries the bulk of the world’s goods. It accounts for 90% of the external trade of the EU where the shipbuilding industry has an annual turnover of €20 billion and a workforce of 350 000.

While transport by sea is safer than in years past – thanks to the introduction of strict controls prompted by several major accidents – there is still room for improvement, notably in vessel design and safety techniques. EU-sponsored research programmes strongly promote the goals of water-borne transport safety and security as basic design objectives – and not mere external constraints – for shipbuilders and operators. By exploiting state-of-the-art research tools and analysis, the right balance between costs, safety and performance can be achieved.

EU research projects also focus on more optimal waterborne mobility regarding navigation and logistics, and new measures to minimise maritime-related pollution and the devastating consequences of oil spills.

Biodiverse stowaways

Oil spillages and illegal discharges of waste and chemicals at sea are not the only threats to our oceans’ well-being. The mere movement of ships across the seven seas carries a risk of ‘infecting’ one eco-system with the organisms of another. The inadvertent transport of organisms in ballast water and on vessel hulls, for example, can have serious consequences for marine biodiversity. Current EU research is addressing this problem by exploring:

- *treatment of ballast water to remove bio-organisms;*
- *response to marine accidents;*
- *technologies for improved inspection, maintenance and repair;*
- *new paints that do not affect sea life.*

