

## **European Perspectives**

*This new regular section looks at emerging issues with a definite pan-European focus and high significance for transport and/or infrastructure research. Three general inter-related themes will be examined in the new section – policy, practice and research. The connections between these themes will also be the focus of the section. Sometimes the section will primarily address one of these themes and at other times it will address two or all three of the themes. The policy theme will include recent developments in European transport policy and also recent developments in environmental, regional development and economic policy where there are specific implications for transport. The practice theme will include issues such as European benchmarking and pilot projects as well as recent developments in different transport industries across Europe (shipping, aviation and rail for example) and prospects for the future. The research theme will include topics such as recent developments in European research priorities and funding opportunities for transport and/or infrastructure research.*

## **Prospects for Transport Research under the European Sixth Framework Programme**

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EJTIR, 2, no. 1 (2002), pp. 61 - 66

The European Commission provides an important source of funding for research and development in many sectors including transport. Recent analysis indicates that the European Commission currently funds almost a quarter of all publicly financed research and development projects in the European Union (Schelhowe, 2002). The vast majority of European research funding comes from the EU's research 'framework programmes': multi-annual programmes for research, technological development and demonstration (RTD) activities. The current framework programme, the Fifth Framework Programme (FP5), sets European research priorities for RTD activities up to 2002. Beyond 2002, a new framework programme, the Sixth Framework Programme (FP6), will set EU research priorities. Preparations are now well under way within the European Commission for this new framework programme, which will identify European research priorities for RTD activities up to 2006. At the time of writing (early 2002), the European Commission is close to adopting proposals regarding the specific programmes and the implementation of FP6. This article examines the draft proposals for FP6 and identifies the prospects for transport research funding from the European Commission over the next few years. Of course it is possible that the content of the Sixth Framework Programme will not exactly match the draft proposals

reported in this paper although it is most unlikely that any of the main areas of research will change.

Work within the European Commission on preparations for FP6 began some time ago. Early in 2001, the Commission adopted proposals regarding the specific programmes and implementation of the framework programme. In June 2001, the proposal was discussed at the European Council and at the European Parliament in November 2001. Broadly similar positions were expressed within both the Council and Parliament about the overall budget and its breakdown, the programme structure, the scientific and technological priorities and the means of implementation. This meant that although certain amendments to the Commission's proposals for FP6 were necessary, much of the main content remained as originally set out in the Commission's 2001 proposals. It is expected that the Council and Parliament will adopt the final text and budget for FP6 by the middle of 2002.

The Sixth Framework Programme will have three dimensions:

1. a *thematic* dimension that aims to focus and integrate community research in specific areas ('integrating research')
2. a *horizontal* dimension that aims to improve conditions for research in Europe through support for research infrastructure and the mobility of researchers ('structuring the European research area')
3. an *underpinning* dimension to strengthen conditions for research in Europe through RTD coordination activities ('strengthening the foundation of the European research area')

The majority of funding will be available through the first of these headings – integrating research. Seven priority areas under this heading have been identified:

1. Genomics and biotechnology for health
2. Information Society technologies
3. Nanotechnologies, intelligent materials, and new production processes
4. Aeronautics and space
5. Food safety and health risks
6. Sustainable development
7. Citizens and Governance in an open European knowledge-based society

In addition, there will also be an eighth priority area (specific activities covering a wider field of research) which will support RTD activities that complement those in the other 7 priority themes. Activities under this eighth theme will underpin the formulation and implementation of Community policies and explore new and emerging scientific and technological problems and opportunities.

Opportunities for transport research will be mainly within research priority 4 (aeronautics and space) and research priority 6 (sustainable development). In addition, there are also likely to be opportunities for transport research through research priority 2 (information society technologies) and through the funding of 'specific activities covering a wider field of research' (the eighth research priority theme). Research priority 4 offers opportunities for transport RTD activities relating to aircraft emissions, noise, safety and accident mitigation. Research priority 6 provides opportunities for transport RTD activities on alternative motor fuels, fuel cells, new transport technologies and concepts, transport design and production techniques, modal integration, safety improvements and congestion reduction. RTD activities under the heading of 'specific activities covering a wider field of research' offers opportunities for transport RTD activities in relation to European transport policy and the

recent European White Paper<sup>1</sup> as well as research underpinning the economic potential and cohesion of a larger and more integrated European Union. The range of opportunities for transport RTD activities under these different themes is summarised in Table 1.

Table 2 indicates the proposed budget for the main areas of FP6 according to the Commission's original 2001 proposal and its amended proposal after discussion in Parliament. The total amount of funding allocated to FP6 activities is likely to be more than €16 billion, which represents an 8.8% increase in funding in real terms compared to FP5 activities. Around €1 billion will be made available for RTD activities in aeronautics and space and around €1.8 billion for RTD activities in sustainable development (although not all these RTD activities will be related to transport).

A wider range of instruments will be available to implement the priority themes of FP6 than in previous framework programmes. The Sixth Framework Programme will contain a mix of both new and old instruments. New instruments include 'integrated projects' and 'networks of excellence' (see below). Old instruments include 'specific targeted research projects' (similar to the shared-cost RTD projects and demonstration projects funded under FP5) and 'coordination actions' (similar to the concerted actions and thematic networks funded under FP5). Another instrument, 'Article 169' (a joint research programme between the EU and Member States), may also be used: this is not strictly a new instrument as it was available in previous framework programmes but is new in the sense that it has not previously been used. All FP6 calls for proposals will identify which instruments are to be used and which have priority. From the beginning of FP6, integrated projects and networks of excellence will be the main means for implementing several priority themes.

Integrated Projects are designed to support large-scale research projects with the aim of achieving clearly defined scientific objectives. They are intended to reinforce European competitiveness and/or help solve European societal problems. The budget for each Integrated Project could be several tens of millions of euros, although some could be much smaller (there is no minimum threshold set), provided the necessary ambition and critical mass are achieved. The partnership is likely to be substantially more than the minimum of three participants from three different countries. Each project is expected to last for three to five years and there will be a flexible approach to project management.

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<sup>1</sup> See Stead (2001) for a review of the European Transport White Paper.

**Table 1. Opportunities for transport RTD activities in FP6**

Research Priority	Research areas identified in Commission proposals
Research Priority 2: Information Society technologies	<u>Societal challenges</u> : vehicle infrastructure and portable systems to provide integrated safety, comfort and efficiency and allow for the provision of advanced logistics ‘infomobility’ and location based services
Research priority 4: Aeronautics and space	<p><u>Emissions</u>: low-emission combustion and propulsion concepts, engine technologies and related control systems, low-drag aerodynamic concepts, low-weight airframe structures and high temperature materials, improved flight operational procedures</p> <p><u>Noise</u>: engine and power-plant technologies, aero-acoustics for airframe noise reduction, advanced noise-control systems, novel flight operational procedures in the vicinity of airports</p> <p><u>Preventive safety</u>: investigation of systemic safety models, improved fault-tolerant systems and human-centred cockpit design enabling a controllable situation awareness for the crew</p> <p><u>Accident mitigation</u>: improved materials and structures, advanced safety systems</p> <p><u>Operational capacity</u>: on-board and ground automation aids, communication, navigation and surveillance systems, flight operation procedures that will enable the introduction of new concepts including the free-flight concept</p>
Research Priority 6: Sustainable development	<p><u>Alternative motor fuels</u>: the integration of alternative motor fuels into the transport system, particularly into clean urban transport, the cost-effective and safe production, storage, and distribution (including fuelling infrastructure) of alternative motor fuels, the optimal utilisation of alternative fuels in new concepts of energy efficient vehicles, strategies and tools to manage the market transformation process for alternative motor fuels</p> <p><u>Fuel cells</u>: cost reduction in fuel cell production and in applications for buildings, transport and de-centralised electricity production, advanced materials related to low and high temperature fuel cells for the above applications</p> <p><u>New transport technologies and concepts</u>: high efficiency propulsion systems and their components, based on alternative and renewable fuels, taking into account the fuelling infrastructure; development of zero or near zero emission propulsion systems and components, in particular those integrating fuel cells, hydrogen combustion and their fuelling infrastructure into the transport system, integrated concepts for clean urban transport and rational use of the car in urban locations</p> <p><u>Advanced transport design and production techniques</u>: ‘transport-specific’ advanced design and production techniques, in particular for one-of-a-kind production environments, leading to improved quality, safety, recycling, comfort and cost-effectiveness of environmentally friendly vehicles (cars and trains) and vessels</p> <p><u>Rebalancing and integrating different transport modes</u>: interoperable transport systems to enable the interconnectivity of the transport networks, in particular enabling a competitive European railway system and the integration of a European vessel traffic information system, intermodal transport services, technologies (e.g. harmonisation of unit loads) and systems, advanced logistics</p> <p><u>Increasing road, rail and waterborne safety and avoiding traffic congestion</u>: strategies and technologies to increase road safety and to improve maritime safety, concepts and systems for advanced human-vehicle, vehicle-vehicle and vehicle-infrastructure interaction, large-scale integration and validation platforms for intelligent transport systems (e.g. transport pricing, transport and traffic management and transport information), including satellite navigation applications, new vehicle types and operational procedures to increase capacity and safety, while respecting the environment (in particular in urban and sensitive areas)</p>
Research Priority 8: Specific activities covering a wider field of research	<p><u>Policy-orientated research</u>: sustainable development, in particular the Community policy objectives relating to the environment, energy and transport</p> <p><u>Underpinning the economic potential and cohesion of a larger and more integrated European Union</u>: the development of tools, indicators and operational parameters for assessing sustainable transport and energy systems performance (economic, environmental and social), global security analysis and validation systems for transport and research relating to accident risks and safety in mobility systems</p>

Source: Commission of the European Communities (2002).

**Table 2. Indicative Budget of the Sixth Framework Programme (in € million)**

	Original proposal, February 2001 (European Commission, 2001)	Amended proposal, January 2002 (European Commission, 2002)
<b>A. INTEGRATING RESEARCH</b>	12 770	13 285
1 Genomics and biotechnology for health	2 000	2 200
• <i>Advanced genomics and its applications for health</i>		1 150
• <i>Combating major diseases</i>		1 050
2 Information Society technologies	3 600	3 600
3 Nanotechnologies, intelligent materials, and new production processes	1 300	1 300
4 Aeronautics and space	1 000	1 075
5 Food safety and health risks	600	685
6 Sustainable development	1 700	2 120
• <i>Sustainable Energy Systems</i>		810
• <i>Sustainable surface transport</i>		610
• <i>Global change and ecosystems</i>		700
7 Citizens and Governance in an open European knowledge-based society	225	225
8 Specific activities covering a wider field of research	2 345	2 080
• <i>Anticipating the EU's scientific and technological needs</i>		570
• <i>Specific research activities for SMEs</i>		450
• <i>Specific international cooperation activities</i>		300
• <i>Joint Research Centre activities</i>		760
<b>B. STRUCTURING THE EUROPEAN RESEARCH AREA</b>	3 050	2 655
1 Research and innovation	300	300
2 Human resources and mobility	1 800	1 630
3 Research infrastructures	900	665
4 Science/society	50	60
<b>C. STRENGTHENING THE FOUNDATIONS OF THE EUROPEAN RESEARCH AREA</b>	450	330
1 Support for the coordination of activities	400	280
2 Support for the coherent development of policies	50	50
<b>TOTAL</b>	<b>16 270</b>	<b>16 270</b>

Source: Commission of the European Communities (2001 and 2002).

Networks of excellence are intended to combat fragmentation of research across Europe and to strengthen scientific and technological excellence on particular topics. They will support more basic research, with the aim of advancing knowledge. Hundreds of researchers could be involved in any given network and funding could be in the tens of millions of euros, though again there is no minimum threshold, provided the necessary ambition and critical mass are achieved. The networks could involve a number of research groups within a given topic with the aim of advancing knowledge by assembling a critical mass of skills targeted toward long-term, multidisciplinary objectives. Networks of excellence will last for five years or more but will be initially only funded for 18 months and then subject to review to determine further funding.

Although no calls for proposals under FP6 will be issued until the end of 2002 at the earliest, there will be a call for expressions of interest by the middle of 2002. This is a new process intended to help the European Commission identify new issues for research and formulate calls for proposals. Clearly, many organisations involved in EU research will want to respond to try to influence the FP6 research agenda.

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