

Handbook

on guidelines for the implementation and re-implementation of transport research programming systems open for cross-border cooperation

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Abbreviations

CLT	Centre for Logistics and Transport, Denmark
CTT	Centre for traffic and transport, Denmark
DRI	Danish Road Institute
DTF	Danish Transport Research Institute
DTU	Danish Technical University
EDS	Education Development Strategy, Poland
ENT	ERA-NET TRANSPORT
ERA	European research area
ERDF	European Regional Development Fund, Poland
EU FP	EU Framework Programme
EU-COM	Commission of the European Union
FIRE	Polish Centre of Innovation
GDP	Gross domestic product
GERD	Gross Domestic Expenditure on R&D
GUS	Central Statistical Office of Poland
ICT	Innovation and communication technologies
NDP	National Development Plan for 2004-2006, Poland
NFP	National Framework Programme, Poland
NTP	The National Transport Policy Plan, Poland
PAN	Polish Academy of Science
PKP	Polish National Railway
PLK	PKP Polish Railway Lines JSC
R&D	Research and development
RTO	Research and Technology Organisation
S-RTO	science, research and technology organization
SRA	Strategic research agenda
TDS	Transport Development Strategy, Poland
TP	Technology Platform
WP	Work package (+number within ERA-NET TRANSPORT)

Foreword

Since 2004 ERA-NET TRANSPORT (ENT) concentrates on improving multi-national transport research policy cooperation and national transport research programme coordination among a large number of European member states. This is actively done by organizing a dialogue platform, where national program owners and program managers from federal ministries and a number of subordinate state agencies (e.g. research funding agencies or transport infrastructure agencies) as well as public funding bodies (e.g. national funds or national research councils) are encouraged to cooperate and collaborate, all for defining and implementing joint transport research funding actions and several other support activities. ENT encourages transport research policy cooperation along the whole research policy cycle, starting at the policy strategy formulation and agenda setting stage, throughout policy decision and the program implementation state to dissemination and monitoring as well as program evaluation and even the single research project evaluation stage.

In 2005 Denmark and Poland became new partners in the ENT consortium. According to this enlargement a new working task for ERA-NET TRANSPORT was outlined. The main objective of this task is to model guidelines, how to arrange and re-arrange national transport research funding programmes in countries, where particular national programmes are not introduced yet, or countries, where former running national programs were closed down due to changing political preferences. A major requisite of the new arranged or re-arranged national transport research programs has to be the preconception "open for cross-boarder cooperation" and with that, national transport research programs, which are responsive for multi-national transport research funding actions in ENT.

In both countries a policy process was started to develop. At first a transport research policy strategy and second to set up a research policy agenda by prioritizing research areas and topics for a future transport research programme were carried out. Further steps in the policy process are going towards the negotiation of a funding strategy and a plan towards the implementation of a national public funding scheme for transport research. In this report the progressing policy process in both countries is described and the main outcome of both policy processes is presented. Both countries take – due to different political cultures – a distinct route and address dissimilar goals regarding the strategic mission and the operation of a national transport research programme. Denmark has a clear orientation on a transport and mobility policy mission and with that public funding for problem-oriented transport research. Poland has a strategic mission, which is strongly affiliated to present national transport policy and transport infrastructure policy priorities. Furthermore policy process started in both countries under supervision of the Transport Ministries in close cooperation with the policy side responsible for national science and R&D funding. In Denmark a transport research policy strategy document has been launched and an implementation plan was introduced. These activities will take place in Poland in the first half of 2007. With the presentation of a research policy strategy and the introduction of an implementation the political negotiation process will start in both countries and we hope an appropriate "window of opportunity" will open to successfully implement a national transport research programme.

DENMARK

1. Summary of the policy process

The policy process for developing a new transport research programme in Denmark is described by the following milestones:

- Analysis of preconditions,
- Kick off seminar,
- Workshop on organisation and financing,
- Outline of a strategy document,
- Further political process,
- Way forward.

The process has not ended yet, so the final result of this action remains open.

Analysis of preconditions

A major precondition to start the process to establish a Transport Research Program in Denmark is the Government's "Strategy Process for Denmark in the Global Economy", which was initiated in March 2005 and published as a main strategic document in April 2006. This strategy contains 350 specific initiatives, which together create a framework for extensive policy reforms in higher education and research actions and provide substantial improvements for growth and innovation in all areas of society.

Following this strategy the policy of the Danish Government actively supports the mission to develop a new research programme for the transport sector. The ERA-NET TRANSPORT idea as well as the Danish Globalisation Strategy do both focus on initiatives to increase the outcome of transport research by increasing the efficiency of public funding, enhancing competition among national researches and by motivating international cooperation.

Kick-off seminar

The first public event towards the policy formulation of a national transport research programme in Denmark was a kick off seminar in January 2006, which was due to establish a platform for the dialogue between all relevant stakeholders. The basic idea behind the kick off seminar was to start a policy process to work out a transport research programme strategy and to get input from relevant stakeholders on the most important topics for future transport research in Denmark.

It was important to include a broad group of representatives from the transport sector for two reasons: Firstly, to give the broadest input possible to the formulation

of a future transport research programme and, secondly, to anchor the programme strategy in the transport sector in order to get the political support when needed.

The most important outcome of the kick off seminar was the agreement, that there is a need to strengthen transport research in Denmark. Other important outcomes were the strong focus on dissemination of research results, the international perspective as well as the need for a trans-disciplinary and cross-sector approach to transport research.

Workshop on organisation and financing

A second workshop was held in February 2006 to discuss relevant ways to organise and finance a new Danish transport research programme. A smaller group of participants was invited for this second seminar, however still representing a broad group of public authorities, researchers and stakeholders from industry.

To set the scene for the discussion two presentations were made. The first one to introduce a programme administration concept to use as a base for the discussion and secondly a presentation from the Norwegian Ministry of Transport to share the experiences from the Norwegian transport research funding programme system. The proposed programme concept for the dialogue was called the research process chain. It outlines the governance or policy coordination phase.

Research process chain in Denmark



The participants came up with recommendations and views on how to handle each of the steps in the research policy process chain. The results are summarized in chapter 2.2.

Outline of a strategy document

Based on the two seminars and further discussions in the Ministry of Transport a strategy paper was outlined in order to be able to argue for the challenge of transport research, whenever a “window of opportunity” will open. This document

provides a simple and easy to read overview of relevant arguments for the implementation of a new Transport Research Programme in Denmark.

Further political process

Although the Danish Government announced the objective to increase the budget for public research funding in order to meet the Lisbon goals by 2010, transport research was not mentioned explicitly in this document as a main research area.

Therefore, the Danish Ministry of Transport had at first to discuss financial matters within the Danish Government. The Ministry prepared a blueprint for a strategy for transport research. This blueprint was presented to the Minister for Transport and Energy in April 2006 and he agreed that the work should be continued. A revised version of the strategy paper for transport research was finished in June 2006, which the Minister discussed with the members of the Parliament Committee in August 2006. Based on comments from the Committee members, the strategy document was adjusted and finally published in October 2006. At the beginning of November 2006 a political agreement between the Danish Government and the political opposition resulted in a mandate for a new transport research programme starting 2008 onwards.

The way forward

The political agreement resulted in a proposition for financial budget for a public funding programme regarding transport research in Denmark. The task now will be, to define in detail how the public funding should be managed and how a programme funding system, which can meet the demands from the transport sector, can be established. Following points have to be taken into account:

- The anchorage of the programme in the transport sector, involving representatives from industry, research and public authorities.
- The professional administration of the funding in a competitive system.
- A focus on better dissemination of research results.
- The focus on international coordination and cooperation at the programme level.

It will be the Ministry of Transport and the Ministry of Science and Innovation, who will be in charge to establish this programme funding system and to enhance the future process. The next phase of work will start, if the related political decisions have been taken.

2. Research priorities and funding strategy

The administration and management of the new transport research programme has not yet been defined in detail. However, the new transport research programme is focusing on the following principles:

- Competition for funding in order to ensure the right quality of transport research;
- Cooperation between public authorities, private partners and researchers;
- Emphasis on international research cooperation (FP7, ERA-NET TRANSPORT);
- Strong link between research, education (Candidates, PhDs) and innovation;
- Dissemination of research results to end users: citizens, public authorities, industry.

2.1. Transport research priority setting

The research priorities will be developed according to the strategy document. However, in the kick-off seminar a first research priority setting process was initiated. The following research priorities were outlined for transport research in Denmark (see appendix for full list):

- Planning and maintenance of infrastructure
- Congestion alleviation
- Freight transport
- Transport behaviour
- Transport safety
- Assessments of social costs
- Visions for the transport sector
- Sustainable transport
- Urban transport

2.2. Suggestions for a research programming system

As an outcome of the second workshop the following suggestions for an appropriate transport research programming system were given:

Identify Research Areas: The relevant Ministries should set the overall agenda for the research programme. It is important to use existing research programming systems and not create new ones. A model with two subcommittees was recommended: one to set the overall framework for the calls and another group for the evaluation of research proposals. It is significant to have a close link to potential users of research results when identifying future research areas. The current transport research arena in Denmark is not sufficiently focussed on the demand of the industry.

Organisation of research: It is important to have a minimum of public research funding for research organisations. The current level is not sufficient to ensure high quality of research. A right balance between bottom-up and top-down should be provided. The funding for transport research should somehow reflect the importance of the transport sector for Denmark. The basic funding could depend on the amount of external funding that an institution could attract. This would encourage the organisations to be competitive.

The Research Process: Even though the transport research institutes are small in Denmark it would not be beneficial to unite them into one large research institution. Each one has its own profile and educates new research candidates with this profile. A regional spread of research organisations is also beneficial in order to provide candidates for the sector all over Denmark. We should build on present organisations and human resources in a long term perspective, in order to get a strong Danish transport research environment. It will take time.

Dissemination: There is a huge demand to improve the dissemination of research results. Small demonstration projects could be one programme instrument and a high quality magazine like the Norwegian "Samferdsel" could be another. Priority should also be given to a funding budget share to finance the dissemination of the research results. Dissemination activities should not only be a part of a research projects, but also separate activities.

Evaluation of research projects: Evaluation of the quality of research projects works well in the current system. There is no need for change. However, the need for an evaluation of the usefulness of research results for industry and other end users is less developed.

3. Implementation of a transport research programme

As already mentioned, the final set-up of the Danish transport research programme has not been decided yet. However, some decisions have been taken: The Danish Strategic Research Council holds the funding budget for upcoming research programme. In the Strategic Research Council, there is currently no committee for the transport area and a decision should be made if a new committee for this field should be established, or if the programme should be administered by the committee of Environment and Energy.

Against the first option could be argued that transport is a separate area and several relevant research topics in transport do not have much to do with the energy and environment field. Consequently the experts in the committee for Energy and Environment will have e.g. a limited background for the assessment of the relevance and innovativeness of incoming research proposals. But it could be as well argued that the transport programme will be very small and that the costs are too high to set up a new committee just for such a small action.

An additional problem concerning both options is the limited number of transport experts in Denmark to peer-review the incoming research proposals. It will be difficult to find enough high level experts, who will not apply themselves for funding and therefore be disqualified both for drafting the call and for evaluating the incoming research proposals. A solution will be to invite Norwegian and Swedish experts for the peer review process.

The input from the seminars and from the strategy process has lead to the following points, which should be given high priority when implementing the upcoming research programme:

- **Participation of stakeholders.** To maintain the interest and backing for the planned transport research programme, the research results should be easily accessible. The transport sector is currently not in a good position to exploit research results. When setting up the programme one should acknowledge that also disseminating research results needs financial resources. The best way to achieve the ongoing support to the programme is to involve industry, public authorities and also researchers in a kind of research programme board. Such a board can give input – e.g. set up new research priorities – at biannual meetings and at the same time provide information on the running research programme. When first research results are available they can be presented as well at this board. If a research project is suitable for a more profound discussion, representatives from relevant parts of the transport sector can form an advisory board for a specific project. It is however crucial, that potential end-users of research results are kept at arms length to the project, so there will be no chance of trying to influence research results. The board should always have an advisory role.
- **Involving stakeholders in research project financing.** An option will be to demand some kind of co-financing from other interested parties. If either industry or a public authority proposes a research priority for a future call, they could be

asked for co-financing. The funding of cooperative research projects have to follow the rules of the European competition regulation. It is very beneficial to have later institutional-users or end-users involved to define the research topics. But the research process should be conducted independently by the research organisations.

- ***Earmark funding for dissemination.*** In order to ensure the dissemination of research results a minor amount of funding could be set aside for specific dissemination efforts. This could be for instance a magazine for the Danish transport sector in which research results are presented and highlights relevant international research findings. A transport sector magazine could raise the general level of knowledge and even be a forum for a public debate on transport policy in Denmark. Another type of effort could be a broader assessment of both national and international research findings, which could set the individual research finding in a greater perspective.

POLAND

1. Summary of the policy process

1.1. *Objectives and background of the policy process*

One of the main objectives of Polish transport policy is to create an effective strategy for the development of Polish transport infrastructure. A major goal of Polish technology and innovation policy is to strengthen main areas of Polish industry to be more competitive at local and global markets. Transport industry and the transport service sector in Poland are important branches of the national economy and relevant for the Polish national innovation system. The major goal from the Polish science and research policy perspective is at the moment to enhance science-industry relations to advance knowledge transfer and support with that the proposed transition towards a knowledge intensive society in Poland.

Most partner countries of ERA-NET TRANSPORT (ENT) have today more specialized transport research policy approaches than Poland, and the experiences of these countries can help Poland to implement an adequate national transport research policy strategy. Polish participation in ENT gives many opportunities for to knowledge and information exchange. ERA-NET TRANSPORT allows Poland to look at structures and mechanisms of transport research policies in other European member countries. But building up a transport research policy strategy in Poland stays at the end an exceedingly national political process. A clear “window of opportunity” for transport research funding is expected, going along with the implementation of the new Polish National Framework Program, which will be administered by the Ministry of Science and Higher Education. The Framework program is the current Polish strategy for national science, research and innovation policy. One of the strategic priorities in the Polish Framework Program is transport and transport infrastructure research.

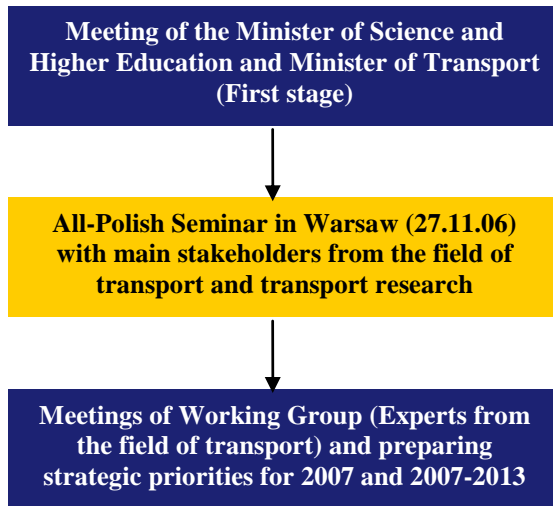
The Polish participation in ERA-NET TRANSPORT had a positive and important influence on shaping a vision for a future national transport research policy strategy.

1.2. *Process steps towards a transport research program*

In the year 2005 Poland started like Denmark a policy process to achieve a national transport research policy strategy and a national transport research program open for cross-border cooperation in the future. For that a new assignment was implemented: the ERA-NET TRANSPORT Polska Initiative. A kick-off seminar was launched in spring 2005 in the former Ministry of Science and Information Society Technologies (today Ministry of Science and Higher Education). Due to the actual political *raison d'être* – there was an election in Poland in 2005, the government changed and with that a lot of re-organization in the ministries took place – the policy process stopped for nearly a year and started again in 2006.

In spring 2006 several informal appointments among representatives from the Ministry of Transport and the Ministry of Science and Higher Education were launched by ERA-NET TRANSPORT Polska Initiative to discuss a strategic research policy agenda and public funding opportunities for transport science and research in Poland.

Structure of the polish process towards transport research programming



An important step towards building-up a Polish transport research policy strategy was the first official seminar “Program of the Polish scientific research in transport in the years 2007-2013” held at the 27th of November 2006 under the patronage of Minister Krzysztof Kurzydłowski (Transport) and Minister Eugeniusz Wróbel (Science and Higher Education). At this event most relevant stakeholders from the transport area in Poland were involved (over 60 persons). The significance for a national transport research policy strategy was highlighted at this workshop. Representatives from the following public and private sector took part:

- Ministries (Science and Higher Education, Ministry of Transport, Ministry of Environment, Ministry of Economy, Ministry of Regional Development);
- Polish Technology Platforms (Railway Transport, Road Transport, Air Transport, Maritime Transport);
- Members of the National Science Council,
- Representatives of transport service organizations,
- Deans of transport departments at universities,
- Members of the European Parliament,
- Deputies of Sejm (lower house of parliament).

All participants in this seminar underlined the importance of a well maintained transport infrastructure, a strong transport service sector, an innovative transport industry and a significant transport science and research arena for the Polish economy and society.

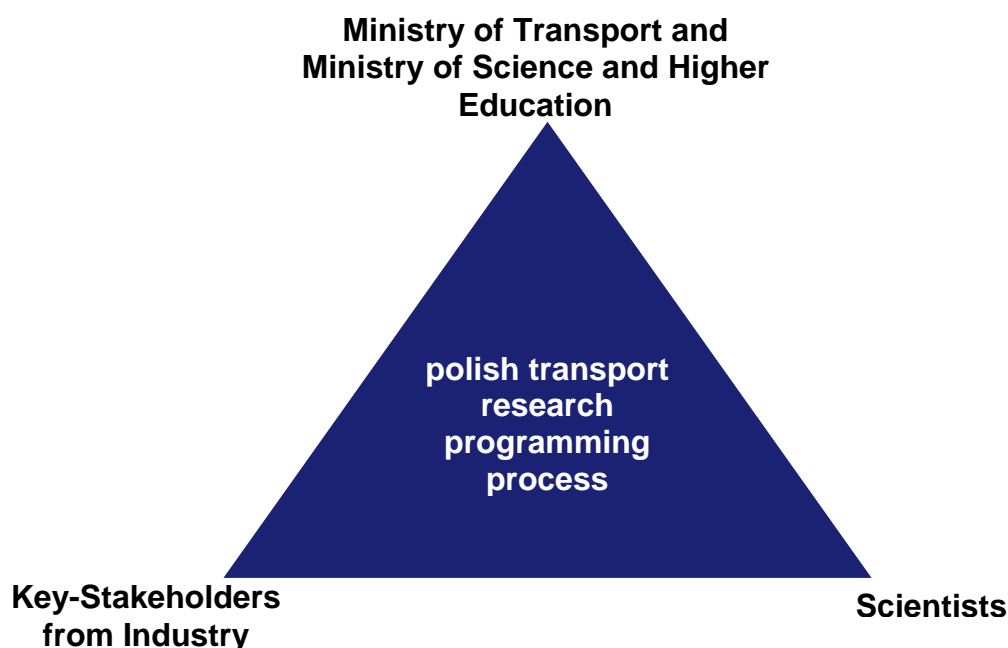
Main tasks regarding the policy process towards a national transport research strategy are:

- The integration of the scientific, industrial, governmental and parliamentary circles connected with transport and transport science and research;
- A survey of the actual state and perspectives for the years 2007-2013 of scientific research in the transport area (competences and capacities);
- The implementation of transport science and research funding initiatives;
- The planning of coordinative actions connected with a participation of Poland in European transport research and the formulation of a strategic research program for the transport sector for the years 2007-2013.

In the seminar was agreed that a national transport research strategy will be drafted under the supervision of the Ministry of Transport. This strategy will than be presented to the Ministry of Science and Higher Education and further discussed.

At the workshop in Warsaw an expert group was assigned with different stakeholders from the transport sector and the transport science and research arena. The main aim of this group is to decide on transport research priorities for the next years. The group agreed for 2007 on seven strategic research topics including two for cooperative actions in ENT.

Key-actors involved in the polish transport research programming process



This working group started their work by discussing, how science and research could serve to develop an integrated transport and shipment infrastructure in Poland, e.g. by introducing new materials and ICT technologies (telematics, including charging systems) in the transport sector and how to reduce negative impacts of transport on the environment.

The prioritized strategic research topics were opted out from a much longer list of relevant transport research themes. Regarding the administration of future public transport science and research funding in Poland following questions came up during the seminar in Warsaw:

- Which strategic research topics should be prioritized?
- How will the transport research program be implemented?
- Which funding budget is estimated to be allocated for the program?

Next to the successful negotiation between the Ministry of Transport and the Ministry of Science and Higher Education an open call will be announced for national research projects and joint international projects. Within this call the above mentioned strategic research topics will be particularly addressed. It is foreseen that in the first half of the year 2007 a list of strategic research topics for the years 2007-2013 will be accessible. Moreover an implementation plan for national project funding as well as joint international funding will be drafted.

2. Research priorities and further steps

2.1. Research priorities

In order to define transport research priorities, it was essential to identify at first Polish transport policy priorities for the next few years. These priorities were presented by the Minister of Transport and discussed at the Warsaw seminar at the 27th of November 2006. In the later working group meetings these transport policy priorities played in as starting point for the discussion on transport research priorities for the years 2007-2013. Transport research priorities were defined for all transport modes: road transport, railway transport, marine and inland waterway transport and as well aeronautics. The following main transport research priorities were outlined (refer to Appendix for full list):

- Inter-modal (freight) transport,
- Urban transport,
- Integrated traffic safety system,
- Intelligent transport systems.

Addressing the Polish transport research policy priorities for the years 2007-2013 as well as taking into account the research priorities identified within the ENT process and at other policy levels, the following strategic research topics were summarized (see Appendix for full list):

- Instruments for strategic planning and policy of transport,
- Concepts for building and maintenance of transport infrastructure,
- Benchmark on sustainable kinds of transport and mobility policy,
- Pro-ecological solutions for all transport modes,
- Sustainable urban transport concepts,
- Problem solutions for the improvement of road traffic safety,
- Research and development of Intelligent Transport Systems.

The list of strategic research topics will be further refined within the first half of 2007.

2.2. The way forward

In spring 2007 the next seminar will be pre-assigned at the Ministry of Transport. At this meeting the above mentioned working group will present a detailed list of strategic research topics and a proposal for a document on Polish transport research policy strategy. The working group will present as well a plan, how to implement a national transport research program and an estimation of the required public funding budget for the years 2007-2013. It is planned that the considered transport research funding program will address particular national research projects as well as cross-border research projects.

The above mentioned document on Polish transport research policy strategy will tackle not only thematic issues and portray strategic transport research topics, but will take into account as well horizontal issues (e.g. how to improve the political decision-making process towards the implementation of public research funding in Poland and how to optimize administrative procedures to distribute public funding for transport science and R&D).

The Ministry of Transport – in cooperation with the above mentioned representatives – will present a proposal for a public funding action regarding transport science and research for the years 2007-2013 to the ministry of Science and Higher Education. The ministry of Science and Higher Education holds in Poland the largest public funding budget for Science and R&D and is in general responsible for public funding in the pre-competitive sphere.

The Ministry of Transport will present a list of strategic research topics for transport research as well as a distinctive plan with a timeline and an estimation of the required funding budget. The transport research program is accounted by the Ministry of Transport and with that strongly linked to Polish transport and transport infrastructure policy. Following the negotiation stage among the Ministry of Transport and the Ministry of Science and Higher Education it is expected, that the funding action can be started at the end of 2007.

An open call (competitive research funding) is planned for late 2007 or 2008. All actors of the Polish transport science and research arena are invited to take part in this call. It is also planned to address cross-border funding activities to allow Polish transport scientists and researches to hand in at trans-national calls initiated and facilitated by ERA-NET TRANSPORT. A feasible strategy for a Polish transport research programming system, e.g. to earmark a budget share in the main Polish public science and research funding budget – administered by the Ministry of Science and Higher Education – was described in Deliverable 1.8.

CONCLUSIONS AND GUIDELINES

In both cases, as well in Denmark as in Poland, a participative policy approach, the **broad support** of high officials, the **clear leadership** of a Ministry or a central public agency in the process and the **right timing** of the policy process as such are the main **success factors**.

In the Danish case especially political arguments regarding the need and significance of transport research were important. The former Danish transport research programme was laid down in 2002 and in order to allocate new funding for transport research in competition with other sectors, it was important to provide key stakeholders and the political level with good arguments. The strategy paper was a key element in the argumentation. It highlights the future challenges of the transport sector especially in the international/global production chain which will change the national transport pattern and increase the involvement of long transports. Furthermore the challenges from the growth in the car-based passenger transport and the congestion, environment and safety challenges will call for research based innovative solutions. Especially the need for international cooperation also in the research sector to match the international transport sector is stressed in the strategy.

All relevant stakeholders were involved in the process to qualify the policy process and the content of the research agenda. The stakeholders represent a broad interest group including the industry (private sector), public authorities and researchers. Moreover, involving relevant stakeholder groups ensures a broad support and backing of the future transport research programme, which is imperative, if the program shall last at the long run. In the process to allocate financial resources for the new transport research program, some stakeholders played an active role and used their communication channels to promote the idea of a new transport research programme. The involved stakeholders all stressed the importance of their involvement in the implementation with their role in the identification of relevant strategic research topics and the need for a focussed dissemination of research results. The future support of the research programme from the actor side will depend on the visibility of the programme and the direct involvement of the end users in the proposed research projects.

In Denmark the Ministry of Transport took the lead regarding the design of the upcoming transport research programme. Internally in the Ministry of Transport and Energy, it was important to get support from high level officials from the start of the process. The Permanent Secretary opened the kick-off meeting and gave the issue of designing a new transport research programme high priority. This was probably one of the reasons for the interest from all stakeholder groups to participate, sending high level experts and representatives from their respective organisations. And that again means that the most influential people from all stakeholder groups have to be involved in developing the argumentation for the political backing of the programme. Another important success factor was the direct involvement of the Minister of

Transport and Energy in the political dialogue. When the strategy document was presented to all relevant parties in parliament, the Danish Minister of Transport and Energy presented the document as his transport research strategy and thereby also the Ministry took the leadership at the political level.

It was very important in the Danish policy process to have the right timing. The initiative of the Danish government to analyse the future for Denmark in the global economy placed research policy issues of any kind very high on the political agenda. This initiative provided the perfect political climate to come forward as well with a research policy strategy for the transport sector. At a different time, the same initiatives might not have led to the approval of a new research programme in Denmark. The success of the ERA-NET TRANSPORT initiative was therefore strongly connected to the coincidence of these two initiatives. This coincidence opened up an appropriate window of opportunity to launch a future transport research funding programme open for cross-border cooperation in Denmark.

In Poland the policy process towards a national transport research policy strategy and national transport research programme has just reached its half time goals. The political arguments to push this process come recently from the Polish transport and transport infrastructure policy side. The policy process is now under direct supervision of the Ministry of Transport. The vision behind the ERA-NET TRANSPORT Polska Initiative is to draft a national transport research policy strategy to incorporate Polish science and research into the development of an integrated transport and shipment infrastructure in Poland.

One of the main results of the stakeholder dialogue in Poland was a general commitment to build up a strong and competitive transport market and a modern integrated transport and shipment infrastructure to serve Polish economy. A second major outcome of the dialogue is the clear dedication to better associate transport science and research with transport industry and the transport service sector concentrating as well on intensifying international research cooperation. A specific working group, in which several stakeholders are involved, is responsible for the research priority setting process. They will draft a document on a Polish transport research policy strategy and an implementation plan for a future Polish transport research programme. It is foreseen that this document will introduce as well an integrated strategic research agenda (SRA) for Polish transport research (integrating the SRAs of the Polish Technology Platforms and strategic agendas of other key-players in transport).

National public funding portfolios for science and research are in common very broad and the major funds are in most countries bottom up organised providing grants for individual researchers or research groups. But several countries have since a while as well more specific public funding schemes as so called thematic oriented research funding programmes. These public funding programmes are much more top-down implemented. Public authorities take a clear leadership and are the main responsible part for the work programme behind these funding programmes. The thematic orientation of the working programme is due to actual policy strategies and concepts. In the Danish case the thematic orientation is very mission-oriented, addressing societal problems and challenges to reach long term goals in the transport sector. In the Polish case the thematic orientation refers strongly to current transport and transport infrastructure politics in Poland. In both countries the actual policy process is arranged under the supervision of the Transport Ministries.

Thematic orientations of transport research programmes can address as well other missions or strategic directions, like for example the re-organisation of the transport service sector and transport industry, towards successful privatisation or the restructuring of national transport industry from a normally low-tech to a high tech-oriented industry branch to force the competitiveness of national transport industries at the global market. Austria did this for example very successful in the 90ties and has today very competitive transport industry branches strongly embedded in international value chains. Poland and Denmark decided as strategic direction for their research programs more a transport policy driven approach.

To come to a suitable Science and R&D strategy in the national context it is important to have a clear picture of the national research and innovation system. Most thematic oriented public funding programmes in the 90ties had a strong orientation towards the optimisation of structure and function of national innovation systems. Later this approach was adapted as well for particular sectoral research and innovation systems, e.g. for the transport sector. From an innovation system perspective, at the start the most important measure is to drive better cooperation among universities, non-university research organisations and industry, in so called science-industry relations. Another important measure is for example to support post-graduate education to get a better human resource state and to build-up transfer sites for knowledge and technology exchange. Other important measures are e.g. the support of industrial cluster initiatives to reform the structure of research and innovation system and to upgrade national industry from low-tech towards medium and high-tech industry branches on the way to a knowledge oriented economy with major branches and several niches which are strongly competitive at the European and the global market.

With the current broad participation of stakeholders in the policy formulation process, e.g. for setting up a strategic research agenda, a more research topic oriented approach comes up. The broad participation of relevant stakeholders is on one side an advantage but can be troublesome on the other. Stakeholder participation in the above described policy process in Poland and Denmark brought a lot better information into the policy formulation phase and supports a wide basis for trust regarding the actual policy strategy. On the other hand the involvement of interest groups can lead as well to a fragmentation of the policy concept, because stakeholders bring only in their very specific preferences and interests. In political science a defeat of government is hypothesized regarding these new governance modes. New governance is on hand helpful due to the growing complexity regarding policy making. On the other hand policy decisions are now much stronger influenced by the private sector.

It was interesting to observe, that in both countries the actual decision making process on the policy strategy and the future research funding program stayed in fact at the political sphere.

In Denmark as well as in Poland the policy process started, because an appropriate window of opportunity for a new policy initiative – here a transport research programme – opened in the political sphere. In Denmark this window of opportunity opened due to the current political process “Denmark towards Globalisation”. In Poland a window of opportunity opened due to the current re-organisation of the Polish science and research funding system going along with the implementation of the Polish National Framework Programme. In both countries the ERA-NET TRANSPORT initiative supported the political argumentation on the significance of transport research policy very much and did also underline the importance of the

need for a specific national transport research program as well as for cross-border cooperation activities.

Regarding the survey on both cases the following **five major guidelines** for implementation and re-implementation of transport research programming systems can be concluded:

1. An appropriate **window of opportunity** in the political sphere – a change of political approaches or new strategies – is significant to start a new research policy initiative.
2. **One public sector authority has to take over the lead** for a new policy initiative like an upcoming transport research program; with that the initiative gets a specific direction.
3. It is central to **involve high level officials** from the beginning and to prepare good political arguments on the significance of transport research programming.
4. **Relevant stakeholders** have to be involved **on a broad basis in the policy formulation phase**, but the policy making process stays at the governmental and political sphere.
5. **ERA-NET TRANSPORT** is vital to **initiate** and **support the process** and to **assist political argumentation**.

APPENDIX

This appendix comprises detailed information regarding the Danish and Polish research priorities mentioned in the chapters 2.1 in the Danish and Polish part of the report.

Strategic transport research priorities in Denmark (results of the kick-off seminar):

Planning and maintenance of infrastructure

- Well maintained road and rail infrastructure,
- Decision support tools (models covering all modes and societal costs),
- Freight infrastructure (road, rail, maritime and multi-modal).

Congestion alleviation

- On rail and road; Efficient use of the infrastructure;
- Intelligent Transport Systems (ITS).

Freight transport

- Freight on rail in Denmark – does it have a future?
- ITS use in road freight transport,
- Intelligent logistics.

Transport behaviour

- Transport and health,
- Transport and education,
- Improved understanding of future transport demands and traffic culture.

Transport safety

- Improved safety in road transport to reduce human and social costs,
- The elderly in traffic and traffic safety,
- Bicyclist safety,
- ITS and safety.

Assessments of social costs

- Improved tools and methodologies,
- Improve quality of the costs to make the assessments more reliable,
- Include also the soft areas in social cost assessments.

Visions for the transport sector

- Infrastructure needs for the next 20-30 years,
- The reliable background for development of policy goals and measures,
- The importance of transport in the future society.

Sustainable transport

- The shift to other fuels than oil in the transport sector,
- Measures to reduce air-pollution - especially small particles in urban air,
- Noise abatement policies.

Urban transport

- Measures to reduce congestion,
- Measures to reduce the impact of traffic on urban environment,
- Improved accessibility in urban areas.

Strategic transport research priorities in Poland for 2007:

1. Road transport

- Transfer to exploitation 1240 km of motorway
- Transfer to exploitation 2640 km of express road
- Roads adaptation to load capacity 115 kN/axis
- Improvement of road maintenance

2. Rail transport

- Modernization of railway lines
- Preparation for implementation high speed rail system and preparation of selected lines section for ridding with speed 200 km/h
- Liquidation of bottleneck causing speed limitation
- Improvement of rail infrastructure
- Increase of rail interoperability

3. Marine transport

- Efficient access to seaports
- Improvement of seaports` infrastructure
- Development of seaway
- Increase of reloading of containers and general cargo
- Improvement of competitiveness

4. Air transport

- Development of air transport infrastructure
- Improvement of road and rail access to airports
- Achievement of high safety standard
- Environment friendly rail transport

5. Intermodal transport

- Building and modernization on railroad line and seaport terminals
- Building and modernization of logistic centres and support in integration already existing

6. Safety of road traffic

- Strengthening controlling and prevention of road traffic, including automatic speed controlling
- Media campaign
- Improvement of road rescue
- Monitoring of road traffic safety

7. Urban transport

- Creation of metropolitan railway infrastructure
- Building of a second underground line in Warsaw
- Development of tram communication
- Creation of integrated communication system
- Improvement of urban transport attractiveness , through standard and safety improvements
- Tariff integration
- Support of structure of bicycle ways

8. Intelligent transport systems

- Creation of Intelligent Transport Systems` architecture
- Support of management projects of road traffic inside and outside the cities
- Realization of management projects of urban communication
- Co-financed information systems purchase for intermodal transport (load monitoring, service of logistic centres)

Strategic transport research priorities in Poland for years 2007-2013:

1. Instruments for strategic planning and policy of transport

- Modelling of transport process
- Instruments of assessment for investment projects
- Advanced instruments of market research in railway transport and logistics
- Monitoring and modelling transport interaction on environment
- Spatial model of integrated system of transport infrastructure

2. Building and maintenance of transport infrastructure

- Modern materials and technologies
- Technical standards
- Efficiency of system of taking of charge
- Safety and interoperability of transport systems
- Safety of transport infrastructure

3. Sustainable kinds of transport and mobility policy

- Instruments of mobility policy
- Possibility of heavy traffic reduction
- Strengthening of railway transport competitiveness

4. Pro ecological solutions in transport

- Reduction of the new transport infrastructure influence on environment
- Noise limitation
- Clean vehicles
- Energy efficiency in transport
- Effectiveness of the used natural compensation in transport investments

5. Sustainable urban transport

- Fee systems
- Integration of the public transport
- Optimization of transport services of metropolitan areas
- Railway transport in cities
- Innovative solution in urban transport

6. Improvement of road traffic safety

- Monitoring of used solutions efficiency
- Shaping of the driver behaviour
- Systems of the automatic speed control
- Improvement of the pedestrian and cyclists safety
- Effectiveness of mass media campaigns

7. Development of the Intelligent Transport Systems

- Road traffic management
- Intermodal transport management
- Systems of the electronic fees
- Economic effectiveness of ITS use



