Ministero dell'Istruzione, dell'Università e della Ricerca

ITALIAN CONTRIBUTION TO THE DEBATE ON THE FUTURE OF EUROPEAN RESEARCH POLICY

1. INTRODUCTION

This document is a contribution to the debate on the European research strategy, aimed at the development of the Seventh Framework Programme. It complements the previous Italian contribution of 20 September 2004, and clarifies the national position regarding the structure, management and thematic areas.

On 6 April 2005, the European Commission presented its proposal for a Decision of the European Parliament and of the Council concerning the Seventh Framework Programme for Research and Technological Development for the period 2007-2013, called "Building the Europe of knowledge" (SEC(2005)430/431). This was accompanied by a Communication from the Commission "Building the ERA of knowledge for growth" (COM(2005)118), setting out the political context and the proposal objectives.

On 6 April 2005, along with the Seventh Framework Programme proposal, and following the recommendations by the 2003 European Spring Council, the European Commission also adopted the proposal for a Decision of the European Parliament and of the Council on establishing a Competitiveness and Innovation Framework Programme (CIP) for the period 2007-2013 (SEC(2005)433).

The CIP is designed to bring together into a coherent framework all Community actions in support of innovation, industrial competitiveness, entrepreneurship and

SMEs, in the fields of ICT development and use, intelligent energy, and environmental technologies.

By publishing the two documents at the same time, the Commission aimed at ensuring consistency and encouraging synergy between all community actions in the fields of innovation and competitiveness, with a view to achieving the objectives set out in Lisbon and Barcelona. To that end, effective coordination will be needed: a) between the two framework programmes and the other community initiatives, such as the education and training programmes, and the part of the Structural Funds allocated to research and development; b) between the European Commission and the different bodies in charge of managing considerable parts of the framework programme (ERC; SMEs; Marie Curie).

2. STRUCTURE – IMPLEMENTATION RULES - SIMPLIFICATION

Compared to the Sixth Framework Programme, the Seventh Framework Programme provides for increased support to the competitiveness of European industry and to the most important research centres. Within the framework of the Lisbon strategy, the Commission aims at developing an effective tool of industrial policy. The abovementioned objectives underpin the new elements introduced in the Seventh Framework Programme:

- definition of work programmes for the thematic priorities, based mainly on the guidelines set by the European Technology Platforms (under industrial leadership), while a secondary role is assigned to Management Committees;
- launch of Joint Technology Initiatives, *i.e.* technology platforms supported by public and private funds;
- creation of the European Research Council providing funding to individual national teams in the field of basic research.

The total budget amounts to 73,215 million euros, for a seven-year period.

COMMENTS

Italy appreciates the general structure of the new Framework Programme and the increase in budget, in line with the Lisbon and Barcelona strategies; however, it still has some reservations about the IDEAS programme.

The need for the Framework Programme to be in line with the financial prospects entailed an extension of the planning period. This requires the introduction of flexibility mechanisms allowing adaptation of the whole programme to emerging needs, and the possibility to update work programmes. In this respect, it is necessary to set a timetable for the mid-term review of scientific and technological objectives, and assign an active and significant role to Management Committees.

The successfully tested method of collaborative research is a valuable tool for creating and disseminating knowledge.

We agree with the idea of focusing on the use of Technology Platforms and Joint Technology Initiatives for the definition of the themes work programmes, which is in line with the European Commission's objective of making the Framework Programme a tool to promote industrial competitiveness. In general, we welcome the underlying approach based on Technology Platforms serving as coordinators for the development of projects under the Cooperation programme or the definition of Joint Technology Initiatives. Nevertheless, it is necessary to take into due consideration the needs of Universities, Research Centres, and the least represented members of the business world, such as SMEs. In this perspective, the competences assigned to the programme committees, far from being a useless burdening of procedures, are an important opportunity to involve Member States. Moreover, the role of Member States in the implementation of the Framework Programme should not be reduced, particularly in the light of the Commission's view that sees the Framework Programme as part of a more general EU policy, and with closer links with national and regional sectoral policies.

Simplification

We welcome the efforts towards simplification and the extension of this principle to the organisation and overall management of the Framework Programme, with particular emphasis on the reduction of costs for submitting proposals. We believe this matter should be further discussed in *ad hoc* working groups. We particularly welcome the following proposals:

- reduction of time to contract;
- user-friendly documents, forms and communications, to be used from the beginning of the Framework Programme;
- use of simplified cost models (lump-sum reimbursement, extension of flat rate system for overheads).

Externalisation

Italy is not against the externalisation process, provided that the structures, competences and general functioning of the agencies are further analysed and discussed with Member States. It is necessary to clearly define the tasks of the executive agencies, and the level of control that the Commission intends to exercise on their work. It is also important to explore how to coordinate the actions supported by the ERC with the research activities carried out under the Cooperation programme.

3. FUNDING SCHEMES

The activities supported by the Seventh Framework Programme will be financed through a range of funding schemes, which can be used either alone or in combination, on the basis of the guidelines of specific programmes, work programmes and calls for proposals.

In order to support actions that will be implemented on the basis of calls for proposals, the following funding schemes can be used:

- Collaborative projects;
- Networks of Excellence;
- Coordination and support actions;
- Individual projects;
- Support for training and career development of researchers;
- Projects for SMEs

In order to support actions that will be implemented on the basis of decisions by the Council and the European Parliament, the following funding schemes are provided:

- Article 169 for the joint implementation of national research funding programmes;
- Joint Technology Initiatives will mobilise a combination of funding of different nature: a) Framework Programme, b) loans from the European Investment Bank, c) support to risk capital, d) Article 171, e) Specific Programme Decisions;
- the development of new research infrastructures will mobilise a range of funding: a) Article 171, b) Specific Programme Decisions, c) national funding, d) Framework Programme, e) Structural Funds, f) loans from the European Investment Bank.

COMMENTS

The possibility of financing projects through a combination of different types of funding requires the adoption of clear implementing provisions, given the lack of guidelines on available instruments in the calls for proposals. The type of financial instrument necessary to develop a project should be implicitly determined by the objectives of the project itself, and by the nature of participants. It is also essential to identify the principles needed to compare and evaluate on a fair basis the projects submitted under the same call for proposals but using different financial instruments.

As to collaborative research, we agree with the idea of making no distinction between STREP and Integrated Projects, and having a single type of project, whose size can vary from field to field and from topic to topic. In this respect, a Communication from the Commission is essential.

Regarding the Networks of Excellence, we appreciate the Commission's proposal to replace the current system, based on grants for integration and cost contributions, with a system based on lump-sum costs. However, we will further analyse the subject once the review of the Financial Regulation is completed.

We also welcome the criteria set by the Commission to identify viable Joint Technology Initiatives, although in our opinion the impact on European competitiveness should be given priority, being more in line with the Lisbon objectives.

Among the JTIs discussed in the past few months, two will definitely be of great interest to the European industry: aeronautics and nano-electronics. However, Italy would like the possibility to be left to propose new JTIs after the start of the Seventh Framework Programme, as other European Technology Platforms may evolve in JTIs. Our specific interest is directed at the following fields: Manufuture, textiles, mobile and wireless communications, road transport.

4. COOPERATION

The Cooperation programme provides for support to transnational cooperation in nine themes, which correspond to the main research sectors.
Transnational cooperation will be implemented in the nine themes through:

- Collaborative research;
- Joint Technology Initiatives;
- Coordination of research programmes;
- International cooperation with third countries.

Under each theme, there will be the possibility to submit proposals regarding:

- Emerging needs, through research projects aiming at identifying or further exploring new scientific and technological opportunities;
- Unforeseen needs, such as events requiring a quick reaction (for instance, new epidemics, food safety-related risks, natural disasters).

The budget assigned to this programme is 44,735 million euros.

COMMENTS

The nine themes indicate a fundamental continuity with the Sixth Framework Programme. Italy welcomes this thematic continuity and the introduction of the new theme "Security".

The Seventh Framework Programme includes all the priority themes identified in the recently approved Italian National Research Programme for 2005-2007, except for "Cultural Identity and Heritage". We would like to draw attention to the importance of protection and enhancement of European cultural heritage. Therefore, under the "Environment" theme, appropriate funding should be provided for the "Protection and cultural heritage".

We appreciate the efforts by the Commission to improve the organisation of activities and thematic areas of the Cooperation programme. Nevertheless, the grouping by themes should not become an obstacle to the development of multidisciplinary projects, in line with the current research trends.

<u>Horizontal measures in support of SMEs</u>

The policy in support of SME participation in specific themes of the Seventh Framework Programme should be implemented through a range of instruments meeting the needs of all sorts of enterprises, including their associations, with a view to encouraging their integration with other players of the research system.

It is important to point out that industrial participation in the Sixth Framework Programme in general, and of SMEs in particular, has been problematic. The 15%

target has only been partially achieved, due to a number of reasons including: costs for submitting proposals, management difficulties due to new instruments, new rules on intellectual property rights, a too long time-to-contract.

Hence, we propose that part of the resources for collaborative research be allocated to actions that allow proposers to choose the research theme (bottom-up approach). The measures identified in the Sixth Framework Programme - Integrated Projects for SMEs, STREP managed by SMEs, work programmes for the various priorities, research topics particularly attractive to SMEs - should be maintained and more widely used also through the appropriation of funds allocated to them.

It is politically important to take on a clear and proven commitment in support of SMEs, in addition to the efforts identified in the section "Research for the benefit of SMEs". Hence we ask the Commission to give greater consideration to SMEs by establishing clear objectives. Diversified participation objectives need to be defined within the work programmes of the Cooperation themes, in order to ensure the necessary flexibility for the different topics. However, we also ask to consider the opportunity to define a general participation objective for SMEs, which would have a political significance and would be an incentive for Member States to help this type of enterprises improve their competitiveness.

We believe it is necessary to plan *ad hoc* calls for proposals for SMEs under the Cooperation themes, as was done in FP6 under the Nanotechnologies priority, which registered a higher level of SME participation compared to the others.
This measure needs to be accompanied by assistance and support actions. We will go into the details of our proposal during the negotiations on the work programmes.

In order to emphasise the role that SMEs can play in validation, technology transfer, and exploitation of results, specific budget items could be allocated, and successful instruments used in the past could be reintroduced, such as the Take Up Measures and the Technology Validation Projects (TTP).

Support to intermediary networks (Economic & Technology Intelligence actions - ETI) has been included in the new Competitiveness and Innovation Programme. Considering that these instruments support the participation of SMEs in

the Framework Programme, they should be an integral part of the Seventh Framework Programme. However, in our opinion this instrument should be adjusted and concentrated on a limited number of transnational projects, thus avoiding useless competition in each thematic area.

Horizontal measures for international cooperation

We welcome the planning of *ad hoc* calls for proposals for third countries, under the different thematic areas. Although it is associated with specific measures for international cooperation under the Fourth Programme, this action is expected to improve synergies with those countries that can cooperate with Europe on an equal footing. In this perspective, the Italian Research Ministry has recently promoted a range of experiences of bilateral scientific and technological cooperation.

THEMES

Among the themes identified in the FP7 proposal, we consider the following to be strategic to improving European citizens' quality of life and for Europe to show excellence in achieving world leadership: Health; Information and Communication Technologies; Nanosciences, Nanotechnologies, Materials and new Production Technologies; Transport; Space.

Italy asks for a significant budget increase for research within these themes.

- **HEALTH**

For this theme, the Commission proposed a 8,373 million euro budget to finance three activities:

- Translating research for human health (translation of discoveries in clinical applications);
- Developing biotechnologies, generic tools and technologies for human health;
- Optimising the delivery of health care to European citizens.

COMMENTS

We fully agree with the approach to this theme, and welcome the attention paid to the activities for translating research for human health and optimising the delivery of health care to European citizens.

Hence, we would like to highlight some issues that deserve further consideration. We deem it appropriate to emphasise a distinctive aspect of the evolution of medical research: in the past few years, research in the field of life sciences and human health has been characterised by an increasing availability of data that has helped solve a number of long-lasting problems and, above all, has stimulated the creative process in research. But new knowledge does not always help solve problems more quickly. In other words, biomedical research made a sudden advance but then continued at the same pace as in the pre-genomic era. Only a limited number of discoveries are ready to be translated in clinical applications; for many of them, work is still underway and will last several years. Therefore, the programme should not be aimed primarily at translational research, especially if the latter is associated with clinical research.

We believe the Seventh Framework Programme is a precious instrument if it guides the work of European leading groups towards application-oriented research, without designing projects with a high level of risk.

The budget allocated to health research is insufficient considering its impact on the quality of life of European citizens. This is why we propose that, within the third activity, although important, funding be allocated only to projects with high scientific relevance, which can have concrete policy effects. Therefore we deem it necessary to avoid distributing funding to a large number of projects that may have a modest impact.

- **FOOD, AGRICULTURE AND BIOTECHNOLOGY;**

For this theme, the Commission proposed a 2,472 million euro budget to finance three activities:

- Sustainable production and management of biological resources from land, forest, and aquatic environments;

- "Fork to farm": food, health and well being;
- Life sciences and biotechnology for sustainable non-food products and processes.

COMMENTS

We agree with the general strategy for science and industry integration, aimed at directing research towards sustainable and quality productions, bearing in mind:

- the need to adapt farming to climate change, for plant productions;
- the prevention of zoonoses, for animal productions.

We support the approach of 'omics' technologies (genomics and proteomics) in the activities for sustainable production and management of biological resources. This approach can be used also in the enhancement of typical products and the research on non-food products and processes.

As to the second activity, "Fork to farm", we wish to highlight the importance of sensory sciences: it is important to integrate quality and security issues with research on sensory aspects, i.e. the study of consumers' perceptions and the way they affect food preferences, consumption and habits. On the other hand, we propose that food-related metabolic diseases be part of the first theme (Health), as they require biomedical approaches. Furthermore, considering that the budget assigned to the Food theme is modest, it is not advisable to support a large number of projects.

- **INFORMATION AND COMMUNICATION TECHNOLOGIES**

For this theme, the Commission proposed a 12,756 million euro budget to finance four activities:

- ICT Technology Pillars;
- Integration of Technologies;
- Applications Research;
- Future and Emerging Technologies.

COMMENTS

The ICT sector plays a driving role in Europe's sustainable socio-economic development, industrial competitiveness, quality of life, health, and excellence in research in Europe. Although new specific mid-term technological breakthroughs have not been identified, the ICT sector is characterised by an evolutionary process comprising: significant technological progress and prospects, associated with competences resulting from basic research (for instance, nanotechnologies, photonics, techniques and languages for mobile systems); mutual interdependence of research in IT and other sectors; the need to overcome some limitations of current technologies and systems, through the optimisation of performance and cost (size and consumption of chips; band capacity, network types and interconnections, innovative software in terms of security, reliability and complexity); need to extend the scope of use and the complexity of applications.

In terms of contents, we welcome the research activities envisaged in the Seventh Framework Programme, which ensure the necessary continuity with the more advanced topics addressed in FP6. However, we propose that an adequate revision be foreseen for some of these, in order to meet the needs resulting from the convergence of information and communication technologies and sciences with other scientific and technological disciplines. To this end, we consider it necessary to strengthen the multidisciplinary aspects of research, which entail an increasing convergence of ICTs with nanotechnologies, life sciences, cognitive sciences, robotics, as well as support to economic sciences and humanities. Within this context, it is advisable to enhance all ICT components that enable the development of these sectors, including the underlying technology sectors, (software, hardware, networks). With particular reference to convergence of life sciences and ICTs, inverse-engineering techniques should also be envisaged in order to develop biomimetic techniques for new mechanisms of software and hardware specification and implementation. The coordination with the Health theme is essential, especially for systems biology and bio-informatics.

Specific research on individual technology and application areas should be further integrated into a systematic and global vision of systems/platforms, encompassing all research and development phases, with a view to involving all stakeholders in their use. They should find in the systems/platforms a common basis for specific future roles at scientific, industrial and commercial levels, by introducing vertical solutions for the various application sectors that meet social and economic needs more directly (Health, Inclusion, Mobility, Government, Business). For instance, in this context, it is necessary to address the growing needs resulting from fixed-mobile convergence for the development and diffusion of multimedia broadband services. Other current needs to be addressed are the new P2P (peer-to-peer) and MDA (Model Driven Architecture) technologies, together with simulation and complex systems analysis.

In the same perspective of involving all stakeholders, it is also advisable to support efforts towards the development of standards that ensure industrial reproducibility and reusability of technology components also in other industrial sectors. Therefore, the ICT content should be characterised by a greater interdependence of the various blocks to be developed (technological, multidisciplinary, applicative). In particular, the emerging multidisciplinary sectors provide for research directed at products that necessarily alternate basic research, applied research and technological transfer. This involves the need to increase the number of technology platforms/initiatives, although only some of them will produce initiatives based on Articles 169 and 171. Within this process, one should explore the possibility to integrate a number of themes – at present abstractly included in FET (Future and Emerging Technologies) activities – into research areas with better defined objectives (for example, Autonomic Communication, Virtual Immersive Systems, Bio-inspired robotics systems, Quantum Encryption, Computation, Global computing, Emerging properties of complex systems). The content of FET activities should be moved forward, towards new frontiers of knowledge, especially in combination with other areas and disciplines, and with a

clear differentiation from the objectives identified within the "investigator driven" projects.

In particular, priority should be given to achieving a convergence at European level in the following areas:

- Nanoelectronics and embedded systems, through hardware and software co-design techniques, also in the field of medical systems biology, to be developed within a Joint Technology Initiative;
- Grids for the development of innovative middleware with increasing functionality complying with international standards, and for the deployment of computing and communication based e-infrastructures for research and for the industrial and service sectors;
- Software services and systems, associating public and private actors in order to strengthen European technological competences and to create an open environment enabling the development of advanced solutions and services for citizens and businesses;
- Convergence of life sciences and ICTs in the fields of modelling, analysis, imaging, and simulation of complex biology systems, in order to develop prognostic, preventive and personalised medical techniques;
- Connection of bioinformatics techniques for oncological and pharmaceutical research;
- Cyber security, with particular reference to Trust & reputation, privacy, access control e security engineering;
- Eureka initiatives that cover multiple and interdependent aspects of some ICT areas, in particular ITEA and CELTIC.

At horizontal level, we believe that ICT activities can also emphasize research aspects producing dual-use results.

- **NANOSCIENCES, NANOTECHNOLOGIES, MATERIALS AND NEW PRODUCTION TECHNOLOGIES**

For this theme, the Commission proposed a 4,865 million euro budget to finance four activities:

- Nanosciences and Nanotechnologies;
- Materials;
- New Production;
- Integration of technologies for industrial applications.

COMMENTS

We agree with the approach to this theme, and point out that the abovementioned research sectors are in line with the main activities of the most advanced laboratories enterprises in the field of nanotechnologies.

In accordance with FP6 and the Lisbon objectives, it is necessary to meet the industrial needs and make every effort to accelerate the transformation process of the European manufacturing industry aimed at achieving world leadership. Based on this principle, we underline the importance of specific actions in the following sectors:

- The scientific incidence of medicines vectorialised by nanoparticles or in nanocapsules, allowing a targeted and controlled release, deserves specific attention and a multidisciplinary approach.

  The disciplines more involved in this sector are: pharmaceutical sciences, medical sciences, materials science;
- "Smart" or highly structured materials, in order to meet the needs of an increasingly demanding society. Priority should be given to textile materials, both in Italy and Europe;
- Micro-robotics and nanotechnologies connected to electronics.

We welcome the importance placed on the mid-term transition of nanotechnologies to micro/milli, including micro-robotics, and the need for a convergence of nanotechnologies towards innovative and "industrializable" systems.

In order to develop common approaches to this theme, attention should be given to the work done by European Technology Platforms (for example: Nanoelectronics, Manufuture) and vertical sectoral platforms (for example: construction, textiles, pulp and paper, transport, steel).

Nanosciences and nanotechnologies are horizontal themes, and synergy should be promoted with other themes, such as: Information and Communication Technologies; Sustainable Energy and Environmental Technologies; Health (intelligent medicines); Transport (materials); Food products; Agriculture; Biotechnologies.

- **ENERGY**

For this theme, the Commission proposed a 2,951 million euro budget to finance nine activities:

- Hydrogen and fuel cells;
- Renewable electricity generation;
- Renewable fuel production;
- Renewables for heating and cooling;
- CO2 capture and storage technologies for zero emission power generation;
- Clean coal technologies;
- Smart energy networks;
- Energy efficiency and savings;
- Knowledge for energy policy making.

COMMENTS

The objective of this theme is to contribute to transforming the current European fossil-fuel based energy system into a more sustainable one, capable of addressing two key issues: environmental compatibility (with particular attention to reduction of CO2 emissions), and security of supply.

We welcome the fact that this theme has been given the necessary autonomy and funding. The nine research lines proposed ensure continuity with FP6, although with

a different structure. Nevertheless, we believe that FP7 should keep, at least in principle, the FP6 organisation of research activities, providing for two separate categories: a short-term one (5-8 years) and a medium/long-term one (10-40 years).
Renewables for heating and cooling, clean coal technologies, energy efficiency and savings fall under the first category. Hydrogen and fuel cells, CO_2 capture and storage technologies for zero emission power generation, smart energy networks, fall under the second. Renewable electricity generation and renewable fuel production could fall under both categories, depending on the technologies considered.
Medium and long-term research activities should be financed through public funds. Short-term research activities can more easily fall under Research and Development industrial activities, prompted by the high prices of hydrocarbons, and can be better encouraged at Member States level through fiscal measures or actions affecting the capital cost. Moreover, medium and long-term research activities benefit from the transnational dimension and their European added value is higher.

Research aimed at developing technologies, and systems for their use, must contribute to the European energy system through innovative technologies with increased efficiency and lower costs. It must also promote greater integration and standardisation of energy products, in order to create a real European market and promote export. Bearing in mind the experiences and indications of FP6, it is advisable for FP7 to pursue an approach that helps promote a better integration of public and private research resources, involving all possible users (Technology Platforms).

The development of the hydrogen economy will take a very long time (2050), according to the estimates of the most important institutions at world level. In the medium and long term (2030-2050), it will be necessary to develop and optimise the production, transport, storage and distribution technologies, through the creation of important market niches, and to promote industrial engagement, both in transport and stationary power generation (centralised and distributed). Fuel cells are still the best technology for the use of hydrogen, and represent the real innovation in electric and thermal power generation.

The increased efficiency of energy technologies is one of the key elements to ensuring energy availability for sustainable development. Activities should focus on the development of innovative components and more efficient energy systems. Particular emphasis should be given to the rational use of energy in the building sector, and to process innovation in industry and transport, aimed at reducing the environmental impact.

- **ENVIRONMENT (INCLUDING CLIMATE CHANGE)**

For this theme, the Commission proposed a 2,552 million euro budget to finance four activities:

- Climate change, pollution and risks
- Sustainable Management of Resources
- Environmental Technologies
- Earth observation and assessment tools

COMMENTS

We welcome the approach to this theme, and in particular the emphasis being put on the technological aspects of global change, but we remark that no consideration has been given to the need to acquire new basic scientific knowledge on the factors causing global changes. If this type of research falls within the competence of the European Research Council, we call for the definition of clear mechanisms connecting the Ideas and Cooperation programmes.

The protection of cultural heritage has only a marginal place in the Commission's proposal, within the environmental sector, and more specifically within the environmental technologies. We do not agree with this choice and propose that cultural heritage protection be recognised as a sub-sector in its own right, and be given adequate resources and visibility.

Priority should be given to research activities that provide significant scientific knowledge for the implementation of international treaties on global environmental

protection that Europe has negotiated and ratified, such as the Kyoto Protocol, the conservation of biodiversity and the fight against desertification.

Concerning climate change, pollution and environmental risks, we emphasize the need to get an in-depth knowledge of the underlying mechanisms and processes of the sources of emission and absorption of greenhouse gases. We also consider it important to enhance the existing structures for modelling climate and interactions with ecosystems at regional level. In this respect, we underline the vulnerability of the Mediterranean to global changes, and the need to enhance the existing infrastructures for ecosystems observation and greenhouse gas control.

While we fully agree with the Commission's proposal to develop early warning systems and improve prevention and mitigation strategies of natural risks, we suggest that multidisciplinary approaches be also encouraged in order to better understand the complex phenomena governing the dynamics of the earth. This methodology should include a strong synergy between the geophysical and geological disciplines and technological innovation in observation systems and communication networks, characterised by high security, reliability, sustainability and interoperability standards.

Within the framework of natural resources management, we consider it important to investigate the theme of goods and services produced by ecosystems. With particular reference to the integration of climate mitigation with the conservation of biodiversity and the fight against desertification, the management of agroforestry resources for the reduction of emissions of greenhouse gases is a priority for the implementing policies of the Kyoto Protocol in Europe.

We underline the importance of international cooperation in this sector, with a view also to strengthening Europe's international leadership.

- **TRANSPORT (INCLUDING AERONAUTICS)**

For this theme, the Commission proposed a 5,981 million euro budget to finance three activities:

- Aeronautics and air transport;

- Surface transport (rail, road and waterborne);
- Support to the European global satellite navigation system (Galileo).

COMMENTS

We appreciate the fact that Transport, including Aeronautics, is one of the nine themes of the next Framework Programme. We would like to emphasize that, given its importance and the technological, environmental and social impact, the activities must be carried out in connection with the other research themes (energy, materials, new production technologies, ICTs) in order to adequately meet the needs of society. Transport research will have to result in an improved integrated approach, with a special emphasis on Galileo, on safety and on initiatives about Hydrogen and Fuel Cells.

Transport is a strategic industrial sector for the development of the European economy. Only by investing more on new technologies R&D, will Europe be able to remain competitive on the market, and make its contribution to the causes of the environment and energy savings. The aim of Surface Transport research is achieving a more sustainable and "smarter" integrated transport system, which ensures the free and safe movement of people and goods.

The systemic approach to achieve the sustainable mobility of people and goods within the European Union by 2020 requires the implementation of a set of actions which integrate all sorts of surface transport modes, in order to meet the following needs:

- Improve general mobility and meet the increasing demand for individual mobility by 2020 (expected increase: one third compared to 2000);
- Ensure the smooth and efficient handling of an increasing amount of goods within the cargo transport system by 2020 (expected increase: two thirds compared to 2000);
- Improve safety and security for people and goods;
- Reduce emissions to achieve an almost inexistent environmental impact;

- Develop highly energy efficient combustion products and systems and gradually introduce gas and synthetic fuels.

We would like to emphasize the importance of research in the field of highly efficient and safe transport applied to two-wheel and four-wheel vehicles.

As to air transport, the content of research in this sector can be defined through a Technological Platform based on ACARE. We welcome the possibility that some activities are implemented through one or more JTIs (Joint Technology Initiatives). In such a case, we believe that the theme of helicopter technology should be addressed within the JTI about aeronautics, with a special focus on Tilt Rotor.

- **SOCIO-ECONOMIC SCIENCES AND HUMANITIES**

For this theme, the Commission proposed a 798 million euro budget to finance 7 activities:

- Growth, employment and competitiveness in a knowledge society;
- Combining economic, social and environmental objectives in a European perspective;
- Major trends in society and their implications;
- Europe in the world;
- The citizen in the European Union;
- Socio-economic and scientific indicators;
- Foresight activities.

COMMENTS

This theme, as stated by the Commission, is meant to encourage integrated research in economic, political, legal and social sciences in connection with questions regarding the knowledge-based society, relations between citizens and between citizens and institutions.

We believe that a better and clearer definition of the second activity is needed (Combining economic, social and environmental objectives in a European perspective). To our view, it should also include the economic development of new Member States, and, in general, the least advanced regions, their innovation processes, their relations with the more advanced European regions, as well as the economic and social cooperation models.

The third activity - Major trends in society and their implications – should also include intellectual migration and the position of Europe in this respect, given the increased human capital coming from non-European countries (China and India), and its current and future impact on both the European society and economy. We also believe that projects about new teaching-educational models in all sorts of schools should be encouraged using a systematic approach. The search for best practices in the field of social inclusion should cover all age groups of the young, even beyond the school environment.

Within this activity, priority should be given to research aimed at assessing the concrete results achieved through measures addressing important social problems. Such research could provide the relevant national authorities with useful data in order to choose the most efficient models or approaches to tackle these problems. We believe it is particularly important to investigate the following themes:

- types of approach to social integration problems (for example, models of integration for migrants and disabled people);
- models for the treatment of drug addiction;
- models for the care of the elderly.

As to the fifth activity, - The citizen in the European Union – we would like to point out that over the last few years, a new area of applied research developed in the field of legal sciences. This focuses on the study of data filing and processing systems to improve the law-making capacity and the quality of legislation. Such law-making support methodologies should be included within the research activities. It is

equally important that clear mention is made of institutions and the way they operate.

The issues of intellectual property rights and open source deserve to be addressed clearly. These questions will have a profound impact on the knowledge-based society and will affect its evolution: this is why they have to be openly mentioned even in view of the adoption of the European Patent.

Finally, we appreciate the reference made to the question of languages. However, since it is mentioned only in terms of "respect for diversity", this excludes the study of EU multilingualism and the necessary transformation process that the regulatory language will have to go through to be able to express notions and concepts in different languages which enjoy equal dignity.

- **SECURITY AND SPACE**

For this theme, the Commission proposed a 3,987 million euro budget and set the following structure:

As to Security, four activities are envisaged:

- Protection against terrorism and crime;
- Security of infrastructures and utilities;
- Border security;
- Restoring security in case of crisis.

These activities will be integrated by three cross-cutting themes:

- Security Systems Integration and interoperability;
- Security and society;
- Security Research Co-ordination and structuring.

COMMENTS

We support and encourage research in this field in order to put Europe's scientific and technological potential at the service of citizens and countries; more specifically,

we support research about transport and communication networks, defence against international terrorism and organised crime. The European Union has to improve its ability to safeguard internal security but also allocate resources for crisis management activities, peacekeeping operations and humanitarian aid.

Given the multiple applications (civil/security/military) of the technologies involved, in order to avoid duplication of efforts and organisational overlapping, we need to ensure the utmost consistence of programmes and to maximize synergies between the different players involved both at national and European level. This requires an effort for cross-cutting and multidisciplinary technological research and innovation having a specific European dimension and a community added value.

Due to the crucial nature of their mission, research and technological development activities in the field of security require appropriate funding and could be fully included within the framework of a European Security Research Programme.

Beyond the industrial and technological aspect, it seems appropriate that the EU further analyses, in cooperation with the Member States, the social and political components, albeit extra-European, which cause problems of internal security. This could be done by adopting a multidisciplinary approach in which Humanities and Socio-economic sciences are also involved.

As to Space, three activities are envisaged:

- Space-based applications at the service of the European Society;
- Exploration of space;
- RTD for strengthening space foundations.

COMMENTS

Since the European Constitutional Charter establishes that space classification is a shared responsibility between the European Union and its Member States, we need to make sure that the identification of the Seventh Framework Programme's space-based initiatives takes into account and builds on the past and future discussions and

negotiations between the ESA, the EU and its Member Countries, and, accordingly, leads to the definition of the new European Space Programme (ESP).
In compliance with the principle of complementarity of sources, the Commission's funding has to be mainly aimed at:

- Implementing services and space applications which meet the needs of the EU policies for the so-called "recurrent phase" which follows the development and validation of space products and services by the ESA; the latter, using its own funds and other resources, will cooperate with those EU Member States that are not members to the ESA;
- The *upstream phase* (research targeted to applications) and the *downstream phase* (the use of data obtained from scientific applications); we recommend that advanced sensors research be included, given its possible repercussions in the civil sector;
- Activities aimed at strengthening some space foundations, i.e. those needed to ensure Europe's strategic independence, in compliance with the principle of subsidiarity (i.e., the europeization of electronic components).

Within the Space priority, the following sectors are suggested:

- Space-based applications at the service of the European society (Global Monitoring for Environment and Security - GMES), satellite navigation, satellite communications, space-based security issues;
- Scientific activities focused on application-oriented instrumental research on the one hand, and the use of scientific data on the other;
- Development of robotic systems to perform space-based operations and exploration of the solar system.

We stress the importance of applying space technology to the observation of the earth in order to mitigate natural risks. We encourage a muldisciplinary approach even by combining satellite technology with the so-called near-surface and ground-based techniques.

5. IDEAS

According to the proposal, we are supposed to support investigator-driven research projects evaluated "on the sole criterion of excellence" and implemented also by national research groups in all sectors. The implementation of such measures will be done by the European Research Council, which should take the legal form of an executive agency.

The estimated budget amounts to 11,942 million euros.

COMMENTS

We welcome the emphasis being put on *bottom-up research*, in particular emerging research groups. We appreciate the fact that a decision was made not to separate basic research and technology. However, we do have a reservation about the financing of national teams of researchers and believe that it would be appropriate to set a maximum budget for this type of action.

We also believe that more clarity and reassurance is needed concerning:

- The amount of funding for the ERC; if the total budget of the Framework Programme is reduced, the percentage weight of this line should also be reduced since it is a new activity whose effectiveness has yet to be proven;
- The possibility of welcoming proposals from non international teams: we shall not consider the norm but a limited exception (no more than 20% of the total ERC's budget); in any event, the funding of teams from a single country has to be additional and not replace the national funding of the country the teams come from;
- The regulatory and governance framework of the facility.

The activities of the European Research Council and those carried out within the Cooperation programme may overlap. We believe it is necessary to clarify the way in which the Commission is going to ensure coordination.

6. PEOPLE

Compared to the previous Framework Programme, the main new elements include: an increase in resources, emphasis on exchanges between universities and the industry, enhanced international cooperation with third countries, measures to attract researchers from abroad and the co-financing of national and regional mobility programmes.

The budget is 7,178 million euros to cover 5 activities:

- Initial training of researchers in both public and private sectors;
- Life-long training and career development to be implemented through both individual fellowships awarded directly at Community level and through the co-financing of regional, national or international programmes.
- Industry-academia pathways and partnerships through joint research partnerships, the recruitment of experienced researchers and staff secondments;
- Strengthening the international dimension to attract research talent from outside Europe and fostering collaboration with researchers from outside Europe;
- Specific actions to support the creation of a genuine European labour market for researchers.

COMMENTS

We fully agree with the considerable increase in resources for researchers' mobility proposed by the Commission and the effort to expand its application using new formulae; we believe that the exchange of researchers between public and private institutions should be funded for educational purposes.

As to the proposal to co-finance national and regional mobility programmes, we expect further clarifications about the type of projects eligible for co-financing. In particular, we believe it is appropriate to co-finance brain drain from third countries.

7. CAPACITIES

The programme is meant to enhance research and innovation capacities throughout Europe. The proposed budget is 7,536 million euros. Activities are divided into six areas:

1. Research infrastructures, with a 3,987 million euro budget, including:
   - Support to existing research infrastructures (transnational access, integrating activities);
   - Support to the creation of new research infrastructures, based on the work conducted by ESFRI notably, and which may be decided on the basis of Article 171 of the Treaty or on the basis of Specific Programme Decisions in accordance with Article 166 of the Treaty.

Projects will be financed on the basis of specific criteria such as: the European added value, the services provided at European level, the international relevance, the technological feasibility.

2. Research for the benefit of SMEs, with a 1,914 million euro budget, to carry on the activities specified in the Sixth Framework Programme such as Cooperative Research and Collective Research.
3. Regions of knowledge, with a 160 million euro budget, to develop regional *research-driven clusters* associating universities, research centres, enterprises, public authorities.

4. Research potential, with a 558 million euro budget.
5. Science in society, with a 558 million euro budget.
6. Activities of international cooperation, with a 359 million euro budget, include interdisciplinary actions or actions targeted at specific groups of countries.

COMMENTS

Research infrastructures

We agree to finance activities to enhance and facilitate access to existing infrastructure. However, given the complexity of new technologies, we think it would be appropriate to set up new muldisciplinary infrastructures. In order to create these, we need to better study the selection methods and the procedures to involve Member Countries in selecting the sites. We also believe that entities like large libraries, museums and restoration institutes have to be considered as research infrastructures.

Research for the benefit of SMEs

We appreciate the effort made to increase considerably the budget for this action. However, we think it is insufficient, and more resources should be allocated. A particular care must also be taken in allowing research-intensive SMEs to participate in these actions, since they are already able to participate in all types of projects funded in various themes of the Cooperation programme. This should allow a greater inclusion of SMEs in major projects and encourage their internationalisation and growth. We have to avoid that these SMEs end up competing with their less research-intensive counterparts.

Regions of knowledge

We strongly welcome this action and support cooperation within regional technological clusters, which Italy considers a national priority and supports through the creation of technological districts.

Research potential

This is a useful support action; therefore we think it should not be used to finance new facilities, also due to the limited budget.

Science in society

We support the study of the relations between science and society, with special emphasis on the role of schools and universities. We believe that this action can be carried out in association with the theme of social sciences and humanities in the first programme.

Activities of international cooperation

We welcome the approach used for these activities and the position of the Commission that identified the Mediterranean, the Balkans and the emerging countries as priority areas. We would like to stress the need to re-establish an *ad hoc* Programme Committee and draft a comprehensive EU international cooperation strategy in the research sector.[1]

[1] DGSSIRST-Segreteria tecnica