

Overview of transport policy and research priorities in the ERA

Options for trans-national cooperation in transport research programming

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For further information on this report,
please contact

Task 1.2 leader

Ministry of Transport, Public Works and Water
Management
P.O. Box 20901
2500 EX THE HAGUE
The Netherlands
Tel. +31 703517678
www.verkeerenwaterstaat.nl

Ad. F. van Ommen
www.transport-era.net

Main author

KiM Netherlands Institute for Transport Policy
Analysis
Jan van Nassastraat 125
P.O. Box 20901
2500 EX DEN HAAG – The Netherlands
Tel. +31 703511970
www.kinmet.nl

Sieds Halbesma

For further information on the ERA-NET TRANSPORT programme,
please contact

Coordination and Secretariat

TÜV Rheinland Consulting GmbH
Research Management
TÜV Rheinland Group
Am Grauen Stein
D-51105 Köln
Phone +49 221 806 4141
Fax +49 221 806 3496
www.tuvpt.de

Oliver Althoff (Coordinator)
www.transport-era.net under Contact

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Written by: Sieds Halbesma, Willy Diddens
Checked by: MS

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List of content

Summary

1.	Introduction	5
2.	National transport policy and research priorities	6
2.1.	<i>Austria.....</i>	<i>6</i>
2.2.	<i>Denmark.....</i>	<i>7</i>
2.3.	<i>Finland.....</i>	<i>8</i>
2.4.	<i>France.....</i>	<i>9</i>
2.5.	<i>Germany.....</i>	<i>10</i>
2.6.	<i>Netherlands</i>	<i>11</i>
2.7.	<i>Poland.....</i>	<i>13</i>
2.8.	<i>Sweden.....</i>	<i>15</i>
2.9.	<i>Switzerland.....</i>	<i>16</i>
2.10.	<i>United Kingdom.....</i>	<i>17</i>
3.	Trans-national and supranational transport policy and research priorities.....	21
3.1.	<i>Trans-national policy and R&D priorities</i>	<i>21</i>
3.2.	<i>Supra-national R&D priorities</i>	<i>24</i>
4.	Options for trans-national cooperation	26
4.1.	<i>Planning, modelling and analysing tools</i>	<i>26</i>
4.2.	<i>Road safety</i>	<i>26</i>
4.3.	<i>Urban transport.....</i>	<i>27</i>
4.4.	<i>Alternative propulsion systems and fuels</i>	<i>28</i>
4.5.	<i>Logistics.....</i>	<i>28</i>
4.6.	<i>Capacity management.....</i>	<i>29</i>
4.7.	<i>Inclusive mobility</i>	<i>29</i>

Annex Definitions objectives of transport policy and transport research

Summary

ERA-NET TRANSPORT promotes and initiates trans-national cooperation in transport research programming. Relevant basic information for the process in ENT is insights and overviews of transport policy and research priorities. Based on this information new initiatives can be developed, both from a bottom-up and top-down process. The trans-national transport policy and research priorities are listed in the following table:

Accessibility	The main policy goal is “providing mobility options for the people“ The general approach in the ENT countries is to reach this goal is to focus (1) the reduction of congestion with specific focus on enhancing reliability and increase the predictability of the transport system and (2) Land use planning and transport with specific interest for reinforcing multi-polarity inside regions and ensure better mobility in less dense areas and making multiple use of areas.
Economic development	The main goal is the “strengthening local, regional and national development to reach national competitiveness”, with specific focus on research to strengthen the transport industry competitiveness, support successful regional and economic development, fair and non-discriminating competitive conditions and efficiently operating logistics system and facilitate growth of the mainports, brainports, greenports and urban economic areas.
Efficiency	To address this objective the main goal is “a more efficient transport systems for passengers and goods. Focus areas are car pooling, stimulation of a better and more efficient use of the public transport to decrease the alternatives for mobility by car, more efficient logistic freight transport systems, by co-modality, but also long-term allocation of financing availability of selection of financing schemes
Environment	The main goals regarding environmental improvements refer to CO2 reduction, the improvement of local Air Quality and reducing the impact on ecosystems and landscape (reduce emissions and pollution) and reduce the impact of climate change on transport infrastructure.
Safety and security	The main goals are the decrease of accidents, especially among children, elderly and vulnerable users. Some countries aim to zero tolerance in the road but also the rail-, maritime- and air traffic. A second important goal is the improvement of passengers and freight transport security, for instance by the optimisation of transport of hazardous goods.
User needs	This objective presents three main goals. First, the improvement of the quality of the transport system, especially in the cities. Secondly, facilitate barrier-freeness in transport. Finally, “transportation systems for ALL users”, which takes into account new societal demands in transport, provides physical accessibility for all – elderly and disabled.

Based on these priorities the following options for trans-national cooperation in ENT for 2009 and 2010 have been identified:

1. Planning, modelling and analysing tools
2. Road safety
3. Urban transport
4. Alternative propulsion systems
5. Logistics
6. Capacity management

1. Introduction

ERA-NET TRANSPORT (ENT) is a sustainable network of national transport research programmes in Europe. ENT is also a service platform for programme managers, which provides the required framework to initiate and implement trans-national cooperation. It actively provides support and knowledge about contacts, national programmes, suitable cooperation procedures and programming practices for successful transport research. At present 13 EU Member States and associated countries participate in this European initiative and more are about to enter the network.

ENT promotes and initiates trans-national cooperation in transport research programming. Participating countries in the programme can develop joined financing activities. Relevant basic information for the process in ENT is insights and overviews of (1) transport policy and research priorities and (2) the running and intended transport research programmes, both on national, trans-national and supra-national level in the ERA. Based on this information new initiatives can be developed, both from a bottom-up and top-down process.

This report presents the results of an inventory of the national, trans-national and supra-national transport and research priorities. The next chapter describes the national priorities. Chapter 3 presents the trans-national and supra-national priorities. Based on these priorities chapter 4 indicates the options for trans-national cooperation in ENT for 2009 and 2010.

The priorities presented in chapters 2 and 3 are listed according to the 6 ENT objectives for transport policy and research (definitions in Annex 1):

1. Accessibility
2. Economic development
3. Efficiency
4. Environment
5. Safety and security
6. User needs

2. National transport policy and research priorities

This chapter presents the national priorities regarding national transport policy and national R&D of 10 ENT countries. Each country is described in one paragraph indicating its policies and research areas on the 6 ENT objectives for policy and research

2.1. Austria

The Austrian ENT partners is the Federal Ministry for Transport, Innovation and Technology (BMVIT).

BMVIT has set itself the priority task of securing and strengthening Austria's excellent position in the years to come. Its main emphasis is on further improving the performance and efficiency of the Austrian innovation system as a whole. To this end, structural changes to increase the competitiveness of Austrian industry and foster knowledge-intensive sectors and services will be as important as the provision of adequate funding for research and development. The main activities in the field of research are (1) co-operation between industry and the scientific community, (2) orientation towards key technologies, (3) building on the strength of Austrian research, (4) support to business start-ups in the high-technology sector and (5) providing an attractive location for international research centres. The general BMVIT policy goals are (1) Achieve R&D Lisbon goal (3% R&D spending of GNP), (2) Increase collaborative FP7 project(s) participation, especially of SME's and (3) Strengthen human research capital and foster collaborative research between universities, industry and other research institutes.

Accessibility

Improve access to the network of public transport by taking into account rural areas. Supporting better environments for pedestrians and cyclists.

Economic development

Strengthening the position of Austria's transport technology industry and support all sectors by providing efficient transportation opportunities. Support the set-up of solid cooperation networks with other countries.

Efficiency

Minimize infrastructure costs (investment and maintenance), improvement of the collaboration of technological components within different transport system and promotion of the integration of the individual carriers and transport systems to an overall transport system. Conceive the requirements for future transport systems or mobility solutions and use new scientific-technologic options for the improvement of systems and components. Develop energy-efficient components and systems. Limit road cargo transport by innovative logistic concepts and transfer cargo transport to the modes rail and water (river Danube).

Environment

Develop new technologies with significant contribution to archive Kyoto goals (especially to fulfil the CO₂ reduction goals of Austria in the frame of EU target definitions). Increase the use of alternative propulsion systems and fuels.

Safety and security

Reduce traffic accidents (especially among children and elderly).

User needs

Facilitate easy use of transportation systems for ALL users and meet the changing societal demand in transport. Facilitate innovations for barrier-free transportation systems.

2.2. Denmark

The Danish ENT partner is the Ministry of Transport (DKMT).

Accessibility, Efficiency and Economic development

The transport system must ensure that the population has access to work, shops, public services and leisure-time activities, and all citizens must be ensured efficient mobility through public and private transport solutions. Denmark must offer trade and industry excellent transport links to the surrounding world, and traffic congestion should only occur during peak periods. High traffic flow should be ensured for public and private transport, including cycle and pedestrian traffic. The public expects to have safe, flexible and swift access to workplaces, shops, recreational activities and holidays. An efficient, modern transport system offering high traffic flow is necessary to provide the mobility required for meeting these demands. Accessibility and efficient mobility are welfare benefits that must also be secured and developed for future generations through Denmark's transport policy.

Improved co-ordination of timetables between waterborne transport and inland transport is needed on a European scale; Improved knowledge of the driving forces behind transport demand. Research for the alleviation of congestion, both on rail and road, efficient use of the infrastructure and Intelligent Transport Systems (ITS). Research is being undertaken into the central aspects of developments in transport and the measures that can steer transport options in the direction of sustainable development. Examples of the research are choice of type of transport, economic analyses for transport, and integrated analyses of economy, the environment, and road safety. The political support for improving intermodality on a European level is too limited; Improved co-operation between operators is needed. More efficient freight distribution (city logistics etc.) through a combination of push and pull parameters.

Environment

The Danish Government has set up a committee to examine possibilities for effective solutions to reduce climate-gas emissions, including from transport. The Danish Government's long-term target for 2030 is reduction in the transport sector of CO₂ emissions by 25 percent, compared to 1988 levels. This ambitious target assumes that economic growth is decoupled from developments in CO₂ emissions from the transport sector. The transport sector must contribute to fulfilling Danish obligations to reduce CO₂ emissions by 21 per cent from 1990 to 2008-12. The Danish Government will consider possible measures to limit CO₂ emissions as a basis for stipulating benchmarks for the transport sector's CO₂ emissions up to the first budget period 2008-12 and in the longer term. A special effort has been made in urban areas to minimise the effects of traffic on city and town environments. By the year 2010, the Government aims to reduce emissions of nitrogen oxides and hydrocarbons by 60% compared to the 1988 level and to halve emissions of particles from urban traffic during the same period. Traffic is the most significant source of noise pollution in Denmark. In particular, noise from road traffic is today a

widespread health and environmental problem, while noise pollution from railways has been limited considerably during the 1990s. In light of this, the Danish Government has set up a "Road Noise Group" to prepare a broadly based proposal for a road-noise strategy. This strategy will include information regarding the feasibility of achieving a significant reduction in the number of dwellings severely affected by road noise.

Safety

The goal is to improve safety in road transport, reduce human and social costs, the elderly in traffic and traffic safety, bicyclist safety and ITS and safety.

The goal of the Danish Road Safety Commission's Action Plan for 2000 is to reduce road casualties (fatal and serious injuries) by 40% by the end of 2012. The Government intends to realise this goal through measures to constrain traffic speeds in particularly dangerous and exposed places, and encourage the wearing of seat belts, improvements in road design, marking and traffic development, as well as more information, and better training for road users.

User needs

A number of long-term investments have been made with the aim of future expansion of the road network and public transport systems. The plan is to boost the quality of public transport by investing in new high quality trains nationwide and in the Metro and the Circle Line in Copenhagen, and urban railways in Aarhus and Aalborg. The road traffic investments are earmarked for motorways and expressways with a view to creating a viable network of main roads, which provide maximum road safety at minimum inconvenience to the population.

2.3. Finland

The Finnish ENT partner is the Ministry of Transport and Telecommunications.

Accessibility and User needs

The main goal is to promote public transport and pedestrian and bicycle traffic as attractive alternatives, objectives to be reached by 2020: 1) The number of journeys in public transport has substantially increased and the number of car journeys is not growing. 2) The need for transport has decreased due to dense urban structure and the coordination of land-use and the transport system. This increases accessible public transport and creates more favourable conditions for bicycle and pedestrian traffic. 3) Public transport is an attractive alternative in large urban regions. Land-use development is based on public transport services.

The R&D priorities: Long-term regional public transport development programmes. Public transport subsidies for large cities. Study on demand-responsive public transport, ridesharing and "neighbour aid" to supplement decreasing regular traffic services. Employer-subsidised commuter ticket. Principles for purchasing public transport. Guidelines for promoting pedestrian and bicycle traffic.

Economic development

Supporting successful regional and economic development, objectives to be achieved by 2020: 1) The transport network provides the possibilities for developing and maintaining vitality to the various parts of the country. 2) The logistics system in Finland operates efficiently and provides companies with possibilities for competitive operations despite additional transport costs caused by long distances and severe climate. 3) Transport markets have fair and non-discriminating

competitive conditions and significant barriers to competition have been removed. The transport sector in Finland is competitive in globalising markets.

R&D priorities: Need for provision of basic transport infrastructure: lower-class roads, private roads. Evaluation of needs to expand railway network capacity. Ferry service needs and renewal of vessel fleet. Preparation of governmental logistics strategy including R&D needs. Measures to secure international competitiveness of Finnish shipping business. Preconditions for opening competition in railway traffic.

Efficiency

Long-term allocation of financing, objectives to be achieved by 2020: 1) Long-term sustainable approach in transport financing. 2) Availability of versatile selection of financing schemes which supplement budget financing. R&D priorities: Life-cycle model for transport investments. Principles for PPP- financing for construction of transport connections e.g. to significant mining projects and participation of municipalities in investment costs in exchange for land-use benefits received. Preconditions for satellite-positioning-based road user charges in the next decade.

Environment

Climate change, objectives to be achieved by 2020: 1) The number of journeys in public transport has substantially increased and the number of car journeys is not growing. 2) The need for transport has decreased due to dense urban structure and the coordination of land-use and the transport system. 3) Public transport is an attractive alternative in large urban regions. Land-use development is based on public transport services. --- According to EU Commission's Climate Action and Renewable Energy Package, Finland should reduce emissions from traffic by 16% during years 2005-2020. The Finnish Government will present concrete national goals in the Climate and Energy Strategy and in the Foresight Report on Climate and Energy policy in Autumn 2008.

R&D priorities: Studies and demonstrations of possible measures, e.g. promoting urban infills, promoting public transport by e.g. favouring rail investments, increasing use of renewable energy resources, full utilisation of vehicle technology, transport pricing, influence on attitudes.

Safety and security

Traffic safety, objectives to be reached by 2020: 1) Fewer than 150 people per year are killed in road traffic accidents. In 2006 the figure was 330. Tolerance in rail-, maritime- and air traffic is zero. 2) Cross-administrative cooperation in safety works well. --- Mid-term goal is less than 250 fatalities in 2010. R&D priorities: Prevention of problems like drunken driving, obeying traffic rules, failure to use safety equipment, speeding, insecurity of unprotected traffic. Special attention given to elderly persons, children and people with mobility impairments. Financing for thematic (safety) projects e.g. median barrier programme for main roads. Opportunities offered by new technology e.g. traffic control, traffic safety systems, participation of municipalities. Safety evaluation methods of transport projects. Driver education renewal. Regional safety improvement measures. Development of cross-administrative cooperation. Preparation of traffic safety plan 2011-2015 with R&D needs.

2.4. France

The French ENT partner is Ministry of Ecology, Energy, Sustainable Development and Spatial Planning (MEEDDAT)

Accessibility, Economic development and Efficiency

At the European and national level the objectives are to keep developing a performing railway network for passengers and goods transport. At regional level the goals are to reinforce the multi-polarity inside regions; at local level ensure better mobility in urban areas:

- More efficient transport systems for passengers
- Promote inter-modal shift towards mass transport
- More efficient transport systems for goods
- Improve traffic flow in freight corridors
- Inter-modal shift

Better access for disabled people: access to transports, stations and ergonomics, price. Alternatives for personal cars in urban peripheries. Traffic management for existing infrastructures optimization and multimodal information. Reliability to face a more and more intensive use. Road freight transport alternatives (railway, water lanes, coastal navigation) and intermodality efficiency. Stimulate transport industry competitiveness

Environment

Priority is given to public transport over 1500 km of bus routes, tramlines and cycle lanes to be built. For rail the objective is the construction of 2000 km high-speed rail lines by 2020 and 25 % increase in rail freight by 2020, upgrading the conventional rail network. Further goals are the development of "rail motorways", sea motorways and inland waterways transport. Regarding new private cars, the introduction of the use of eco-tags is envisaged. Regarding the development of clean vehicles, ecotax is foreseen based on mileage for trucks using the non-concessionary road network. Regarding the protection of natural resources, sea and ecosystems from ships pollution.

Reduce energetic dependency;- Diversify energetic supply. Reducing local pollution (air, noise) and impacts on ecosystems and landscapes. Fight greenhouse effect.

Safety

For road safety the objective is to reach less than 3000 persons killed on roads before 2012, which means fighting against the absorption of alcohol before driving, improving safety for the most vulnerable users (pedestrians, motorcycles) and fighting violation of highway code, especially with improving drivers training. For freight transport this means improving safety for dangerous goods.

Keep progressing on road safety: technology and behaviour. Increase passengers and freight transport security.

User needs

Improvement of the quality of transport services especially for freight transport by rail and public transport. Providing accessibility for all (elderly, disabled) to public transport and more generally urban transport by implementation of the law of 11/02/05 facilitating urban mobility for handicapped persons; Development of multimodal information systems, electronic ticketing, and real time travel information for users. Involving users representatives for research orientation.

2.5. Germany

The German ENT partner is the Ministry of Economics and Technology (BMWi).

Accessibility

Reducing bottlenecks at freight hubs by focussing on "cargo handling technologies and automation", "ICT", and "process control". Congestion-free with intelligent transport systems by focussing on "high-quality traffic information", "cooperation and communication on roads", and "technologies for cooperative traffic management. Building and preserving ways for the future by focussing on "life-cycle-cost oriented maintenance of streets and rails", "intelligent road works management", and "safety and security of transport infrastructures"

Efficiency

Efficiency improvement and environmental protection for railways, lorries and ships. Optimised transport through cooperation and networking by focussing on preventing empty drive and improved capacity utilisation, reducing detours, accelerating transport operations and utilisation of inter-modal transport chains with focus on railways and waterways.

Economic development

The transport sector is of vital economic and social importance for Germany. The satisfaction of diverse mobility needs in professional and private life is a substantial condition for economic growth and prosperity, and for the unhindered participation in social life.

Environment

Climate and noise protection by focussing on alternative Fuels and Propulsion Systems, new materials and procedures in vehicle and engine technology and less traffic noise.

Safety and security

Affordable safety requirements in the logistics sector. Save travelling by focussing on driver assistance, innovative safety systems in the railway sector and improvement of subjective security perception.

User Needs

Development of sustainable mobility services by focussing on new transport services from door to door, Innovative technologies for an improved accessibility in public transport and mobile by foot - in professional and private life.

2.6. Netherlands

The Dutch partner in ENT is the Ministry of Transport, Public Works and Water Management (MinVenW).

Accessibility

In 2020, train passengers will know when they will have to leave in order to arrive on time. A target has been set to operate approximately 90% of all trains. This predictability is the largest benefit of the traffic and transportation policy up to 2020. In the years to come, the reliability of roads, rails and waterways must increase. Road congestion must be reduced and many more travellers need to arrive on time at their destination. Targets are set to reach a reliability of 95% "on time" in 2020

for a trip on the main road network. In this case “on time” means 20% more or less than the expected travel time.

To increase accessibility in the Netherlands innovations are crucial: innovations of products and processes. Three main areas are dedicated to introduce the innovations on this objective in the transport system, (1) "to build smarter and quicker", (2) "making multiple use of areas" and (3) "increasing the capacity of existing infrastructures"

Economic development and Efficiency

The economic structure of the Netherlands will be reinforced by investments in the facilities and accessibility by road and rail of the mainports Rotterdam (maritime and inland water transport) and Schiphol (air transport) the greenports (agricultural centres), brainports (technological centres) and the national urban networks. For the freight transport, the Ministry will stimulate the market to reach more efficient logistic freight transport systems. To reach this goal it will support shippers to use possibilities for transport reductions and effort is put on bundling of freight transport. Furthermore will it engage the market in exploring the possibilities to increase the innovation-capacity of the logistic sector on a structural basis. This will also encourage the competitiveness and contribute to a safe, sustainable and efficient freight transport. For public transport, the Ministry will stimulate a better and more efficient use of the public transport to decrease the alternatives for mobility by car and increase the use of by public transport itself. Together with regional and local authorities organisational and technological innovations will be introduced.

To increase the efficiency of the transport system and support the economic development of the national industries, well functioning supply chains are inevitable. Two main areas for innovations are identified, (1) increasing the operational logistics and services and (2) supporting the national position in the entire supply chain and its related high value supply chain services.

Environment

The Dutch government has set ambitious targets for improving air quality, aiming to reduce CO₂ emissions in the Netherlands to 30 percent lower than 1990 levels by the year 2020. It intends to lobby at European level for an adjustment to the standard for CO₂ emissions from private cars. Plans also include increasing innovation in new and sustainable fuels and vehicle technology. By 2015 the Dutch government will spend at least EUR 900 million on measures including soot filters and cleaner local transport. The Dutch government is also working to reduce pollution caused by aviation and shipping. To reach reduction of CO₂ emissions in the Netherlands goals are set to reach a reduction of 30% until 2020 in relation to the 1990 emissions. The negative environmental impact of increased mobility should be limited, by stimulating innovative solutions in road transport, shipping and aviation.

To improve the environmental conditions caused by the transport system, innovations are focussed on measures to reduce noise and emissions. Noise reducing measures are for instance anti-noise developments and new forms of "noise walls". The Netherlands is encouraging pilot projects for the reduction of emissions and will stimulate early markets for innovations that contribute to sustainable mobility.

Safety

For traffic safety, the Ministry has set itself the target of reducing the maximum number of road fatalities to 750 and the number of road injuries requiring hospitalisation to 17,000 by 2010. The drop in road fatalities over the past two years motivated the Minister to lower the previous target of 900 to 750. In order to achieve this, the Ministry of Transport, Public Works and Water Management has put together a package of measures.

The national government and Dutch Railways are investing €230 million in a programme to make railway crossings safer. In addition, the Ministry has drawn up the 2003-2007 Multi-Year Plan for Traffic Safety Campaigns. Focus areas are (1) Alcohol, drugs and driving, (2) Blind spots, (3) Safety in and around your car, (4) Safety in and around lorries and (5) Seat belts and child booster seats. For external safety, the transport of hazardous goods must be organised more effectively in the future. The ministry will examine the complete chain from production until use of dangerous goods, together with regional and local governments, infrastructure managers and the private sector. On this basis and transport and spatial developments it will indicate a basic network for the transport of dangerous goods, which will set preconditions for spatial development. Furthermore, attention will be given to prevention at the source, smart use of space and a comprehensive organisation of calamity management.

2.7. Poland

The Polish partner in Ent is the National Centre for Research and Development (NCBiR).

Accessibility and Efficiency

It has been planned to develop and construct an integrated system of transportation based on highways and expressways serving to main transport corridors (incl. TEN-Ts) and ensuring links between the biggest cities in Poland. In the perspective of the years 2020-2025 high standards of transport accessibility for traffic from the EU states and neighbouring countries to all agglomerations, medium-sized cities, industry-port metropolis, regional centres and the areas of tourist attractions concentration will be secured. In plans of the network construction significant tourist attractions will be included as well as unified system of their signing along the roads.

Improvement of transport accessibility and quality of transport should be a mark of higher living standards of Polish people. Additionally legal bases will be established to introduce city-centre car fees in order to regulate accessibility (i.e. to the valuable historic sites), protection of the city centre against heavy traffic and improving the effectiveness of public funds expenditure for public transport.

Modernization and development of the infrastructure of Polish airports ahead of the demand, in order not to reduce the air transport development, improving the accessibility of air transport and eliminating the isolation of regions; in the first phase the existing infrastructure will be used, and then the programme of its reconstruction will be initiated, especially in regions facing the worst access to air transport.

Poland will take care of efficiency improvement through radical improvement of infrastructure condition with reduction of access costs, improvement of transport quality in cities, improvement of public transport competitiveness in relation to

individual transport and improvement of pedestrian and bicycle traffic conditions, with a special concern to disabled people. The main goals are (1) to enable and facilitate transport connectivity with the EU states and neighbouring countries, (2) to make the network of roads and railway more accessible for private and business users of transport and (3) to channel traffic in agglomerations, regional centres, metropolis and cities as well as the areas of tourist attractions.

To improve management in the transportation sector (1) to introduce more efficient technologies, (2) to increase public financing for maintenance and modernization works, (3) to achieve sustainability between road and rail transport, (4) to conduct a policy aiming to ensure equal opportunities of all carriers in various branches of transportation mainly through the system of tax incentives and support for inter-modal transport and (5) to improve the quality and competitiveness of public transport in metropolitan areas and regions, i.e. through implementation of facilitations and incentives (co-financing) for organizing metropolitan rail network, development and modernization of technical infrastructure.

Economic development

The crucial task till the year 2025 is modernization of the basic transport network and ensuring the high quality of transport services in order to facilitate the economic development of the country. Efficient transport system should contribute to the improvement of living standards but also to the increase of foreign investment in Poland. It does not mean although to resign from the idea of controlling the increase of transport-based economy, according to the rule of sustainable development.

The important objective is to support the economic development of eastern regions of Poland achieved by construction and development of the integrated and useful transport network in eastern voivodeships of Poland.

The objective is to modernise the transport network in order to ensure the sustainability, as well as the implementation of the national goals (EURO 2012). The development of the country depends on the efficient and modern transport infrastructure and to facilitate the economic development of eastern regions of Poland.

Environment

Environmental-friendly transportation is a priority of Polish transportation policy. This objective should be attained through support for public transport in metropolitan areas, rail transport, water transport (sea and inland) and inter-modal transport, what should, in consequence, lead to better sustainability of transport through increasing the participation of those means of transportation, which are alternative to road transport, in transport of people and goods, reducing the negative impact of transport on environment and reducing the noise and traffic jams.

To meet the EU policy criteria in terms of the environment protection, to develop the network of roads with the respect to nature and its heritage and to attain better sustainability of transport through increasing the participation of different means of transportation in order to reduce the negative impact of transport on environment and reducing the noise and traffic jams.

Safety

The National Programme of Road Traffic Safety GAMBIT 2005 will ensure the possibility to intensify the prevention activities in order to protect life and health of

road transport users. The expected effect of the programme will be saving more than ten thousands human lives and avoidance of injuries of thousands of people. Significant improvement of safety and security on Polish roads will also influence the improvement of our image on the international scene, what benefits with raising the economic and tourist attractiveness of Poland.

The following actions shall contribute to the improvement of transport users safety:

- Programme of dangerous road sites removal
- Campaign Last Escapade – convincing passengers to use seat belts;
- Construction of modern airports, designed to ensure the security of the travelling public and people employed in the transport sector
- 24-hour courts for the drunken drivers
- Construction of highways and expressways
- Intensification of prevention and control in road traffic
- Reconstruction of extremely dangerous sites on state roads as well as traffic tranquility in urban areas
- Facilitation of life-saving
- Monitoring of the safety in road transport
- Organising promotion campaigns in medias

To reduce the number of deaths caused in road accidents to the maximum number of 2.800 people in 2013 and 1.500 people in 2020. The transportation system should be designed, developed, operated and managed system transport in order to protect life and health of its users.

2.8. Sweden

The Swedish ENT partner is the Swedish Agency for Innovation Systems (VINNOVA). The Swedish political aims regarding transport consist of one overall goal and six subsidiary goals. The overall goal is to secure a socially, economically efficient and long-term sustainable transport system for citizens and industry in the country as a whole. The six subsidiary goals are: (1) an accessible transport system, (2) a high quality of transport, (3) safe traffic, (4) a good environment, (5) a positive regional development and (6) a transport system based on equality.

Accessibility, User needs and Efficiency

Based on the principle that the transport system should be managed by and serve the interests of women and men equally, the aim is to facilitate travel by promoting a sustainable transport system that attends efficiently the demands of different groups of passengers and goods.

To Increase accessibility and attend the users needs, the transport system must be efficient. By working in partnership with the Swedish vehicle and component industry, promoting renewal and innovation in transport systems and logistics, solutions will be created to optimise the use of vehicles and infrastructure and benefit both citizens and the business sector.

Economic development

To support the economic development, Sweden is investing in research and technological and IT innovations that will increase the competitiveness of national automotive industries. Two major areas were identified: (1) development of a safe and sustainable automotive engineering system, (2) research and development of new materials and technologies.

Environment

The principal goal is to reduce the environmental impact of the transport system. That includes vehicles emissions (both air pollutants and noise), fuel consumption, evaporation and emissions from tyres and road surface. Three major measures were identified: (1) implementation of water protection measures, (2) development of new environmentally friendly methods and working procedures for constructions and maintenance of the transport infrastructure and (3) conduction of research and development in order to produce environmentally sustainable solutions.

Concernment about the environment is an important part of Sweden's profile and the transport system must follow determined parameters to meet the requirements for a good and healthy environment. Three major areas are identified: (1) search for alternative fuels, (2) efficient energy transformers and (3) reduction of emissions.

Safety and security

Sweden's long-term traffic safety goal is that there should be no fatalities or serious injuries in road traffic. This goal was ratified by the Swedish Parliament in 1997 and is based on the "Vision Zero" programme. The country is already among those with the lowest number of traffic fatalities in relation to its population. This is not enough, however. Swedish road safety work is based on a refusal to accept human death or lifelong suffering as a result of road traffic. Prerequisites for safe traffic are: (1) not mixing alcohol and driving, (2) everyone in the vehicle must wear a seat belt, (3) all vehicles must drive with at least the dipped headlights switched on, even in daytime and (4) Sweden is a densely-forested country where wildlife accidents are all too common and wildlife warning signs must be taken seriously.

To improve safety and security, innovations are focused on measures to prevent fatalities and serious injuries as the result of accidents. The key areas are active safety, injury-prevention measures and development of a sustainable transport system.

2.9. Switzerland

The Swiss ENT partner is the Federal Department of Environment, Transport, Energy and Communications (DETEC)

Accessibility and Economic development

Combined and well organised transportation connections, inland and with neighbouring countries are fundamental for the economic development of Switzerland. Therefore priority is given to the international aspect to implement the Swiss infrastructure networks into the European networks, especially for the rail infrastructure. Furthermore priority is given to the national level of the transport system, where congestion danger the quality of life of the citizens and options for competition for the Swiss companies. This element comes forward especially in the agglomerations where economic development is concentrating.

Efficiency

Despite its economic value, the possibilities to extent the transport infrastructures are limited in Switzerland. Strict preconditions are the financial budgets of the government and the environmental pressure from the society. Therefore the Swiss Department of the Environment, Energy, Transport and Communications (DETEC) gives priority to optimise the use of the existing infrastructure before panning and building of new infrastructures, especially the increase of capacity of road and rail infrastructure use in trans-alpine traffic. An important tool to reach this goal is the extensive use of telematics in traffic.

Promotion of inter-modality in goods and passenger transport: Optimum connections between human-powered mobility, rail, bus, motor vehicles and air transport, effectiveness and costs of measures aimed at shifting the transport of goods from road to rail, and promoting the use of combined freight transport and principles for international considerations in passenger, goods, road and rail transport. Enhancement of capacity and optimum utilisation of capacities of all forms of transport: Principles of telematics systems, compatible information systems in public and private transport and specification of infrastructure capacities.

Environment

The Swiss sustainable transport policy combines the economic and environmental goals. Therefore priority is being given to implement a system in which the external costs (i.e. health and environmental damages) of transport is included in the total costs.

Safety

Protection against natural hazards, technical risks and risks due to human activity, is one of DETEC's significant tasks. As far as possible it is based on a uniform safety philosophy and an appropriate risk policy. DETEC strives to ensure a high degree of safety in air, rail, cable car and ship transport, now and in the future. Safety in road traffic should be increased further.

Enhancement of overall safety: Planning of transport safety with short-term, medium-term and long-term measures, measures aimed at enhancing safety, continual development of safety philosophy, quality assurance systems and protection against criminal acts (security)

User needs

Public land transport has three main tasks regarding the optimisation of the user needs. It guarantees countrywide basic service, it is the main mode of transport within and between the conurbations and in European long-distance traffic. Furthermore does it relieve the roads of freight transport, in particular over long distances and in national passenger traffic the proportion of public transport within total traffic volume should be increased.

2.10. United Kingdom

The UK partner in ENT is the Department for Transport (DfT).

Accessibility and Efficiency

UK needs a transport network that can meet the challenges of a growing economy and the increasing demand for travel. This means coherent transport networks with:

1. the road network providing a more reliable and freer-flowing service for both personal travel and freight, with people able to make informed choices about how and when they travel
2. the rail network providing a fast, reliable and efficient service, particularly for interurban journeys and commuting into large urban areas
3. bus services that are reliable, flexible, convenient and tailored to local needs
4. making walking and cycling a real alternative for local trips and ports and airports providing improved international and domestic links.

UK continues to develop its railway system to improve performance, drive down costs and get better value from public spending. Better traffic management will ease

congestion on our road network. Where it makes sense, economically and environmentally, we will add capacity to our road network. Where we do so, we will take steps to ensure that the benefits are locked in, and that the design is sympathetic to the environment. Options we are exploring include, for example, measures such as tolling on new roads and the introduction of carpooling (High Occupancy Vehicle) lanes, where these make sense. The Government is committed to supporting industry by helping to ensure that goods can be moved freely, reliably and efficiently. The DfT strategy will provide a framework within which the freight industry can continue to underpin our economic prosperity.

To reduce congestion and enhance reliability, there are cost-beneficial and effective measures that can be taken. Improving the understanding of how we can deliver these measures and how users might respond is a key part of our evidence agenda. DfT needs therefore both to improve the performance of current networks and optimise investment in new infrastructure, including looking for ways to reuse existing technology infrastructures (e.g. telecommunications) for transport schemes. The research priorities are to improve understanding of how changes in land use, demographics and social habits will affect future demand for transport, develop analyses to ensure investment in infrastructure and technology delivers best value for money, identify how to lock in infrastructure benefits so as not to induce additional demand, assess the potential of new transport modes to reduce congestion, encourage technology transfer from outside the transport sector and improve exploitation of transport-related data and the development of new applications.

Economic development

The ability to travel offers all of us very real benefits and extending mobility is important in building an inclusive society. The transport system helps to underpin the international competitiveness of the economy. However, experience suggests that over time people's need and desire to travel, for business or leisure, will increase.

By facilitating the national and international free movement of people and goods, transport contributes to regional and national prosperity. In turn, when the economy grows the demand for goods and therefore for their transportation will increase. DfT needs to improve or build new analytical tools and models that allow us to monitor and predict the effect of transport on the broader economy. The development of appropriate methodologies is dependent upon an evidence base derived from data supplied by public and private transport operators. Among the factors needing consideration are: (1) monitoring effects on the local, regional and national economies and monitoring the distribution of economic effects across social groups, whether in terms of employment, income or productivity.

Environment

By respecting the environment, there will continue to be a strong presumption against schemes that would significantly affect environmentally sensitive sites or important species habitats or landscapes. By keeping the environmental impacts of new and existing transport infrastructure to a minimum, ensuring that mitigation measures are implemented to a high standard. We will work across government to ensure that we can deliver carbon savings in line with our domestic and international commitments and reduce the impact of other emissions which pollute the environment. Reducing the impact of all forms of transport, including encouraging the development, introduction and take-up of new vehicle technologies and fuels. Ensuring that the noise impacts of transport are reduced

and mitigated. Making progress towards the inclusion of aviation in the European Union emissions trading scheme. By investing in public transport to provide alternatives to the car.

Meeting increasing demand for travel must be balanced against safeguarding the environment and improving the quality of life for everyone. The detrimental impacts of travel include emissions of greenhouse gases and air pollutants, for which DfT has set targets, as well as noise and damage to both the natural and built environments. Research priorities are appraisal of technology options, including full-life cycle evaluation of carbon release, effects of the European Union voluntary CO₂ vehicle emissions targets, impacts of aviation and how effectively these impacts may be redressed by emissions trading, public perception, attitudes and behaviour in relation to climate change and the sustainability agenda, costs to the UK economy of the government's long-term goal of cutting carbon dioxide emissions by 80% by 2050, risk-based assessments of the impact of climate change and extreme weather on transport infrastructure and overall transportation impacts on air quality and atmospheric chemistry.

Safety

The UK has set the objective of reducing the number of people killed or seriously injured in road accidents by 40 per cent, and the number of children killed or seriously injured by 50 per cent, by 2010 compared with the average for 1994-98. We will keep the pressure on to further reduce road casualties through development of new future targets and methodologies for their achievement. We will make it our priority to improve road safety for children in disadvantaged communities, where accident levels are relatively high. Looking ahead 30 years, Britain needs to be in a position where we have significantly improved the safety of our transport networks for both travellers and for the people who work on them. This will mean (1) capitalising on the potential for new technologies to reduce the risk and severity of accidents on all modes of transport (2) better education and training for drivers, cyclists and pedestrians to ensure all road users are aware of the risks and know how to use the roads safely, (3) better, more targeted enforcement for the minority who break the law and put others at risk, (4) promoting better street design to make our roads safer and more pleasant environments for all road users, including children, (5) improving personal safety on our transport networks by reducing crime and vandalism and (6) working with industry and with international partners to maintain and improve safety standards both in the UK and abroad.

Across all modes, appropriate safety regimes must be further developed to manage risk at an appropriate level without placing unreasonable costs and constraints on operators, the travelling public or industry. Recent terrorist attacks illustrate the challenges we face in ensuring the security of the transport system. No single security measure is capable of mitigating every threat, so a range of security measures based on the best possible evidence is needed, as well as planning to prepare for the consequences and improving resilience. Research priorities are to identify indirect vulnerabilities created by new vehicle technologies affecting behaviour, e.g. how in-vehicle technology affects driver attentiveness and safety, assess computer simulations of vehicle crash behaviour as an alternative to conventional impact testing, increase understanding of road accident causation to improve safety measures, including driver training, road environment and vehicle design, improve speed management to reduce accident risk and severity by use of road engineering and enforcement technologies such as cameras and investigate further whether the level of under-reporting of road accident casualties has changed.

User needs

The Department is encouraging local authorities to procure bus services through Quality Contracts, where this is linked to a wider strategy including bold measures to reduce congestion, or modification of rail services. DfT is committed to inclusive and accessible transport systems and services. This involves working effectively with delivery partners at a local and regional level, particularly in meeting our PSA targets to improve the accessibility, reliability and use of local public transport. Central to this will be giving regional and local bodies more influence to ensure that transport services can be tailored to meet local needs and preferences. The research priorities include understanding the performance and perception of Transport Direct to inform, further development including the use of real time data, ensuring that the adoption of new technology does not become a barrier to accessing information for any social group, improvements to data and information exchange; identifying data accuracy, timeliness, security and confidentiality issues and provision and presentation of information to users of the strategic road network.

3. Trans-national and supranational transport policy and research priorities

The previous chapter presented the national priorities. In this chapter the trans-national and supra-national priorities will be indicated. The trans-national transport policy and research priorities represent the similarities in the national priorities. The supra-national research priorities are derived from the 7th Framework Programme of the European Commission.

3.1. Trans-national policy and R&D priorities

Accessibility

The main policy goal is “providing mobility options for the people“. The general approach in the ENT countries is to reach this goal is to focus (1) the reduction of congestion with specific focus on enhancing reliability and increase the predictability of the transport system and (2) Land use planning and transport with specific interest for reinforcing multi-polarity inside regions and ensure better mobility in less dense areas and making multiple use of areas.

Figure 3.1 R&D priorities Accessibility

Policy oriented	<ul style="list-style-type: none"> • Pricing systems <ul style="list-style-type: none"> ○ Best value for money ○ Data and new applications • Increase of predictability of travel time
Policy and Technology oriented	<ul style="list-style-type: none"> • Develop alternatives for personal cars in urban peripheries <ul style="list-style-type: none"> ○ Promoting public transport and pedestrian and bicycle traffic as attractive alternatives ○ Improvement of pedestrian and bicycle traffic conditions, with a special concern to disabled people
Technology oriented	<ul style="list-style-type: none"> • Public transport services • Traffic management and traffic information systems for a better use of existing infrastructure <ul style="list-style-type: none"> ○ Reducing bottlenecks at freight hubs ○ Congestion-free with intelligent transport systems ○ Increase the capacity of infrastructures ○ Alleviation of congestion, both on rail and road, efficient use of the infrastructure and ITS

Economic development

The main goal is the “strengthening local, regional and national development to enhance national competitiveness”, with specific focus on research to strengthen the transport industry competitiveness, support successful regional and economic development, fair and non-discriminating competitive conditions and efficiently operating logistics system and facilitate growth of the mainports, brainports, greenports and urban economic areas.

Figure 3.2 R&D priorities Economic development

Policy oriented	<ul style="list-style-type: none"> Analytical tools and models – economic appraisal
Policy and Technology oriented	
Technology oriented	<ul style="list-style-type: none"> Collaboration between industry and research institutes/ universities, support SMEs Investing in research and new technologies to strengthen its competitiveness

Efficiency

To address this objective the main goal is “a more efficient transport systems for passengers and goods. Focus areas are car pooling, stimulation of a better and more efficient use of the public transport to provide alternatives to mobility by car, more efficient logistic freight transport systems, by co-modality, but also long-term allocation of financing availability of selection of financing schemes.

Figure 3.3 R&D priorities Efficiency

Policy oriented	
Policy and Technology oriented	<ul style="list-style-type: none"> Network capacity Increase the railways performance, cost-effectiveness and value for money Efficient interfaces between transport modes <ul style="list-style-type: none"> Optimised transport through cooperation and networking Increase the efficiency of global supply chains its related high value supply chain services Increase the operational logistics and services Inter-modal freight transport
Technology oriented	<ul style="list-style-type: none"> Minimize infrastructure costs - investment and maintenance <ul style="list-style-type: none"> Develop energy-efficient components and systems Efficiency improvement for railways, lorries and ships Radical improvement of infrastructure condition with reduction of access costs Traffic management and traffic information systems for a better use of existing infrastructure <ul style="list-style-type: none"> Road traffic management Innovative logistic concepts <ul style="list-style-type: none"> Transfer cargo transport to the modes rail and water More efficient freight distribution (city logistics etc.) through a combination of push and pull parameters

Environment

The main goals regarding environmental improvements refer to CO2 and other greenhouse gases reduction, the improvement of local Air Quality and reducing the impact on ecosystems and landscape (reduce emissions, pollution and noise) and reduce the impact of climate change on transport infrastructure.

Figure 3.4 R&D priorities Environment

Policy oriented	<ul style="list-style-type: none"> • Change attitudes and behaviours • Enhance public transport • Better coordination of land-use and the transport system
Policy and Technology oriented	<ul style="list-style-type: none"> • Increase the use of low carbon alternative propulsion systems and fuels • Market introduction and stimulation of early markets for innovations that contribute to sustainable mobility • Reduce energy consumption of vehicles • Secure energy supply
Technology oriented	<ul style="list-style-type: none"> • New materials and procedures in vehicle and engine technology to reduce traffic noise <ul style="list-style-type: none"> ○ Noise reducing measures are for instance anti-noise developments and new forms of "noise walls" • New materials and procedures in vehicle and engine technology to reduce CO2 <ul style="list-style-type: none"> ○ Development of clean vehicles ○ Low carbon fuels, propulsion systems, energy efficient transformers, reduction of emissions • Sustainable construction and maintenance of infrastructure <ul style="list-style-type: none"> ○ To develop the network of roads with the respect to nature and its heritage ○ Infrastructure for the electrification of transport.

Safety and security

The main goals are the decrease of casualties, especially among children, elderly and vulnerable users. Some countries aim to zero tolerance in the road but also the rail-, maritime- and air traffic modes. A second important goal is the improvement of passengers and freight transport security. Third there is a need to improve the safe transport of hazardous goods.

Figure 3.5 R&D priorities Safety and security

Policy oriented	<ul style="list-style-type: none"> • Economic and legal aspects of road safety <ul style="list-style-type: none"> ○ Manage risk at acceptable cost • Behaviour changes <ul style="list-style-type: none"> ○ Alcohol, drugs and driving ○ Blind spots, in and around your car/lorries, seat belts and child booster seats ○ Naturalist driving
Policy and Technology oriented	<ul style="list-style-type: none"> • Identify and mitigate vulnerabilities <ul style="list-style-type: none"> ○ Safety for vulnerable users • Optimise enforcement • Improvement of subjective security perception • Safety across modes, learning from each other
Technology oriented	<ul style="list-style-type: none"> • Vehicle technology <ul style="list-style-type: none"> ○ Advanced driving assistance systems and cooperative systems and safe cars • Road engineering technology • Affordable safety requirements in the logistics sector • Innovative safety systems in the railway sector

User needs

This objective presents three main goals. First, the improvement of the quality of the transport system, especially in the cities. Secondly, reduce barriers in transport, while internalising the economic and environmental costs transport and travel.

Finally, “transportation systems for ALL users”, which takes into account new societal demands in transport, provides physical accessibility for all – including the elderly and disabled.

Figure 3.6 R&D priorities User needs

Policy oriented	
Policy and Technology oriented	<ul style="list-style-type: none"> • Identifying mobility behaviour and demands <ul style="list-style-type: none"> ○ Improved knowledge of the driving forces behind transport demand • Increase public transport quality • Develop multimodal information systems: electronic ticketing and real time information
Technology oriented	<ul style="list-style-type: none"> • Barrier-free transport – technological solutions • Development of sustainable and innovative mobility services and tools <ul style="list-style-type: none"> ○ Sustainable mobility services ○ Innovative mobility tools for personal mobility

3.2. Supra-national R&D priorities

This paragraph presents the priorities of the European Commission on the six ENT objectives for policy and research.

Accessibility and Efficiency

The Chapter TRANSPORT of the 7th Framework Programme (FP7) defines 2 research areas that address this theme:

Encouraging modal shift and decongesting corridors

Developing and demonstrating seamless door-to-door transport for people and goods as well as technologies and systems to ensure effective intermodality, including in the context of rail and waterborne transport competitiveness. This includes activities addressing the interoperability and operational optimisation of local, regional, national and European transport networks, systems and services and their inter-modal integration in an integrated approach. The activities will aim at European-wide strategies, optimised use of infrastructure including terminals and specialised networks, improved transport, traffic and information management, enhanced freight logistics, passenger intermodality and modal shift strategies to encourage energy efficient means of transport. Intelligent systems, new vehicle/vessel concepts and technologies including loading and unloading operations as well as user interfaces will be developed. Knowledge for policy making will include infrastructure pricing and charging, assessments of Community transport policy measures and trans-European networks policy and projects”.

Ensuring sustainable urban mobility

“Focusing on the mobility of people and goods by research on the ‘next generation vehicle’ and its market take-up, bringing together all elements of a clean, energy efficient, safe and intelligent road transport system. Research on new transport and mobility concepts, innovative organisational and mobility management schemes and high quality public transport will aim at ensuring access for all and high levels of inter-modal integration. Innovative strategies for clean urban transport will be developed and tested. Particular attention will be paid to non-polluting modes of transport, demand management, rationalisation of private transport, and information

and communication strategies, services and infrastructures. Tools and models supporting policy development and implementation will cover transport and land use planning including the relationship with growth and employment”.

Economic development

FP7 TRANSPORT defines 1 research area that address this theme:

Strengthening Competitiveness

“Improving the competitiveness of transport industries, ensuring sustainable, efficient and affordable transport services and creating new skills and job opportunities by research and developments. Technologies for advanced industrial processes will include design, manufacturing, assembly, construction and maintenance and will aim at decreasing life cycle costs and development lead times. Emphasis will be placed on innovative and improved product and system concepts and improved transport services ensuring higher customer satisfaction. New production organisation including the supply chain management and distribution systems will be developed”.

Environment

FP7 TRANSPORT defines the following research area that addresses this theme.

The greening of surface Transport

“Developing technologies and knowledge for reduced pollution (air including greenhouse gases, water and soil) and environmental impact on such areas as climate change, health, biodiversity and noise. Research will improve the cleanliness and energy-efficiency of powertrains (e.g. hybrid solutions) and promote the use of alternative fuels, including hydrogen and fuel cells as mid and long-term options, taking into account cost efficiency and energy efficiency considerations. Activities will cover infrastructure, vehicles, vessels and component technologies, including overall system optimisation. Research in developments specific to transport will include manufacturing, construction, operations, maintenance, diagnostics, repair, inspection, dismantling, disposal, recycling, end of life strategies and interventions at sea in case of accident“.

Safety and security

One research area in FP7 TRANSPORT deals with safety and security. Furthermore FP7 ICT addresses 2 safety issues.

Improving Safety and security (TRANSPORT)

“Developing technologies and intelligent systems to protect vulnerable persons such as drivers, riders, passengers, crew, and pedestrians. Advanced engineering systems and risk analysis methodologies will be developed for the design and operation of vehicles, vessels and infrastructures. Emphasis will be placed on integrative approaches linking human elements, structural integrity, preventive, passive and active safety including monitoring systems, rescue and crisis management. Safety will be considered as an inherent component of the total transport system embracing infrastructures, freight (goods and containers), transport users and operators, vehicles and vessels and measures at policy and legislative levels, including decision support and validation tools; security will be addressed wherever it is an inherent requirement to the transport system”.

ICT for Safety and Energy Efficiency in Mobility (ICT)

ICT for Intelligent Vehicle Systems for further improving road safety and performance of transportation systems. This includes advanced in-vehicle safety systems with improved performance; systems supporting autonomous driving (first in restricted environments and later on open environments); new approaches to crash avoidance including development of sensors and sensor networks; advanced methods for traffic situation detection (including vulnerable road users); and technologies for addressing digital footprint, data security and privacy of in-vehicle applications.

ICT for mobility of the future (ICT)

Field Operational Tests for Integrated Safety Systems and Co-operative Systems to assess improvements in the efficiency of the transport system, in the safety of all road users and in making individual mobility more comfortable. This includes large-scale test programmes aiming at a comprehensive assessment of the efficiency, quality, robustness and user-friendliness of close-to market systems, before their full-scale deployment in Europe.

4. Options for trans-national cooperation

During a workshop in 2008 all participating ENT countries presented their (1) national policy and R&D priorities, (2) research topics of national interest for short and long-term cooperation and coordination and (3) the critical factors of success to reach the cooperation and coordination. After these presentations the participants discussed and identified the options for cooperation. Based on a joined discussion on the results of two sub-groups 7 main themes were identified. Each theme consists of several specific items. These items are, per theme, clustered in topics for cooperation.

4.1. Planning, modelling and analysing tools

In total 5 countries expressed their interest for this theme. Three clustered topics were identified, each containing several national items for research:

Data quality	<ul style="list-style-type: none">○ Reliability and predictability data○ Transport technologies for interaction spatial planning and transport planning – data, tools, analyses and simulations
Data protection	<ul style="list-style-type: none">○ Protection of data○ Private data protection
Pricing tools	<ul style="list-style-type: none">○ distance base road charging○ Pricing tools○ Reducing traffic congestion by pricing and taxation

4.2. Road safety

In total 6 countries expressed their interest for this theme. Three clustered topics were identified, each containing several national items for research:

Technological solutions	<ul style="list-style-type: none"> ○ Opportunities of new technologies – traffic control, ITS in cars and infra – helping systems, emergency systems, alcohol-lock, etc ○ Forecasts of technological development, effects and barriers ○ ITS ○ Technological solutions to increase traffic safety of children, elderly, etc
Target groups	<ul style="list-style-type: none"> ○ Young novice drivers, fatigue, drugs and drunk driving, vulnerable road users and accident causation ○ Attitudes and behaviour, demographics, education and training ○ High risk drivers ○ Safety for vulnerable users
Additional	<ul style="list-style-type: none"> ○ Pilots, regulation and financial tools ○ Safety evaluation method of transport projects ○ Economics and legal aspects of road safety ○ Transport management tools to prevent accidents ○ Public campaigns promoting safe driving ○ Construction and reconstruction of “safer transport” infrastructure

4.3. Urban transport

In total 6 countries expressed their interest for this theme. Three clustered topics were identified, each containing several national items for research:

Promotion of green transport	<ul style="list-style-type: none"> ○ Clean delivery vans ○ Clean infrastructures
Land-use planning (sustainable cities)	<ul style="list-style-type: none"> ○ Sustainable cities: land use planning in relation to transport demand ○ Transport planning and urban planning ○ Promotion of public transport and pedestrian/bicycle traffic in urban regions by coordination of land use planning and the transport system ○ Multiple use of areas
Additional	<ul style="list-style-type: none"> ○ Planning and modelling tools in relation to decision making tools ○ Co-modality / bicycle use and transport management ○ Short distance mobility options (micro-mobility), pedestrian, bicycles and new mobility tools with an interlink to public transport ○ Energy efficiency

4.4. Alternative propulsion systems and fuels

In total 5 countries expressed their interest for this theme. Three clustered topics were identified, each containing several national items for research:

Policy and implementation process	<ul style="list-style-type: none"> ○ Full economic / environmental impacts of alternative low carbon fuels ○ Routes to applying alternative fuels ○ Car of the future
Fuel technology	<ul style="list-style-type: none"> ○ Energy efficient propulsion systems and fuels ○ Combustion engines and fuel cells ○ Distribution ○ Storage of all forms of fuels, liquid and gas / infra and vehicle ○ Batteries ○ Hydrogen and bio-fuels R&D ○ Electric vehicles
Additional	<ul style="list-style-type: none"> ○ All topics and items relating CO2 reduction ○ Material research ○ Greening Railways ○ Infrastructure for transport electrification

4.5. Logistics

In total 7 countries expressed their interest for this theme. Three clustered topics were identified, each containing several national items for research:

Supply chain	<ul style="list-style-type: none"> ○ Efficient inter-modal transport chains for freight - logistic system and planning tools ○ Efficient interlinks between transport modes ○ Supply chain management and related services ○ Increase efficiency of freight logistics and freight transport System
ITS	<ul style="list-style-type: none"> ○ Inter-modal / door-to-door solutions ○ ITS in the logistic system
ENT+ on CO2 reduction related items	<ul style="list-style-type: none"> ○ Climate friendly trans-national logistics – information and awareness, ITS, transport management, vehicle technology ○ Green freight ○ City logistics – clean and low carbon vehicles ○ Green logistics

4.6. Capacity management

In total 8 countries expressed their interest for this theme. Four clustered topics were identified, each containing several national items for research:

Road network management	<ul style="list-style-type: none"> ○ Network management ○ Road traffic management ○ Increase capacity of infrastructures ○ Capacity management
Public transport	<ul style="list-style-type: none"> ○ Increase capacity of PT system as alternative to mobility by car ○ Improvement of public transport competitiveness in relation to individual transport ○ Railways ○ Promotion of public transport in urban regions by financial tools, ICT, infra, raising awareness and enabling technologies ○ PSO – Public purchase of transport services in rail ○ Financing of PT ○ Connectivity of public transport
Financing tools	<ul style="list-style-type: none"> ○ Long term financing tools for infrastructures, which supplement budget financing, like PPP-financing principles, satellite-position-based user charges, life –cycle model for investments ○ Pricing schemes
Information	<ul style="list-style-type: none"> ○ Standardisation ○ Ticketing ○ Travel information ○ Provide multimodal information systems; electronic ticketing, real-time information ○ Multi-modal travel information ○ Increase the predictability of travel time

4.7. Inclusive mobility

In total 6 countries expressed their interest for this theme. Three clustered topics were identified, each containing several national items for research:

Rural and regional areas	<ul style="list-style-type: none"> ○ Public transport in rural areas ○ Mobility (public transport) in less dense areas ○ Mobility solutions for rural areas
Elderly and disabled	<ul style="list-style-type: none"> ○ Provide accessibility for all ○ Elderly and disabled ○ Improvement of pedestrian and bicycle conditions with a special concern to disabled persons ○ Elderly people / interactive mobility ○ Inclusion and barrier free solutions / information / components and systems
Additional	<ul style="list-style-type: none"> ○ Relation to public transport, individual mobility, diverse services, information and awareness, ITS and transport management ○ Technological solutions regarding behaviour-needs-societal implications-behaviour ○ Accessibility to the social life with/without reduced need for mobility – virtual mobility ○ Travel information systems

Annex Definitions objectives of transport policy and transport research

Accessibility

In most cases accessibility is considered from the point of view of the citizen, with the aim of provide appropriate choice in accessing activities such as employment, shopping and leisure. It is possible also to consider accessibility from the standpoint of the employer or retail outlet, wanting to obtain maximum economic efficiency. In either case, access can be measured simply in terms of the time spent travelling or, using the concept of generalised cost, in terms of a combination of time and money costs.

Economic development

This theme is concerned with the competitiveness and economic development aspects of sustainable mobility. The competitiveness aspects concern the impacts originating from infrastructure and other policies affecting the provision of transport services on the competitiveness of both the transport industry and any other industry. The economic development aspects concern the impacts on the development of the areas that are affected by such policies and on their economies. Development and competitiveness impacts occur mainly through the mechanisms of cost savings and improved accessibility and enable economic activity. These can affect (to different extents) industrial sectors and areas. The main effects of this are the revival of economic activity, the increase of employment levels, the attraction of new investment or the expansion of existing industries. The competitiveness of the EU transport industry is an important objective.

Efficiency

Efficiency represents the relationship between resource use and costs on the one hand and productivity on the other. The concept applies to the European transport system as a whole and to any specific transport system. Measures of efficiency indicate the extent to which changes in infrastructure and service provision and in trip choices by shippers and travellers have been successful in reducing the resources expended per trip supplied or made. Efficiency is not restricted to the internal efficiency of transport provision and not its external costs to society, the environment, safety etc. Aspects of these are considered in separate themes, as is the related objective of accessibility. Efficiency and quality are related themes as an efficient system needs to offer performance and quality at the least cost.

Environment

The objective is to develop a transport system and transport patterns that provide the means and opportunities to meet environmental needs efficiently, while minimising adverse impacts and their associated costs, over relevant space and time scales. These cover all the adverse side effects of transport on the environment. They include air and water pollution, noise, vibration, visual impacts, social impacts and waste disposal. Research includes assessment of the severity of these impacts, analysis of mitigation measures and the development of environmentally friendly technologies.

Safety and Security

Safety implies freedom from danger. In practice transport safety refers to the level of danger that is socially acceptable in a real-life situation, where risk arises when human beings are exposed to any part of the transport system. Different levels of risk attach to different modes and to different activities. The acceptable level of risk is judged according to the choices made by individuals – as operating staff, drivers or passengers. The safety performance of a technical system is the measurable consequence of the extent to which it behaves as expected, with and without the interaction of human beings. The objective is to come as close as reasonably possible to the ideal safety performance. Security is the undertaking to protect human beings, transport means and transport from crime and terrorism.

User needs

The user aspects of sustainable transport primarily concern (*accessibility and*) the freedom of mobility for any citizen, whatever their physical ability, income and social status. The users' choice and rights include the freedom of mobility, independent of where they live and work. Transport services are judged by the quality they afford to users, involving aspects such as safety and security, reliability, flexibility, comfort, accessibility, affordability and convenience. The term quality is closely related to efficiency. The use and operation of means of transport always involves human individuals. This is often an interactive process, and is strongly influenced by human factors such as professional training, adaptation to new technologies and behavioural responses. Human factors can refer to impacts on individuals, such as drivers and operators.

Source: Transport Research Knowledge Centre (TRKC)