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RELATIONSHIP BETWEEN TRANSPORT AND ECONOMIC DEVELOPMENT

Transmitted by the Governments of Czech Republic, Germany,
the Netherlands, Slovenia and the United Kingdom

Note: In accordance with the Working Party's request at its fourteenth session, the secretariat prepared a summary document containing replies by member Governments outlining research projects, relevant information on strategies which focus on the relationship between transport and economic development, and their experiences with developing strategies to support sustainable transport development.

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CZECH REPUBLIC

The orientation of the research work for the next period follows from the hitherto research strategy in the transport sector which was suggested in order to satisfy the requirements as provided for in the Transport Policy.

The R & D priorities in the transport sector are particularly the following:

- forecasting the transport development trends following up-to-date methods;
- addressing progressive transport technologies with the use of logistics, telematics and global navigation systems;
- development of mobile means of transport with substantive progressive and ecological parameters;
- increasing the transport safety and reliability;
- reducing the emission of pollutants, noise, congestion, waste;
- development and application of alternative fuels and energies;
- increasing qualitative parameters of transport ways;
- supporting the interoperability of conventional and high-speed railways;
- development of up-to-date safety systems;
- optimization of the traffic control and of information systems;
- application and tackling economic transport policy instruments;
- making use of renewable energy sources in the transport sector.

In the framework of the priorities referred to above, selected topics of the basic research in the transport sector are also under study. It is envisaged that universities, in particular, by involving their research staff will create the needed theoretical background for subsequent applied research.

In the transport and communications sector, it is the applied research which predominantly implements financially targeted R & D programmes. It is the question of programmes covering projects selected according to tendering procedure of annually invited tenders (the list of projects is annexed).

In compliance with the adopted transport policy principles of the Czech Republic, a programme entitled "Optimization of the transport system and its sustainable development" has been suggested. It mainly aims at focusing the R & D on ensuring sustainable mobility of persons and goods, the completion and optimization of the transport system under conditions of the European integration taking into consideration ecological and human aspects. Individual European Union transport policy measures will be transposed into the conditions of the Czech Republic. While maintaining the necessary impact of the State on the transport infrastructure development, the transport market mechanisms will be strengthened, notably in the legislative and financial fields so that the competition is strengthened and permanent economic growth ensured.

Within this context, the research programme has been divided into four subprogrammes in terms of its factual contents:

1. Subprogramme - Sustainable development, transport and environment

The programme is focused on an efficient energy use in the transport sector, the permanent reduction of adverse environmental impacts and on supporting the aspects contributing to a sustainable transport development. From this point of view, the R & D will be focused on the following fields:

- alternative energy sources for the transport sector;
- permanent reduction of energy consumption and increase in transport efficiency;
- permanent reduction of adverse transport environmental impacts;
- transportation as a life style component - individual car traffic;
- education of the public for correct behaviour in terms of the environment.

2. Subprogramme 2 - Protection of the health of population, transport safety, human factor in the transport

The subprogramme aims at the study of opportunities, relations and applications brought about, for the transport sector, by the development of telecommunications and information technologies and their rapid global deployment. The introduction of their application may basically support not only the transport technologies of individual transport modes but also the overall position of the transport within the society.

The R&D covers the following fields:

- the human factor impact in the transport safety;
- informatics and telematics in individual transport modes;
- application of logistics in transport chains;
- introduction of advanced telecommunications and information technologies into transport and traffic processes;
- education and upgrading the competence of the transport staff - a principle of permanent education;
- optimization of the process of serving the Czech Republic's territory with transport.

3. Subprogramme 3 - The development of transport infrastructure and of transport technologies

In accordance with the ongoing modernization and integration process of the European transport networks, the subprogramme aims at evaluating the future transport demands in terms of the participation of the State and, in particular, of the technological backing of the:

- transport infrastructure development in terms of safety and reliability;
- development of transfer process and introduction of advanced technologies.

4. Subprogramme 4 - social structures, forecasting and transport economics

This field represents one of the priorities as provided for in the Transport Policy chapter research. Therefore, the subprogramme aims at securing through R & D the knowledge of the status and development in the transport sector of the Czech Republic, the subprogramme to be focused on:

- financial aspects of the transport infrastructure;
- forecasting the development of the transport sector (individual transport modes, private car traffic, regional transport, etc.);
- social-economic aspects of the transport;
- application of economic instruments - harmonization of market conditions.

The subprogrammes referred to above are open and they are implemented annually by concrete projects as the transport sectors immediately require. At the same time, conditions for further development of the scientific potential of universities and other science education institutions, including business sector, will be created.

Survey of existing projects implementing the Transport Programme

	Project title
Programme	Optimization of the transport system and its sustainable development
Subprogramme 1	Sustainable development, transport and environment
	Research into alternative fuels for vehicles in terms of achieving important technical parameters
	Night and day visibility of road traffic horizontal marking and night visibility of vertical road traffic marking
	External noise of vehicles, its measurement and limiting from the point of view of current measurement methods under preparation
	Safety of children in road traffic in connection with child vehicle retention devices
	Development of retention devices for adult passengers and children in passenger cars in the case of 01 asymmetric impacts
	Methodology for impacting the behaviour of road traffic participants by means of media
	Evaluation of road traffic benefits to the society
	Research into the environmental burden caused by transportation
	Establishment of the process for implementing the Czech Republic's commitments adopted in the framework of international conferences in the field of the transport environmental impacts
	Research into the improvement of road traffic safety on road communications by means of transport-engineering and transport-organizational measures

Subprogramme 2	Protection of health of the population, transport safety and human factor in the transportation
	Development of a new generation of Internet library of national and European regulations for technical fitness and supervision over vehicle operation
	Transport information system RDS-TMC (“Radio Data System - Traffic Message Channel”)
	Information and control assistance for regional freight transport
	Application of transport-logistics approaches applicable in urban agglomerations in the Czech Republic
	Complex system of rail transport control in crisis situations
	The use of aerial pictures and of distance survey data of the Earth in the transport sector
	Telematics system of waterways and water transport
	Intelligent transport systems under conditions of transport-telecommunications environment of the Czech Republic
	Information structure of technical information for the R & O and transport sector management
	Dealing with unlawful acts in air traffic
	Participation of the Czech Republic in the Galileo project
Subprogramme 3	Development of the transport infrastructure and transport technologies
	Development and assessment of the vehicle stability
	Development of testing methods for braking the vehicles equipped with electronic braking systems
	Principles of installing traffic signs and traffic facilities on road communications
	Analysis and risk management in tunnels on road communications
	Fatigue impact on the strength of the reinforced “Heavy Bridge Sets”
	Time related dependence of the corrosion process and the issue of forecasting the life-cycle of the reinforced and pressurized concrete constructions
	Development of a methodology for monitoring the mounting of reinforced and pressurized concrete constructions
	Skeleton and filling mixtures for carriageways with heavy traffic loading
	Models of loading the bridge constructions by temperature and extraordinary loading according to Eurocode principles
	The use of modal analysis for the assessment of bridge constructions
	Bridge management system
	Prevention of alkaline reaction of the aggregate in the concrete on road constructions
	The use of fibre composites for bridge reinforcement
	Loading and loadability of road bridges in relation to European standards
	New generation bitumen carriageways in the Czech Republic
	High quality concrete for road bridge constructions
	Road management system
	Technical project of a new motor ship for the Elbe river
	New designs and materials for railway superstructure and substructure
	The use of geophysical methods for monitoring the conditions of railway lines of Czech Railways
	Installation of cement-concrete carriageways on bridges
	Organization, technique and technology for carrying out periodical technical inspections and emission measuring of road vehicles and their information system
	Unification of facilities and equipment of navigation locks and roadstead
	Utilization of waterway transport in waste management

Subprogramme 4	Social structures, transport forecasting and transport economics
	Electronic toll collection on roads
	Transport infrastructure expenditures brought about by the operation of the means of transport -railway part
	Methodology of preparing Czech Republic's standards in relation to EC standards in the field of crisis situation prevention in the transport sector and in the transport of dangerous goods
	Development of a methodology of forecasting transport performance and transport relations
	Development of transport networks in the Czech Republic until 2010 with a perspective until 2015
	Financing the servicing of the territory by transport
Programme	Development of telecommunications networks under the conditions of a liberalized market environment in the Czech Republic
Subprogramme 1	Development of the communications infrastructure for the transition to the information society
	Research into the increase of transmission capacity of the basic telecommunications infrastructure
	Research into the use from 2002 of the convergence of the network and the services in the development of communications infrastructure of the infrastructure society
Subprogramme 2	Methods and means for the development of telecommunications networks and services under optimum use of limited resources
	Optimization of the development of telecommunications networks and their parameters in the period of developed competition environment and growing communications demands of the economic and social sphere
	Research support of the development of the spectrum of telecommunications services in relation to the European and World communications environment
	Optimization of the frequency spectrum utilization
	Development of advance mobile earth and satellite communication systems and services
	Improvement of the State regulation system in telecommunications under conditions of a liberalized market in compliance with the development of EU telecommunications policy

GERMANY

At the United Nations Conference on Environment and Development, which was held in Rio de Janeiro in 1992, the international community committed itself to the concept of sustainable development and adopted Agenda 21, thereby giving itself a global plan of action for the 21st century. This document calls on the signatories to develop a strategy whose objective is to achieve development that is economically efficient, socially just and ecologically acceptable. In this context, the issue of decoupling economic growth and transport growth plays an important role.

In Germany, a state secretaries committee for sustainable development, acting as a "green cabinet", is formulating the national sustainability strategy for the Federal Government and determining concrete projects for implementing the strategy. This committee is assisted by a Council for Sustainable Development, appointed by the Federal Chancellor in April 2001. The Council is preparing contributions for the national strategy and proposals for concrete projects to implement the strategy and promote social dialogue.

The Federal Government will adopt the final version of the national sustainability strategy in the spring of 2002. It will present the German sustainability strategy at the World Summit on Sustainable Development, which is to be held in Johannesburg in September 2002. At the European level, too, a lot of attention is being focused on this topic. One of the basic statements made in the Commission White Paper on European transport policy is the objective – with reference to the conclusions adopted by the July 2001 Gothenburg European Council – of “gradually” breaking the link between transport growth and economic growth and shifting the balance between modes of transport.

Without wishing to anticipate the Council conclusions on the Commission White Paper or the final decision taken by the Federal Government on the national sustainability strategy, it is already possible to make the following basic statements:

Rising economic output is a central indicator of increasing prosperity in society. However, economic growth may also involve the rising consumption of limited resources and increasing pressures on the environment.

The Federal Government’s aim is therefore to achieve a steady, environmentally and socially acceptable increase in per capita gross domestic product. The economic and financial reforms of recent years, especially the tax reform, have decisively improved the framework for realizing this objective.

In the freight transport sector, a rise in the intensity of transport movements was apparent in the 1990s. The aim is to set in motion a trend similar to that which has already taken place successfully in the field of energy intensity. This means that the aim is to reduce the intensity of transport movements by around 5% in freight transport by 2020 compared with 1999 levels.

The following measures can help to achieve this:

- In the road haulage sector, the deployment of logistics and fleet management systems can reduce the number of avoidable empty journeys, which is still too high, thereby reducing vehicle mileage. By progressively deploying more telematics systems, it will be possible to increase the mean capacity utilization of transport movements in the road haulage sector by 2 to 3% by 2005 and by a further 2% by 2010.
- Better IT connectivity will also result in a further shift away from movements exclusively by road towards combined road/rail transport.

Following the introduction of the road user charge for heavy goods vehicles in 2003, which will replace the current time-related form of charging, charges will be based on the mileage travelled. This is designed not only to create a charging system that is more in line with the “user pays” principle, but also to shift freight traffic to the railways and the waterborne mode and to reduce empty running. The road user charge for heavy goods vehicles will thus create an incentive to make even more economical use of transport capacity.

In the rail freight sector, stepping up the active deployment of telematics can improve capacity utilization by 3 to 4%. The deployment of more telematics systems can increase the capacity of the railway infrastructure on busy main lines by 2 to 4% by 2005 and by up to 20% by 2010.

In addition to decoupling economic output and transport mileage, one of the main issues will be managing the impact of transport by increasing the share of traffic carried by the rail mode. The Federal Government's objective is to double rail freight mileage by 2015 compared with 1997. Like the Commission, the Federal Government is in favour of strengthening the competitive position of the railways. It believes that the extended opening-up of networks to all freight services, the improvement of interoperability between railway systems and the creation of a European rail freight network are instruments for strengthening the competitive situation of the railways.

In addition to the creation of a regulatory framework, however, the maintenance and upgrading of the railway infrastructure are indispensable core elements. Thus, in 2002 alone, the Federal Government is providing around €4.5 billion for investment in the federal railway infrastructure.

NETHERLANDS

The main conclusions of our research on this topic in the Netherlands are the following

1. The relation between transport and economic development is a complex one. No clear-cut answers or conclusions on the subject can be given without considering a whole range of other intertwined questions and topics. [1]
2. Transport influences economics and vice versa. In the Netherlands several models are developed to deal with this complex relationship (such as MOBILIEC, a neoclassical regional economic model, and TIGRIS). Also several special general equilibrium models are being developed right now. [2]
3. It cannot be considered as self evident that transport will benefit economic development. It will depend on the specific market conditions inside and outside the transport market. In general when prices are below marginal costs there will be over-consuming of transport. Several reports give an overview of the marginal costs of transport. [3 and 4]
4. In general the term 'economic development' not only refers to the so-called 'user benefits' but also the wider benefits and costs of transport are taken into account. In the Netherlands an integrated cost benefit analysis is used (OEEI), which takes into account user benefits of transport, wider economic impacts, external effects and the incidence of benefits and costs on user groups. [5]
5. The wider economic impacts of transport are an import issue in the Netherlands. This is mainly because it is still difficult to get a grip on them and because the incidence of benefits and costs of major transport projects could fall inside or outside the nation border. [5]

6. Recently the topic of ex-post evaluation of transport gets attention in research and policy-making. [6]
7. The relationship between transport, efficiency and evaluation practices is becoming more important because of the new accounting base of the Dutch Government. [7]

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SLOVENIA

With approximately 2 million inhabitants, Slovenia represents a limited market for its well-developed economy. Therefore, exchange, especially export, plays an essential role in all sectors and modes of production. The exchange of services does not necessarily follow the exchange of goods. Substantial development of the service sector has been noticed during recent years and this significant progress represents one of the elements of the country's economic development.

Between 1994 and 1999, growth in the exchange of services was considerably low in Slovenia, especially in comparison with the exchange of goods. This tendency continued in 2000 and in the first half of 2001. Similar trends have also been observed in the global exchange of services which increased only by 6% in 2000, while the exchange of goods increased by 12% in the same period of time.

Export and import of services in Slovenia nominally even dropped in 2000. On the other hand, export and import of goods grew more dynamic between 1994 and 2000. The above-

mentioned tendencies caused a further fall of the services share in both export and import exchange from 17.6% to 12.9% in 2000.

For Slovenian services exchange, permanent surplus is characteristic, although it decreased between 1998 and 1999. In 2000, surplus grew again and the same is expected after the analysis of the year 2001. Travelling has been the main generator of the services exchange surplus.

The structure of the exchange of services has shown slight changes and the share of services with higher value added has grown slightly (especially in construction and other business services). The share of transport services export within aggregate services export declined for more than 1% in 2000. This was mainly due to decreased export of the haulage business. Nevertheless, it is expected that the share of transport services will remain the same. Further growth in the exchange in transport services is expected when Slovenia will become a full member of the EU. Even now transport services represent 80% of all services export on the EU market.

With this observation it may be concluded that transport plays a crucial role in export of services on the EU market. Furthermore, it may also be expected that with the EU enlargement and important transport position of Slovenia, this share will remain the same.

For information, all other statistical data about Slovenia are available on <http://www.sigov.si/zrs>.

REPUBLIC OF SLOVENIA

SERVICES TRADE BALANCE BETWEEN 1994-2000 IN MILL. \$US							
year:	1994	1995	1996	1997	1998	1999	2000
SERVICES	643,0	578,2	633,4	630,3	492,5	364,1	426,3
Transport	67,6	69,3	73,3	97,2	131,2	142,3	139,3
maritime transport	27,4	37,0	39,2	40,6	43,3	30,4	21,9
air transport	17,6	12,9	3,3	5,8	2,5	13,4	18,3
road transport	54,6	48,9	51,2	55,7	65,2	73,3	81,1
railway transport	7,8	0,3	4,9	17,3	26,2	21,2	28,7
other modes of transport	-39,8	-29,8	-25,4	-22,1	-6,0	3,9	-10,5

year:	1994	1995	1996	1997	1998	1999	2000
Services share in trade (in %)	17,5	16,5	17,2	16,5	15,8	15,7	15,2

EXPORT							
year:	1994	1995	1996	1997	1998	1999	2000
SERVICES together (in %)	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Transport (in %)	26,9	24,9	22,5	22,7	26,6	27,4	26,2

IMPORT							
year:	1994	1995	1996	1997	1998	1999	2000
SERVICES together (in %)	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Transport (in %)	35,9	30,1	27,1	25,9	26,6	24,6	24,2

EXPORT	Index 2000/1994 (in%)		
Transport	101,3		
maritime transport	108,3		
air transport	149,2		
road transport	170,1		
railway transport	70,1		
other modes of transport	74,0		

IMPORT	Index 2000/1994 (in%)		
Transport	84,4		
maritime transport	135,7		
air transport	188,8		
road transport	199,1		
railway transport	54,1		
other modes of transport	63,7		

Source: dr. Metka Stare, Impact of liberalization in the field of non-financial services trade, University of Ljubljana, Faculty for Social Science, Centre for international relations, November 2001

UNITED KINGDOM

There has been various research undertaken in the United Kingdom on the economic development impacts of transport infrastructure. Our most recent, comprehensive research into this topic was published in 1999 by the Standing Advisory Committee on Trunk Road Assessment (SACTRA). Their “Transport and the Economy” report sets out the relationships between economic growth and transport, the measurement of these impacts in the appraisal system and the relationship between growth in GDP and transport intensity. This report has had a strong influence on the way transport appraisal is carried out in the UK. The report is published on DTLR website at: www.roads.dtlr.gov.uk/roadnetwork/sactra/report99/index.htm. In addition to the report, many supporting documents are also available on the website.

The Department is also currently undertaking further research on economic development impacts following the recommendations of the SACTRA report.
