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**ECONOMIC COMMISSION FOR EUROPE**

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**Working Party on Rail Transport**

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**RESEARCH ACTIVITIES IN THE FIELD OF RAILWAY TRANSPORT**

Transmitted by the Governments of Hungary, Lithuania, Slovakia, Sweden,  
United Kingdom and the United States of America

**HUNGARY**

A separate Institute for Development and Research has been functioning within the national railway company from 1951 with an annual budget of € 1 million. Its typical research fields for 2002/2003 are:

- passenger transport services
  - = guidelines for modernization and development of control system
  - = integration of suburban mainline services into local mass transport associations
  
- train operations
  - = optimization in energy utilization and protection of the environment
  - = capacity researches in border stations for the interoperability
  - = maximum load limits for freight traffic at increased speed (RIV-S)
  - = analysis of braking techniques for reduction of the noise in freight traffic

- background to investments
- = analysis of effects of investments, aiming at harmonization with EU, on competitiveness
- = supervision of the trunk network for analysis of effects of investments to reduce running times
- = model to prepare decisions on the development of rolling stock.

## **LITHUANIA**

The main document which regulates development, promotion and growth of the scientific research, is the Resolution of the Seimas of the Republic of Lithuania of the year 2002 (NQ IX1187).

## **SLOVAKIA**

The Railways Research Institute in Žilina (Výskumný a vývojový ústav železníc Žilina) is especially active in research activities in the field of railway transport for the “Železničná spoločnosť” a.s.

Research activities are focused mainly on the following fields:

- elaboration of company internal standards and regulations
- solutions to problems of integrated transport
- railways safety improvement
- regional transport issues
- improvement of the technical parameters of rolling stock

The ZSR also implemented the project “Analysis of the needs for tilting units on the ZSR's infrastructure” (160-200 km/h).

## **SWEDEN** (information provided by Banverket)

Banverket's responsibility for research and development (R&D) in the rail industry includes all aspects of the rail transport system. This means that R&D operations conducted in addition to Banverket's own infrastructure issues include questions related to vehicles, transport policy, market and co-operation with other types of transport. Within the framework of sectoral responsibility, Banverket also supports R. & D. needed for the development of other players' operations.

Since Banverket is unable to carry on development single-handed, one goal is to strengthen cooperation in the research area with other players in the sector. Research is also initiated and financed by other authorities as well as by industrial companies. Since Swedish bodies are also taking part as financiers in EU projects and in UIC activities, Swedish rail research can benefit from extensive research results at a limited expense.

The effects on travel and choice of transport in connection with the opening of the new line between Stockholm–Strängnäs and Eskilstuna, referred to as the Svealand Line, has been

studied in the R&D project entitled “The establishment of new rail connections. Impact on travel demand and social structure using the Svealand Line as an example”. In the project, a study has been made of the supply of and demand for regional travel by different forms of transport along the Svealand Line before and after the start of rail operations. The new services have increased the volume of rail transport significantly.

Availability, disability and gender issues are areas that will be accredited with increasing importance in strengthening the role of the railways on the transport market. The project referred to as “The importance of experienced security”, which is being conducted by the Swedish Road and Transport Research Institute (Väg- och transportforskningsinstitutet), shall augment what is known about the importance of experienced security as regards the attraction of commuter trains, light-rail systems and city buses compared with the private car.

“The Whole Journey” is a joint project being run by transport authorities, Vinnova, the Swedish Local Traffic Association (Svenska Lokaltrafikföreningen, SLTF), Samtrafiken, Tåg I Bergslagen and the Coordination Committee for the National Swedish Association for Disabled Persons (Handikappförbundens Samarbetsorgan). The project is being coordinated by the National Public Transport Agency (Rikstrafiken). The principal purpose of the project is to assess the preconditions for achieving the goal of a creating a form of public transport that is adapted to functionally disabled persons by the year 2010. One important feature is to define where the responsibility of each player begins and ends, and also to identify those areas where there is no clearly defined responsibility.

Banverket’s subproject is being run in cooperation with the Swedish National Road Administration (Vägverket). During 2001, a number of meetings have been held with regional and local players. Visits have been made to some of the connection points identified in the project. The project will be evaluated from the point of view of passengers and how the project process was conducted. Banverket is responsible for the evaluation work together with Vägverket and Vinnova. The project is scheduled for completion in March 2003.

“An elucidation of controversies in connection with large scale infrastructure projects: The case of the West Coast Line” is a multi-disciplinary social science-oriented project, the purpose of which is to shed light on the dilemma of local communities when faced by large-scale infrastructure projects. The study has been carried out at the Centre for Public Sector Research (Centrum för Forskning om Offentlig Sektor, CEFOS) at Gothenburg University. Risks and risks experienced in connection with the environment, health and wellbeing have been investigated. The study focuses on questions concerning communication and confidence in politicians and authorities.

The project has resulted in the book entitled “National Objectives, Local Objections, Railroad Modernization in Sweden”, published by Gothenburg University. A continuation of the study is planned. Among other aspects, it will study the experiences of citizens with regard to their ability to influence planning and implementation, as well as their faith in politicians and authorities and how it affects their attitude to building projects.

In connection with a practically-oriented project at Luleå University of Technology, a study has been made of rail lubrication in cold climates. Icy conditions and snow do not in fact constitute ideal conditions for the stationary lubrication equipment that has been used to date. At

an early stage of the project it could be demonstrated that a mobile lubrication system – which gives control over choice of lubricant, lubrication intervals and the positioning of lubricant on the tops of rails – significantly increases the quality and effectiveness of the lubrication process. Tests under field conditions have been carried out at the Umeå marshalling yard, and these will be extended to include the yards at Luleå and Kiruna. The use of mobile lubrication equipment reduces the consumption of lubricant to a tenth of that of the stationary equipment, at the same time as measurements indicate that track wear decreases by approximately the same extent. Furthermore, the working environment is improved. Staff no longer have to manhandle heavy gas cylinders and grease tubes or work with sticky hoses and clogged nozzles out of doors in freezing conditions along the track.

## **UNITED KINGDOM**

Since privatization the Department for Transport (DfT) have directly funded a limited amount of rail research. The Strategic Rail Authority (SRA) was created to provide a clear, coherent and strategic programme for the development of the railways. The Secretary of State, through his Directions and Guidance to the SRA, requires it to “encourage and as appropriate commission research related to its purpose and objectives”.

Much of the SRA’s research is focused on making the case for rail, as set out in their October 2002 publication *The Value of Rail: Route Map to 2004*. This contains three key outputs: the specification by the SRA of outputs required from Network Rail to inform the Rail Regulator’s Interim Review of Charges (2003-2004); the Government’s Comprehensive Spending Review (2004) and the Review of the Government’s 10 Year Plan for Transport (2004).

The SRA research studies commenced or planned to underpin the Route Map work cover modelling and appraisal of passenger and freight services, including issues such as customer response to overcrowding, performance and reliability and the road congestion impacts of freight transfer to rail. The programme also includes a review of threats and opportunities for the rail network in the medium to long term and the development of some scenarios against which to assess the robustness of future options for the rail network and services.

The rail industry itself conducts a large amount of research. On the safety side, the Rail Safety and Standards Board (RSSB) currently manage a £75 million five-year research and development programme funded through the SRA from resources made available from track access charges set by the Rail Regulator.

RSSB’s Rail Safety Research Programme (RSRP) is designed to “deliver research that identifies achievable ways of improving safety, as a contribution to meeting the expectations of a safer railway”. The RSRP is structured around 3 main areas (catastrophic risks, risks to individuals and the management of safety). These areas are under-pinned by 7 specific topics, which are Policy and Risk, Management, Engineering, Operations, Train protection and Control, Public behaviour and Human Performance.

The recently establishment of Rail Research UK by the Engineering and Physical Science Research Council (EPSRC) provides for further research activity. Operational from 1 April 2003 it has an initial £7 million, six-year budget. It has been developed to provide a centre of

excellence for railway systems research as part of EPSRC's objective to support high quality research in the engineering and the physical sciences that is in tune with industry's needs. The 'virtual' centre involves twelve research groups from seven UK universities and will be jointly led by the Universities of Birmingham and Southampton. It will concentrate on providing a strong multidisciplinary base for railway systems research, and achieving a safer and more reliable railway whilst reducing the impact on the environment.

During 2003-2004, DfT intended to commission a small number of research projects aimed at its evidence base for its immediate policy objectives and to underpin its understanding of the perception of rail, the barriers to performance, risk aversion in the rail industry and the modelling needs for its environmental impacts.

#### **UNITED STATES OF AMERICA**

Information on rail related research and development might be found at the Federal Railroad Administration Research and Development Internet site (<http://www.fra.dot.gov/rdv30/index.htm>), including the new five-year plan.

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