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Interim evaluation of EU FP7 Transport research notably within Theme 7 of the cooperation programme “Transport (including aeronautics)”

Final report – deliverable D7
Executive summary – deliverable D4
Interim evaluation of EU FP7 transport research notably within Theme 7 of the cooperation programme "Transport (including aeronautics)"
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Executive summary

The interim evaluation of the Seventh European Framework Programme (FP7) Transport research aims to contribute to the overall FP7 interim evaluation. The bulk of investigations were carried out within three sub-themes of the FP7 Transport programme: aeronautics, sustainable surface transport, and cross-cutting activities.

The following tools were used at the programme and sub-theme levels to produce the results in this report:

- Desk study used to question the intervention logic of the research on transport funded under FP7, i.e. to track the internal coherence between the transport policy priorities, the research work programmes and ultimately the project objectives.
- Proposal and project databases analysis in order to gain a comprehensive and exhaustive view of which activity is supported under FP7 Transport programme in terms of funding, objectives, type of actors, size and instruments of projects, etc.
- Interviews with project coordinators and participants in order to investigate the achieved and expected outputs, results and impacts, as well as identify the potential barriers and problems at sub-theme levels. These interviews were primarily used for the three sub-thematic reports.
- Interviews with experts, stakeholders and policymakers in order to investigate issues related to the role of the Programme in the coordination of national research programmes and the take-up of EC-led project results.
- Interviews with EC representatives in order to investigate at programme and sub-theme levels the practical management of the calls and projects but also more strategic issues such as the way priorities are selected and coordination performed between projects.
- One workshop with the Commission’s Transport Advisory Group (TAG) to address key issues related to the coverage and the relevance of the 2007 and 2008 Work programmes, the coordination of activities with Member States policies and, finally the process of elaboration of the work programmes.
- Four case studies on the role of the Small and Medium Enterprises (SMEs) on transport research and innovation in the European Union, the role of the New Member States on transport research and innovation in the European Union, the contribution of Clean Sky on research in aeronautics in Europe and the contribution of European Technology Platforms to R&D in surface transport
- Three workshops to discuss with project participants, stakeholders and EC officers the results obtained in each of the three sub-thematic reports.

The main conclusions of this evaluation are presented below:

The FP7 Transport programme exhibits a strong European added value

Almost all project participants (whether coordinators or not) see obvious benefits and added value from the pan-European projects in which they participate. The FP7 Transport programme has brought together the complementary competencies of the best European R&D actors in the field, providing a truly pan-European view or foundation, necessary to give support regulation, with the necessary scale and scope to address key transport challenges.
The national programmes are still limited to domestic boundaries despite some encouraging Member States’ initiatives and ERA-Nets calls. The FP7 Transport programme offers one of the only opportunities for European research and innovative actors to cooperate with their most important and relevant counterparts, at least within the required scale and scope of public support, to address transport research challenges.

The approach adopted for the FP7 is an outstanding improvement compared to the previous FPs

The FP7 Transport programme adopted a new approach, more integrated, systemic and holistic:

- **Integrated:** In FP6, ‘Sustainable Surface Transport’ was a thematic area within the ‘Sustainable Development, Global Change and Ecosystems’ priority. An additional priority addressed Aeronautics and Space. In FP7, Surface Transport and Aeronautics both now belong to the FP7 Transport Programme.

- **Systemic:** FP7 has been set up to tackle all modes of transport under one flag, therefore creating the opportunity to address these broader European challenges through a systemic approach. The co-modality approach which means the efficient use of different transport modes on their own and in combination and which was recommended by the 2006 mid-term evaluation of the Transport White Paper was integrated into the design of the work programmes, which are no longer dedicated to a specific mode. Instead these are open to any mode.

- **Holistic:** This approach was developed in order to link ‘soft’ (regulatory, policy-related, social, etc.) and technological issues. In the past, DG TREN (which was split up into DG MOVE) often focused on these issues while DG RTD dealt with ‘hard’ issues such as the vehicle components and activities with longer technological application perspectives. Currently, technological and non-technological issues are integrated and are no longer considered as separate issues.

These characteristics are a very positive improvement for the FP and its ability to define challenges and effectively address them.

**Note:** up to February 2010, DG TREN was responsible for European Transport policy (along with European Energy policy). In February 2010, DG MOVE took over from DG TREN for the responsibility for European Transport policy.

The Transport programme demonstrates stronger ambitions with regards to cross-modal and cross-cutting activities, yet allows them to materialise more concretely

In the context of the FP7, the Transport programme has designed a dedicated budget for cross-cutting activities (called TPT). These are cross-modal activities to help implementing the Transport programme. Participants, experts and stakeholders commonly perceive this as a very powerful instrument. This is also relevant since most of the challenges the programme faces cut across the different transport modes. Further, cross-cutting topics have been included in the aeronautics and air transport sub-theme and in the sustainable surface transport sub-theme. Moreover, these cross-modal/cross-cutting activities are areas of great European added value since national programmes usually barely address these questions. In practice, however, cross-cutting activities have serious limitations, which are related to a small budget and the heterogeneity of the portfolio of projects funded under the TPT.
The procedures for priority-setting and Work programme design are well-defined

The committee system is well structured within the EC to ensure the most beneficial input from the different actors involved in research and in research policy. There is a clear division of tasks between the three main external influences on the Transport programme: the Programme Committee; the European Technology Platforms; the Transport Advisory Group (TAG). The different committees are composed of actors committed to their role, which enables the EC to receive valuable and relevant input for the design of the Work Programmes. Both the formal and the informal channels for doing so function well.

European Technology Platforms (ETPs) add value to the FP7 Transport programme

Although platforms already had significant influence on some FP6 projects, FP7 is the first programme to benefit from the outset from the European Technology Platforms (ETPs). These coordination structures are now in place to help focus the research efforts in the different modes. The regularly updated versions of the Strategic Research Agendas (SRAs) are important input for the FP7 Programmes and strongly reinforce the relevance and legitimacy of the FP7 Transport Programme.

European Technology Platforms contribute to gear Member States public and private research towards common goals

The European Technology Platforms (ETPs) have a significant impact on some national transport research programmes within the EU, for instance through national platforms that replicate the structure of the ETPs. The ETPs also play a strong role in the strategic research agendas of large companies. Hence, ETPs in general have now become a major tool for permitting a better articulation of the private and public efforts within the EU.

The FP7 Transport programme strengthens and broadens the ‘ERA in Transport’

The FP7 Transport programme strengthens the existing well-structured research community. Pre-existing partnerships form the core of the projects, which are completed by new partners with complementary competences according to specific project needs. For two thirds of the projects, the level of cooperation between the partners is strong and effective. The FP7 Transport programme also has a broadening effect: the programme involves participants beyond the pattern of national specialisation in R&D.

The capacity of the FP7 to attract the most important players in research and innovation in transport is uneven among sectors

The comparison of the FP7 project database with the structure of leaderships in the transport-related sectors shows that a significant share of the large R&D performers do not participate in FP7. Therefore this analysis shows that there is an untapped reservoir of R&D leaders in the field that are potential FP partners. Their relationships with EC-led research should be further investigated in order to find ways to attract them into the FP.
All necessary conditions are set for projects to deliver their expected results

The project sample analysis shows that the large majority of projects are considered to be on track to deliver their results, that the level of cooperation between partners is high and that the composition of consortia is adequate. Given its strong initial ambitions, the programme as a whole should therefore eventually achieve significant progresses towards ‘safer, greener and smarter’ transport systems.

FP7 funds applied mid-term research for projects that will need follow-ups to lead to innovation

Most of the projects are applied research projects with a mid-term horizon. This intermediate positioning of FP research has two strong implications:

• FP7 research will only marginally lead up to radical innovation. Reflection should be carried out concerning the role of EC research in transport open collaborative research.

• Many projects will need a phase of technological development before they eventually result in an innovative marketable product or a service. Although it is still a very new initiative, our analysis of Clean Sky suggests that Joint Technology Initiatives are a very promising tool to fill this gap, bringing results up to the demonstration stage. Clean Sky is tackling a major gap through the commitment of a critical mass of public and private resources towards the development of demonstrators. More lessons-learned from Joint Technology Initiatives will be needed to support strategic discussions regarding FP8, which is expected to be more oriented towards innovation.

FP7 funds research with high additionality

FP7 funds projects that are too complex and risky to be funded without public support, although as demonstrated by the analysis, these projects are related to the core business of the companies. Project investigations show that one half of projects would not have been launched if it was not for the programme, or it would have been launched in a more reduced scale and scope.

The role of the Small and Medium Enterprises (SMEs) in the projects is important

Most large companies consider the participation of the Small and Medium Enterprises (SMEs) as important for the projects:

• SMEs hold the technological bricks necessary to achieve the project objectives.

• Larger and more traditional SMEs also can be part of the innovation chain even if they are not research and technological providers.

• SMEs can be involved in consortia because they belong to the value chain of a large company.

However, even though the objective of 15% of SME participation has been reached in research funded under the Transport Work Programmes 2007 and 2008, the analysis of the evaluation team shows that only a minor share of EU innovative SMEs are involved in FP projects (5.6% in FP6 and 2.2% in FP7 so far).

The cooperation with ICPC partners is still limited

The FP7 had the ambition to increase cooperation with the so-called International Cooperation Partner Countries (ICPC). So far, there are some projects that explicitly
deal with that issue. However, the participation of actors from these countries still faces strong reluctance from leading European players due to competitive issues. In particular, the EU actors often express concern about IP issues. Further reflection on the effective instruments to involve ICPC partners is needed.

On the basis of the above conclusions, the evaluation team proposes the following recommendations:

Recommendation 1 - The EC should reaffirm and strengthen its integrated, holistic and systemic approach in future FP7 work programmes and in FP8

The approach of the FP7 Transport programme has been designed to tackle overarching issues in order to shape ‘safer, greener and smarter pan-European transport systems’. The integrated, holistic and systemic approach is considered as very positive by the consultants. It is also highly relevant to the increasing challenges faced by transport research. This approach should be pursued and reinforced, in particular in order to adequately address future FP8 ‘grand challenges’.

Recommendation 2 - The EC should reinforce and modify the modalities of its support to multi-modal research activities

The willingness to adopt a systemic approach instead of a modal approach is unanimously considered as extremely positive. As mentioned already, cross-fertilising across modes is pursued. However, actors involved in a specific mode today do not consider the possibility of working on cross-modal projects or on projects related to a mode other than theirs.

The EC contribution to projects dealing with multi-modal issues and project aimed at transferring technology across modes should be increased significantly. The EC should also fund projects aimed at enhancing awareness of the importance of a multi-modal approach of transport challenges in engineering schools.

In future Work programmes, the EC should better differentiate between multi-modal research projects and diverse support policy actions in order to give more visibility and importance to the former.

Recommendation 3 - The EC should redefine its approach of cross-cutting issues

The cross-cutting activities of the FP7 do not have any equivalent in any national research programme on transport. Since these activities are new, the learning process is still ongoing. In order to overcome its structural weaknesses, e.g. lack of a structured community and insufficient involvement of industry and national authorities, the cross-cutting issues should be better linked to the other activities of the programme. To be more specific, the cross-cutting activities should address both policy and business dimensions of each and every issue addressed. To do so, the EC should explore the possibility to fund collaborative projects dealing with cross-cutting issues.

Recommendation 4 - The EC should increase the development of new means of communication and diffusion of FP7 Transport programme results

The EC should develop new ways of communication of research outcomes on specific dedicated topics. The diffusion and dissemination efforts beyond individual projects (at topic, theme or even programme level) remain limited. There is a serious lack of communication from the EC on the outcomes that have been achieved so far on
specific topic or objective towards larger audience than the core audience of researchers and policymakers. There are some initiatives already (e.g. the project called ‘Raising European Student Awareness in Aeronautical Research Through School-labs – REStARTS’) which might be replicated.

Each Project Officer is responsible for following up on an important set of projects, which makes it difficult to devote time to the communication of the project research outcomes. The Transport Knowledge Research Centre puts together an impressive pool of knowledge and of reports but it is more a library than a tool for communication.

The Commission could explore the subcontracting of the communication towards the general public on specific topics to dedicated professional bodies.

Recommendation 5 The EC should enhance the internal human resources and budget assigned to the management of the FP Transport programme in order to maintain sufficient project and programme coordination

The new systemic approach requires a higher level of coordination in order to design the Work programme and support cross-fertilisation of results between projects. It becomes very difficult for the EC staff to follow-up their projects and to also participate in activities related to the animation of the programme going from the upstream engineering design of the work programmes to the downstream diffusion of research project outcomes.

Recommendation 6 The EC should identify the lessons-learned from the Clean Sky Joint Technology Initiative and reflect upon possible replication in other transport modes

Clean Sky has been set up to better and further involves the industry in European research both from the point of view of priority-setting and financial commitment. As a matter of fact, industry is now participating in the management of the research work programmes as well as the co-funding of research projects.

Lessons from Clean Sky, along with those stemming from the other Joint Technology Initiatives, will have to be drawn in order to see the extent to which such public-private partnerships might be duplicated in other transport modes in order to address the critical challenges in for instance maritime or rail technologies. In road transport, it is still not clear whether the Green Car initiative – which could not be set up as a Joint Technology Initiative – will generate an equivalent and integrated endeavour from the research and industry communities.

The evaluation of Clean Sky and other JTTs shall provide clear conclusions on the added value of such tools for research in the field, in general, and for the EC intervention, in particular, as well as on their impact on industry research efforts and competitiveness.

Recommendation 7 The EC should explore ways and instruments to reinforce European exploratory research

The evaluation has shown that FP7 primarily funds applied research. The level of challenges with which the programme is coping also calls for a radical approach that is barely supported in the programme. The EC could draw on the lessons-learned from initiatives in Information and communication technologies (Future and Emerging Technologies Open Scheme in particular) and in Energy in order to set up support schemes dedicated to open ‘bottom-up’ collaborative research in each transport mode and across modes.
Recommendation 8 Increasing articulation between the Framework Programme and the national programmes of the Member States

The EC should facilitate the articulation of the Member States’ research programmes on Transport and of these programmes with the FP.

The issue of the articulation of the FP with the national programmes was concretely taken into account with the implementation of the ERA-Nets. In spite of visible improvements, the question remains largely relevant today. This evaluation, backed by the evaluators previous experiences, suggest that most often, policymakers consider that the articulation is made at the research activity level. However, there is clearly a lack of articulation at the policy level and - even more importantly - on specific issues.

As already noticed in the evaluation report of the FP6, the point is not only to enable a stronger coordination of programmes but to act as a coordinator for multi-actors initiatives. In order to increase the coordination of the FP Transport programme with the national research programmes on transport, an effort is needed to increase punctual cooperation on specific research themes or topics. This will increase the discussion between the EC staff and the national policymakers on commonly agreed specific objectives and will make it clearer for everybody that the EU and the national levels can complement each other on specific topics.
Interim evaluation of EU FP7 transport research notably within Theme 7 of the cooperation programme “Transport (including aeronautics)”
Introduction

The Directorate-General Research of the European Commission commissioned the EPEC consortium to perform the interim evaluation of the Seventh European Framework Programme (FP7) Transport research notably within Theme 7 of the Cooperation programme “Transport (including aeronautics)”\(^2\). This evaluation is aimed at assessing the FP7’s actions according to their results, their impact and the needs they aim to meet. The work was undertaken from January to September 2010 by a team of consultants from Technopolis Group, as part of the EPEC Consortium.

The bulk of investigations were carried out within sub-themes of the FP7 Transport programme. Closely following the inner structure of the Programme, these three themes are: aeronautics, sustainable surface transport, and cross-cutting activities\(^3\). The results of investigations in each sub-theme are provided in so-called ‘sub-theme reports’ provided in three annex volumes.

Three other annex documents to the final report include:

- The analysis of the proposal and project databases;
- Four case studies on specific issues (the Clean Sky Joint Technology Initiative, the participation of Small and Medium Enterprises (SMEs), the participation of New Member States, the role of European Technology Platforms) and the main conclusions of the three sub-thematic workshops organised by Technopolis in September 2010;
- The analysis of the interviews conducted with the coordinators and participants.

This final report provides the cross-sub-theme comparative analysis as well as the overall Transport programme-level analysis.

1. Objectives and key questions

The Terms of Reference provided clear objectives and evaluative questions for this study.

1.1 Overall objectives

The general objective of this evaluation, as set out in the Terms of Reference, is to assess the overall implementation and management, as well as the achievements and impacts of transport research co-financed by FP7, with respect to its specific objectives, its environmental impact, and the efficiency, effectiveness, relevance of the funding and the sustainability and utility of the different transport research programmes.

\(^{1}\) A glossary is provided in annex.

\(^{2}\) Hereafter for practical reasons, we simply refer to the ‘FP7 Transport programme’. The interim evaluation also referred to as ‘the study’.

\(^{3}\) Hereafter referred to as the three ‘sub-themes’ for the sake of commodity, although cross-cutting activities are not a sub-theme as such.
The lessons learned from this evaluation are used in a final section to formulate conclusions and recommendations for potential improvements of the Programme.

1.2 Key questions by evaluation criteria

The Terms of Reference of the evaluation listed the specific questions that the study had to tackle. These questions were further refined during several meetings with Commission services. These questions are presented below by evaluation criteria. This structure will also be used to present the results of the evaluation.

1.2.1 Relevance

The main questions regarding the relevance of the FP7 Transport programme are as follows:

- Are the overall Framework Programme objectives adequately specified, notably towards achieving 'safer', 'greener' and 'smarter' pan-European transport systems?
- Are the overall Framework Programme objectives adequately specified, notably towards the realisation of the European Research Area?

1.2.2 Coherence

- Internal coherence: What is the logic and structure of the Work programme? Is it efficient to drive activities toward the objectives?
- External coherence: What are the relations (complementarity, synergies, overlapping, etc.) with Joint Technology Initiatives?

1.2.3 Effectiveness

The main questions regarding the effectiveness of the FP7 Transport programme are as follows:

- In how far has FP7 contributed to shaping 'safer', 'greener' and 'smarter' pan-European transport systems?
- In how far has FP7 contributed to shaping the European Research Area?
- Is there evidence of structural change, including in particular networking, integration and co-ordination of research, at a national or at an international level as a result of Community research activities?
- Does FP7 play an adequate role in promoting excellence in scientific and technological research, development and demonstration in the transport (including aeronautics) area?
- Does FP7 play an adequate role in positioning Europe on the global map of science and technology in transport research?

1.2.4 Efficiency

The main questions regarding the efficiency of the FP7 Transport programme are as follows:

- Are the activities carried out efficient and are they clear, appropriate and (cost) effective, taking into account issues such as the level of funding and other available resources, the overall cost of management against research funded, contractual and legal procedures (including rules for participation, funding schemes and grant agreements), and the support given by the Commission to assist programme participants?
• To what extent have simplification measures been effective? What kind of approaches could be considered to generate further efficiency gains? Will further steps create the desired results or do we need to consider radically new?

2. Perimeter of the evaluation

The evaluation covers the 2007 and 2008 Work Programmes. This perimeter includes the projects that resulted from the following calls:

• Aeronautics:
  – FP7-AAT-2008-RTD-1
  – FP7-AAT-2007-TREN-1,
  – FP7-AAT-2007-RTD-1
• Surface transport:
  – FP7-SST-2008-RTD-1
  – FP7-SST-2007-TREN-1
  – FP7-SST-2007-RTD-1
  – FP7-SST-2008-TREN-1
• Cross-cutting issues:
  – FP7-TPT-2008-RTD-1
  – FP7-TPT-2007-RTD-1

Note: up to February 2010, DG TREN was responsible for European Transport policy (along with European Energy policy). In February 2010, DG MOVE took over from DG TREN for the responsibility for European Transport policy.

The study does not include directly:

• Transport related ERA-Nets
• GALILEO-related projects
• The Clean Sky JTI, the Green Car Initiative or SESAR.

The aforementioned initiatives are only considered in this evaluation in light of their interaction and impact on the FP7 Transport programme. Further, it should be noted that SESAR and GALILEO are or soon will be evaluated individually.

3. Content of the report

This final report follows the structure suggested by the Terms of Reference:
1. Introduction
2. Research methodology;
3. Evaluation results;
4. Conclusions and recommendations;
5. Annexes.

The evaluation results are presented according to the main evaluation criteria: relevance, effectiveness and efficiency of the FP7 Transport programme.
Evaluation methodology

The section outlines the tools used during the investigation, as well as a sample of the projects that served as the basis for these investigations. It also provides elements on the perimeter of the evaluation and the content of each sub-theme.

Further information on the methodology is presented in Annex C.

1. Evaluation tools

The following tools were used at the programme and sub-theme levels to produce the results in this report:

- Desk study (policy documents such as the 2001 transport white paper, the Work Programmes 2008 – 2009, project websites). This desk study was used to question the intervention logic of the research on transport funded under FP7, i.e. to track the internal coherence between the transport policy priorities, the research work programmes and ultimately, the project objectives.

- Proposal and project database analysis in order to gain a comprehensive and exhaustive view of which activity is supported under FP7 Transport research in terms of funding, objectives, type of actors, size and instruments of projects, etc. Social network analysis was used to explore the relationships between the participants and the resulting networks.

- Interviews with project coordinators and participants in order to investigate the achieved and expected outputs, results and impacts, as well as identify the potential barriers and problems. Questions addressed a range of issues from practical management to the more strategic issues related to project objectives, composition, relationships with partners within the project or with other projects and with stakeholders, and achievements. Special effort was put on tracking the real added value (or European added value) of the programme, i.e. the value resulting from the programme that is additional to what would have resulted from regional and national support to transport research activities.

- Interviews with experts, stakeholders and policymakers in order to investigate issues related to the role of the programme in the coordination of national research programmes and the take-up of EC-led project results.

- Interviews with EC representatives (mainly at DG Research and DG Move), including a roundtable with the Unit H.1 of DG Research (horizontal aspects and coordination) in order to investigate, at programme and sub-theme levels, the practical management of the calls and projects, dealing especially with simplification measures as experienced by the EC but also more strategic issues, such as the way priorities are selected and coordination performed between projects.

- One workshop with the Commission’s Transport Advisory Group (TAG), during which three parallel sessions were held with TAG sub-groups, corresponding to each of the study sub-themes. The objective of the meeting with the TAG was to rely on the members’ expertise in order to address three key issues related to the coverage and the relevance of the 2007 and 2008 work programmes, the coordination of activities with Member States’ policies and, finally, the process of elaboration of the work programmes.

- Four case studies on the role of the Small and Medium Enterprises (SMEs) on transport research and innovation in the European Union, the role of the New
Member States on transport research and innovation in the European Union, the contribution of Clean Sky on research in aeronautics in Europe and the contribution of European Technology Platforms to R&D in surface transport.

- Three workshops to discuss with project participants, stakeholders and EC officers the results obtained in each of the three sub-thematic reports.

2. Analytical approach from investigations to recommendations

The evaluation team has designed a purpose-built approach in order to propose conclusions and recommendations that are valid for the whole FP7 Transport programme, while being grounded in precise field investigations and taking into account the specificity of the different domains and areas.

Three levels of results are distinguished in this evaluation (Figure 1):

- The sub-theme level: This represents the core of the investigation carried out (interviews with coordinators and participants of sample of projects, desk study, sub-thematic workshops, etc.). Results are presented in three sub-theme reports.

- The comparative analysis level: The main results in each sub-theme are compared and benchmarked in order to extracts commonalities and idiosyncrasies. The results of this analysis are presented in dedicated exhibits that recall and systematically compare the main results obtained at the sub-theme level for the key evaluation questions. These results are based on the interviews conducted with the participants.

- The programme level: Analysis is built on the previous levels of fieldwork and analysis in order to provide clear responses to the overall evaluation questions. The results presented are not sub-theme specific.

Figure 1 Three levels of analytical approach followed in this evaluation
3. Sample of projects

Interviews and all in-depth investigations have been carried out based on a sample of 100 projects. The two principles guiding the selection of the sample were:

- Ensure that the number of projects from each area reflects the structure of the entire project portfolio in terms of the number of projects per area and the weight of each area with regards to EC contribution.
- Have a balanced number of projects in terms of activities within each sub-theme.

The random sample complying with these basic principles was validated by EC services. The following table describes the makeup of this sample by sub-theme (see Table 1).

Table 1 Breakdown of sampled projects per sub-theme

<table>
<thead>
<tr>
<th></th>
<th>Aeronautics</th>
<th>Surface transport</th>
<th>Cross cutting issues</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of projects in sample</td>
<td>30</td>
<td>40</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Number of projects in portfolio</td>
<td>68</td>
<td>143</td>
<td>60</td>
<td>271</td>
</tr>
<tr>
<td>% of projects in sample</td>
<td>30%</td>
<td>40%</td>
<td>30%</td>
<td>100%</td>
</tr>
<tr>
<td>% of projects in portfolio</td>
<td>25%</td>
<td>53%</td>
<td>22%</td>
<td>100%</td>
</tr>
<tr>
<td>% of EC Contribution in sample</td>
<td>50%</td>
<td>43%</td>
<td>7%</td>
<td>100%</td>
</tr>
<tr>
<td>% of EC contribution in portfolio</td>
<td>41%</td>
<td>54%</td>
<td>5%</td>
<td>100%</td>
</tr>
</tbody>
</table>

4. Structure and content of the sub-themes

The portfolio of projects funded under the Transport Work programmes 2007 and 2008 includes 271 projects, which represent a total of 3644 participations. Each of these projects falls under one of three sub-themes: AAT for aeronautics, SST for sustainable surface transport and TPT for cross-cutting issues.

The three sub-themes in this evaluation do not directly correspond to the aforementioned sub-themes of the Work Programmes. In order to increase the internal coherence of the three sub-themes, it was decided by the Commission to reallocate the cross-cutting activities funded within the AAT and SST sub-themes into the TPT sub-theme renamed ‘cross-cutting activities’. The fact that the traditional and well-known acronyms AAT, SST and TPT are not used in the evaluation reflects these changes in the original structure of the programme, in order to avoid any confusion.
5. Strengths and limitations of the methodology

This evaluation is based on in-depth investigation, from which resulted a wealth of materials and evidence. Interviews – especially with project coordinators and participants which represent the bulk of interviewees – were numerous and fruitful. All in all, 164 interviews were carried out (Table 3). This number does not include the dense interactions with programme actors in round-tables and workshops.

The interviews carried out with participants (129) played a particularly important role in obtaining the results of this evaluation. Indeed, results presented in the following sections are heavily derived from this set of interviews. It must be kept in mind, however, that the analysis is strongly based on the information obtained from this sample. Results should, therefore, be considered as an estimate of the situation of the three sub-themes and the programme as a whole. This of course has strong implications in terms of sampling methodology and potential pitfalls.

- The evaluation team has tried to mitigate this problem by designing a random and sound sample and by doing as many interviews as was possible in the limit of the study time and budget.

Table 2

Breakdown of projects into the sub-themes

<table>
<thead>
<tr>
<th>Areas</th>
<th>Number of projects covered</th>
<th>% of projects</th>
<th>Number of participations</th>
<th>% of EC contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeronautics</td>
<td>68</td>
<td>25.1%</td>
<td>1145</td>
<td>41.4%</td>
</tr>
<tr>
<td>Surface transport</td>
<td>143</td>
<td>52.8%</td>
<td>498</td>
<td>53.9%</td>
</tr>
<tr>
<td>Cross-cutting issues</td>
<td>60</td>
<td>22.1%</td>
<td>2001</td>
<td>4.7%</td>
</tr>
<tr>
<td>Total</td>
<td>271</td>
<td>100%</td>
<td>3644</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3

Number of interviews carried-out in the evaluation

<table>
<thead>
<tr>
<th>Sub-themes</th>
<th>Number of interviews with project coordinators and participants</th>
<th>Number of interviews with other actors including EC officers and stakeholders,</th>
<th>Total number of interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeronautics</td>
<td>58</td>
<td>10</td>
<td>68</td>
</tr>
<tr>
<td>Surface transport</td>
<td>44</td>
<td>5</td>
<td>49</td>
</tr>
<tr>
<td>Cross-cutting issues</td>
<td>27</td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>Programme level</td>
<td>15</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>129</td>
<td>35</td>
<td>164</td>
</tr>
</tbody>
</table>
Interim evaluation of EU FP7 transport research notably within Theme 7 of the cooperation programme “Transport (including aeronautics)”

Another limit of this study, as is the case for most interim evaluations, is that a significant proportion of projects were not yet completed at the time of investigations. All projects studied were funded under the 2007 and 2008 Work programmes, which means they actually started their research activities in 2009 and 2010. This is mainly due to the significant delays between the issue of the calls and the effective start date.

The fact that this evaluation intervenes at the early stage of these projects is an additional handicap, as the production of results and impacts is not linear during the course of projects. Scientific progress and the exploitation of research outcomes is a cumulative process in which most impacts are produced during the final stage of the project and after completion. Additional effects (including policy, economic, and social) may appear on a longer term.

As a result, this evaluation has required a certain dose of anticipation from evaluators, as well as from the solicited actors. Because most projects are only starting to deliver their first outputs, it is even irrelevant to measure progress in terms of patents or publications. This would not give any indication of the projects’ ability to actually meet their objectives. Based on the activities carried out to date, it was necessary to identify potential future outputs and results according to robust evaluation tools available. Logically, this evaluation does not cover impacts of projects hence the effectiveness of the FP7 programme. It thus should be borne in mind that achievements are formulated, for the most part, as trend’s assessment.

The evaluation team has tried to mitigate this problem by carrying out interviews with an outstanding number of participants in the FP. It also has crossed findings obtained from the different tools and across the three sub-themes to reach the most reliable assessment of achievements. The evaluation team also organised three dedicated sub-thematic workshops with experts in order to confront and discuss the results obtained at the sub-thematic. The evaluation team relied on its comprehensive experiences with FP evaluation, especially in the FP5 and FP6 ICT, energy and environment programmes.
Evaluation results

This chapter presents the results of the evaluation by means of criterion. This is done in order to systematically address all the evaluation questions in a logical order. The details of the activities carried out in this programme, based on the project database analysis, are provided in a separate annex volume. Key figures are provided in the annex for the reader's convenience in order to directly support the analysis.

1. Relevance of the FP Transport programme

Relevance's dimension measures the extent to which the objectives of the FP Transport programme are in line with the needs of the beneficiaries and/or the social, economic and environmental problems they are addressed at.

Exhibit 1 Questions of the Terms of Reference related to the relevance criterion

- Are the overall Framework programme objectives adequately specified, notably towards achieving 'safer', 'greener' and 'smarter' pan-European transport systems?
- Are the overall Framework programme objectives adequately specified, notably towards the realisation of the European Research Area?

1.1 Main novelties of the FP7 Transport programme objectives and approach

The priority in FP7 has been to develop an integrated approach to transport research. This integration relates to the relationships between transport modes, as well as between the technological and non-technological dimensions of projects. More precisely, the approach adopted by the FP7 Transport programme has three underlying key characteristics:

- **Integrated**: In FP6, 'Sustainable Surface Transport' was a thematic area within the 'Sustainable Development, Global Change and Ecosystems' priority. An additional priority addressed Aeronautics and space. In FP7, Surface transport and Aeronautics both now belong to the FP7 Transport programme.

- **Systemic**: FP7 has been set up to tackle all modes of transport under one flag, therefore creating the opportunity to address these broader European challenges through a systemic approach. The co-modality approach which means the efficient use of different transport modes on their own and in combination and which was recommended by the 2006 mid-term evaluation of the Transport White Paper was integrated into the design of the work programmes, which are no longer dedicated to a specific mode. Instead these are open to any mode.

- **Holistic**: This approach was developed in order to link 'soft' (regulatory, policy-related, social, etc.) and technological issues. In the past, DG TREN (which was split up into DG MOVE) often focused on these issues while DG RTD dealt with 'hard' issues such as the vehicle components and activities with longer technological application perspectives. Currently, technological and non-technological issues are integrated and are no longer considered as separate issues.
Further, another outstanding characteristic of the FP7 Transport programme is the place given to cross-cutting activities focused on combined policy objectives. The previous approach was focused on distinct policy objectives within each mode of transport and associated sub-theme. As a matter of fact, cross-cutting issues were included within the different sub-themes of the programme, which has prevented a real strategic approach and caused a risk of fragmentation of efforts. Under FP7, challenges are no longer considered as mode-specific.

These characteristics are considered a positive improvement for the FP, contributing to its ability to define challenges and to address them. They are also considered a useful instrument for the EC to implement policy-support actions.

However, it appears that the projects carried out by the cross-cutting activities are sometimes of small interest for the industry, as they do not address the issues that are considered to be relevant. These projects are criticised for being too focused on policy issues and not sufficiently so on business issues. Finally, it is also stated that involving public authorities in projects has proven difficult. This is perceived as a major concern.

1.2 Design of the FP7 Transport programme

Annual Work programmes are designed on the basis of the consultations with stakeholders and notably with the recommendations provided by the European Technology Platforms and the Transport Advisory Group. The Programme Committee, which represents the Member States, provides inputs during the preparation phase and is responsible for giving final approval of the Work programmes.

1.2.1 Role of the Transport Advisory Group (TAG)

From FP5 onwards, the European Commission has required advice on the content and directions of the research to be carried out. As far as transport is concerned, the EC takes advice from the dedicated Transport Advisory Group (TAG) set up in 2006. The group was established as a follow-up to both the FP6 Sustainable Surface Transport Advisory Group and the FP6 Aeronautics and Space Advisory Group. This was done in order to provide the European Commission with support regarding the Work programmes, the content of the calls implementing the Work programmes and on the Framework programme itself.

The TAG is composed of experts assigned intuitu personae by the European Commission4. The input it provided is considered of high quality and is acknowledged as very valuable. In particular, EC staff members consider the annual reports to be very informative.

However, the ability of the TAG to provide advice as specified in their mandate on strategic issues (relevant objectives and scientific and technological priorities) and on the topics covered by proposals is limited by the fact that it only intervenes during the final phases of Work programme design. Consequently, the advisory role of the TAG seems to operate at a more general level than the more detailed level usually required by the Work programme.

This does not mean that the work of the TAG is not helpful. However, it fails to directly influence the design process of the work programmes it is meant to review.

4 The list is available here: http://ec.europa.eu/research/fp7/pdf/advisory-groups/transport-members.pdf
1.2.2 Role of the Programme Committee

According to the report published by VINNOVA (2005)\textsuperscript{5} regarding the future implementation of FP7, the role of the Programme Committee needs to be clarified.

\begin{quote}
It is misleading to explain the long time for handling the proposals by saying that selected projects must be discussed by the programme committees. Rather, it is inadequate planning that causes the unnecessary delay. Transforming the right to decide (though seldom used to make changes in the Commission’s proposals) into an obligation to inform is the first step towards downgrading the importance of the programme committees and thus indirectly the member countries’ possibility of influencing FP proposals and implementation.
\end{quote}

The Programme Committee is responsible for giving final approval of Work programmes. Officially, the EC drafts proposals and it is up to the Member States to approve them or not.

In practice, the EC has meetings with the Programme Committee six or seven times a year in order to provide the Member States with the possibility to influence the contents of the Work Programmes. These meetings are aimed at preventing long discussions at the end of the design process of the Work programme. For that reason, the EC sends a draft proposal to the Member States before each of these meetings takes place. Despite the varying levels of involvement and cooperation among Member States, the input provided by the Programme Committee is considered as highly valuable by Commission services.

1.2.3 Role of European Technology Platforms for the Framework Programme

The European Technology Platforms (ETPs) were primarily set up with the intention of bringing together R&D-relevant stakeholders and elaborating long-term R&D strategy. To this end, the ETPs have developed Strategic Research Agendas (SRAs) and roadmaps that define prioritised R&D needs, primarily from the industry perspective.

ETP activities are industry-led, but stakeholders also include national representatives, typically from ministries, and in some cases funding agencies, as well as a few representatives from universities and Research and Technology Organisations (RTOs).

The FP Transport programme relies on the following European Technology Platforms:
- The Advisory Council for Aeronautics Research in Europe - ACARE
- The European Road Transport Research Advisory Council - ERTRAC
- The European Rail Research Advisory Council - ERRAC
- The Waterborne Technology Platform – WATERBORNE.

1.2.3.1 General appreciation of the role of European Technology Platforms in the Transport Programme

The evaluation report of the European Technology Platforms (2008)\textsuperscript{6} indicated that:

\begin{quote}
\textsuperscript{5}VINNOVA (2005), Views on the European Commission’s proposal for the 7th FP (2007 – 2013)
\textsuperscript{6}IDEA Consult (2008), Evaluation of the European Technology Platforms (ETPs), Report for the European Commission
\end{quote}
The set-up of the ETPs is professional and is in compliance with the main principles of good governance. The operations and activities of the platforms are generally considered to be open and transparent.

With regards to transport, ETPs influence Work programme design. The Commission also acknowledges their more general advisory role at a strategic level. Consensus has built around the quality of the platforms in terms of knowledge and expertise in their respective fields, in addition to natural legitimacy stemming from their comprehensive membership. As a matter of fact, the Strategic Research Agendas drafted and updated by the ETPs are considered to be a major input for the design of the Work programmes.

The European Commission is represented within the ETPs. In practice, as the platforms have different commissions and committees, it is not possible for EC staff to attend each and every meeting. However, this does not prevent the EC from receiving the inputs from the platforms and interacting with them. In the three sub-themes, the platforms appear now as legitimate and relevant interlocutors for Commission services.

1.2.3.2 Advisory Council for Aeronautics in Europe (ACARE)

The high-level Advisory Council for Aeronautics in Europe (ACARE) was set up in 2000 in order to develop a strategic vision for the development of aeronautics in Europe. Since then, ACARE has defined and maintained a Strategic Research Agenda (SRA) serving as a roadmap to fulfil the objectives of Vision 2020. The Council is intended to influence all European stakeholders in the planning of research programmes, particularly at the national level and European level, in line with the goals set forth by Vision 2020. In 2004, ACARE put forward SRA–2, which extended SRA–1 in various ways. An addendum to the SRA (SRA–2) was published in 2008.

The role of ACARE is considered as essential to the strategic identification of themes funded by the EC, either through FP7 or Clean Sky.

1.2.3.3 Surface transport-related European Technology Platforms

Several transport-related ETPs have been founded and are working in a truly pan-European manner. These European Technology Platforms seem to be functioning well in general terms. Some of the ETPs are proactive and work efficiently with roadmaps. They provide the EC not only with valuable information but have also become highly appreciated discussion partners. The existence of European Technology Platforms helps increase the level of structuring of the European research community in the transport area, thanks in part to their success in influencing Work programme priorities.

There are a few more critical appraisals regarding how the European Technology Platforms function. These voices however do agree that the present situation has improved, thanks to the adoption of ETPs.

Several FP7 projects are also closely connected to ETPs. Several projects make clear references to Strategic Research Agenda (SRA) performance goals in their objectives. In addition, some projects relate to the formulation of new policy documents, such as the Strategic Research Agendas produced and updated by the European Technology Platforms. Some projects are therefore funded to elaborate on what has been done in the past by the European Technology Platforms.

From this standpoint, the FP7 Transport research and the ETPs have a ‘symbiotic’ relation. The FP7 has priorities and challenges identified by the European Technology Platforms and the European Technology Platforms, benefiting from findings of projects funded by the FP7.
1.2.4 Other actors involved in the design process

The EC also receives feedback from actors other than those present within the different bodies mentioned above. On the one hand, EC Project Officers have personal relationships with policymakers, experts, industrials and academics that provide them with an up-to-date and sharp picture of current challenges and needs. On the other hand, regular meetings are organised in which different actors and stakeholders can share their concerns and views with the EC.

1.2.5 Coordination within the EC in the making of the Work programmes

The fact that FP7 transport related projects fall under different programmes implies there is a need for a high level of coordination among the concerned Directorates General (DGs).

DG RTD and DG MOVE are in charge of the FP7 Transport programme flows of information between these DGs for the design of the work programmes and the calls, as well as for the follow-up of activities and of the selected projects.

DG RTD coordinates with DG ENTR in the context of issues related to Security and Space. DG INFSO also follows up projects in the context of the Information and Technologies communication (ICT) for Transport. More specifically, the FP7 ICT Work programme is composed of seven challenges, one of which covers transport (Challenge 6 - ICT for Mobility, Environmental Sustainability and Energy Efficiency). As shown by Table 4, the two calls published in 2007 and 2008 resulted in the selection of 26 projects. These relate to either ICT for intelligent vehicles and mobility services or to ICT for cooperative systems.

Table 4 Projects related to transport funded by the FP7 ICT programme (funded in 2007 and 2008)

<table>
<thead>
<tr>
<th></th>
<th>ICT for intelligent vehicles and mobility services</th>
<th>ICT for cooperative systems</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EC contribution (€m)</td>
<td># projects</td>
<td>EC contribution (€m)</td>
</tr>
<tr>
<td>CP</td>
<td>53.1</td>
<td>11</td>
<td>43.2</td>
</tr>
<tr>
<td>CSA</td>
<td>3.4</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td>Network of Excellence (NoE)</td>
<td>0.0</td>
<td>0</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>56.6</td>
<td>14</td>
<td>48.4</td>
</tr>
</tbody>
</table>

Source: EC database of FP7 contracts

The principal means of coordination between different units or DGs to manage research activities are:

- Direct interaction between EC officers in charge of the different programmes, including formal inter-service consultations
- Joint calls
- Common events, e.g. cross-priority workshops
- Common publications such as project catalogues

Interim evaluation of EU FP7 transport research notably within Theme 7 of the cooperation programme “Transport (including aeronautics)”
In the transport area, information is well spread among the different DGs. Every DG is kept up-to-date regarding the projects followed up by the other DGs. This is done in order to avoid funding two projects of a similar nature. The different DGs work in close relationship with each other despite the difficulties encountered in order to circulate information and raise awareness regarding the activities carried out by different Units and DGs.

Formally speaking, inputs received from different sources are assembled for the future design of Work programmes. This processes is based on a formal inter-service consultation. The evaluators do not see any simple solution for reconciling the necessary meetings within and among Units, with a centralised end process to design the calls.

1.3 The link between FP objectives and target challenges

The negative environmental consequences of the ever-increasing mobility of people and goods are the drivers behind the EC’s ambitions regarding its Transport programme. Consequently, most of the challenges addressed by the FP7 Transport programme contain a strong environmental dimension. During the meeting held with the Transport Advisory Group\(^7\), it was pointed out that despite the long-standing recognition of environmental challenges, policymakers have only recently significantly increased in practice their efforts towards ‘greener transports’.

Activities of the Work programme 2007-2008\(^8\), corresponding to the objectives of the Programme for the two first years, perfectly cover the challenges presented above.

Table 5 presents the objectives of the FP7 Transport programme and the objectives for Aeronautics and Surface Transport. Most of the objectives are common to both sub-themes. Some are tackled horizontally through cross-cutting issues, such as competitiveness, integration and efficiency and support to policy. These implementation cross-cutting activities perfectly respond to the objectives identified by the ETPs.

---

7 Meeting was held 11\(^{th}\) of March 2010.
Table 5 Activities (i.e. objectives) of the FP7 Transport programme for the two first years

<table>
<thead>
<tr>
<th>FP7 Transport programme</th>
<th>Aeronautics</th>
<th>Surface Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement of greening of transport</td>
<td>Greening of air transport</td>
<td>Greening of surface transport</td>
</tr>
<tr>
<td></td>
<td>Pioneering the air transport of the future</td>
<td></td>
</tr>
<tr>
<td>Increase in efficiency of transport</td>
<td>Increasing time efficiency</td>
<td>Encouraging and increasing modal shift and decongesting transport corridors</td>
</tr>
<tr>
<td>Reduction of congestion</td>
<td>Pioneering the air transport of the future</td>
<td></td>
</tr>
<tr>
<td>Improvement of urban mobility</td>
<td>Protection of aircraft and passengers</td>
<td>Ensuring sustainable urban mobility</td>
</tr>
<tr>
<td></td>
<td>Ensuring customer satisfaction and safety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pioneering the air transport of the future</td>
<td></td>
</tr>
<tr>
<td>Increase in safety, security and satisfaction</td>
<td>Improving cost efficiency</td>
<td>Strengthening competitiveness</td>
</tr>
<tr>
<td></td>
<td>Pioneering the air transport of the future</td>
<td></td>
</tr>
</tbody>
</table>


Figure 2 shows the intervention logic of the FP7 Transport research. It allows for clarification of the identified challenges and for translating them into a hierarchy of objectives at different levels, which in the end drives actual research activities. Challenges and objectives of EC transport policy are those listed in the 2001 white paper and in the 2006 mid-review of the white paper, considered as the referent of work programmes. Objectives of EC research on transport are those identified by the four Strategic Research Agendas of the ETPs.
1.4 Distribution of EC effort among the main programme objectives

During the two first work programmes, the EC funded six main objectives in order to shape safer, greener and smarter pan-EU transport systems (see Table 6).

Table 6 Distribution of projects and EC funding among the six main objectives of the FP7 Transport programme

<table>
<thead>
<tr>
<th></th>
<th>Number of projects funded</th>
<th>EC funding (£m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitiveness</td>
<td>70</td>
<td>302</td>
</tr>
<tr>
<td>Safety, Security and satisfaction</td>
<td>59</td>
<td>228</td>
</tr>
<tr>
<td>Greening</td>
<td>48</td>
<td>236</td>
</tr>
<tr>
<td>Urban mobility</td>
<td>26</td>
<td>142</td>
</tr>
<tr>
<td>Decongestion</td>
<td>25</td>
<td>91</td>
</tr>
<tr>
<td>Policy support</td>
<td>43</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>271</td>
<td>1024</td>
</tr>
</tbody>
</table>

Source: EC database of FP7 contracts

So far, the FP7 Transport programme has put a strong emphasis on the competitiveness of the EU industry, as well as on the environmental challenges and
safety, security and satisfaction (see Figure 3). This emphasis is a step in favour of the EC objective to shape pan-EU greener, safer and smarter transport systems.

Figure 3 Distribution of EC among the six objectives of the FP7 Transport programme (in % of total)

Source: EC database of FP7 contracts

1.5 Topics not funded of 2007 and 2008 calls

The comparison of the calls for 2007 and 2008 with the database of projects shows that some topics have not been funded at all.

- In particular, as shown by Table 8, as far as Aeronautics is concerned, there are topics that were covered by a call in 2007 as well as in 2008 for which no project was eventually funded. This is the case for the following areas: ‘7.1.4.1 Aircraft Development Cost’, ‘7.1.4.2 Aircraft Operational Cost’, ‘7.1.4.3 Air Transport System Operational Cost’, ‘7.1.5.1 Aircraft Security’, ‘7.1.6.1 Breakthrough Technologies’. The activity ‘7.1.6. Pioneering the air transport of the future’ did not generate an impressive number of proposals since altogether the different topics within the activity engendered four proposals (two accepted) in 2007 and five proposals (one accepted) in 2008.

- For Surface transport (see Table 8), several topics that have not been funded by the FP after the calls focused on freight transport and logistics as well as on rail. These subjects barely mobilise the research community. As far as the topic ‘SST.2008.2.1.3 New generation of European freight train system’ is concerned, the EC did not receive any proposal at all, while the topic ‘SST.2007.2.1.5. Future long-distance freight road transport’ and ‘SST.2008.2.1.4 Continental shipping’ generated a single proposal each.

- The cross-cutting activities have also several topics which have eventually generated no project (Table 9). It is worth noticing that some dealt with prospective issues (e.g. ‘TPT.2008.10. Exploring future technology paradigms beyond 2050’ or ‘TPT.2008.9. Prospective study on upcoming global competitors for European transport industry, targeting manufacturers and hi-tech service providers’) while others focused on monitoring and analytical tools (e.g.
“TPT.2008.4. Impact assessment of transport research funding in Europe on the
environment (air, water and soil), “TPT.2008.16 Studies supporting FP7 midterm
review and indicators' trends (time horizon 2020”).