COMMISSION OF THE EUROPEAN COMMUNITIES

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Amended proposal for a

DECISION OF THE EUROPEAN PARLIAMENT AND THE COUNCIL

concerning the 7th framework programme of the European Community for research, technological development and demonstration activities (2007-2013)

Amended proposal for a

COUNCIL DECISION

concerning the 7th framework programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities (2007-2011)

(presented by the Commission pursuant to Article 250 (2) of the EC Treaty)

EXPLANATORY MEMORANDUM

The Commission adopted, on 6 April 2005, its proposals for Decisions concerning the seventh framework programme of the European Community for research, technological development and demonstration activities (2007 to 2013) and concerning the seventh framework programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities (2007 to 2011)[1]. The Commission subsequently adapted the budgetary aspects of these proposals following the agreement of 17 May 2006 on the Financial Framework 2007-2013.

The proposals have been examined by the Council and the European Parliament, as well as by the Economic and Social Committee and the Committee of the Regions.

The Parliament adopted, with a very broad majority, its opinion on both proposals on 15 June 2006, proposing a considerable number of amendments.

The Economic and Social Committee unanimously adopted an opinion on 14 December 2005 and the Committee of the Regions adopted its opinion on 16 November 2005.

To expedite an agreement on the framework programmes, the Commission is now bringing forward revised proposals on both framework programmes, enriched with Parliament's amendments and Council's views. As the opinion of the Parliament and the approach taken by the Council reflect the key principles of the original Commission proposals, these revised proposals take up in spirit and content if not necessarily always with the exact wording, a large proportion the position taken by the other institutions.

The main issues raised concern the proposal for the EC framework programme. As regards the Commission's position, the following items can be highlighted:

– As for the **scope** of the themes, and their scientific and technical **content**, the Commission accepts many of the clarifications and additions requested, where these reflect important needs, are consistent with maintaining the overall focus of each priority and their inclusion is not prevented by the reduced budget for the framework programme.

– Concerning the **Joint Technology Initiatives**, the Commission accepts modifications on the criteria to be used for the identification of potential Joint Technology Initiatives, as well as their nature and implementation.

– Concerning the **European Research Council**, important clarifications are accepted by the Commission, including on the term of office, the renewal and the role of the Scientific Council, the management and the staffing arrangements of the European Research Council, as well as the conduct of an independent review in 2010 of the European Research Council's structures and mechanisms.

– - As regards **People**, a series of changes include references to the links of this programme with other parts of the framework programme and other community programmes, additions that make explicit the international dimension of this part of

[1] COM(2005)119

the programme, pointers to the establishment of appropriate working conditions of researchers and indications on the co-funding mode.

– As regards **Capacities**, the aspects on the Coherent development of policies now form a separate part, in line with the importance of this field. Further, the criteria for the support to new research infrastructures became more detailed and the importance of regional aspects in the construction of new infrastructures was acknowledged.

In what concerns the budget, the Commission maintains the amounts proposed in its adapted proposals of 24 May, 2006.

2005/0043(COD)

Amended proposal for a

DECISION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

concerning the seventh framework programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 166(1) thereof,

Having regard to the proposal from the Commission[2],

Having regard to the opinion of the European Economic and Social Committee[3],

Having regard to the opinion of the Committee of the Regions[4],

Acting in accordance with the procedure laid down in Article 251 of the Treaty[5],

Whereas:

(1) The Community has **set itself** the objective of **creating the knowledge society by developing the know-how and** strengthening the scientific and technological bases of the Community industry**, including service industries, with a view to assuring** a high level of competitiveness. To this end, the Community **recognises the responsibility and independence of scientists in the definition of the broad lines of research at the frontiers of knowledge and it** shall promote all the research activities deemed necessary, in particular by encouraging undertakings, including small and medium sized enterprises ("SMEs"), research centres and universities in their research and technological development activities, **giving priority to those areas and projects where European funding and cooperation is of particular importance and gives an added value. Through its support for research at the frontiers of knowledge, applied research and innovation, the Community seeks to promote synergies in European research and thus provide a more stable foundation for the European Research Area. This will make a positive contribution to the social and economic progress of all Member States.**

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2 OJ C , , p. .
3 OJ C , , p. .
4 OJ C , , p. .
5 OJ C , , p. .

(2) **The central role of research was recognised by the European Council of Lisbon which highlighted knowledge and innovation as the key, setting itself a new strategic goal for the next decade: to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic development and aiming at full employment with more and better jobs and greater social cohesion.**

(3) **The seventh Framework Programme is central to achieving the Lisbon strategic goal of Europe becoming the most competitive and dynamic knowledge-based economy in the world. The triangle of knowledge - education, research and innovation - is a principal tool for achieving this goal.**

(4) **The central role of knowledge and intangible goods in the production of economic, social and cultural wealth was recognised by the Lisbon European Council. In the knowledge-based society, innovation and knowledge production, far from flowing top-down, are widely distributed throughout society and are increasingly achieved by bottom-up processes. It is an aim of the Community to mobilize and strengthen all these research and innovation capacities.**

(5) In line with the Lisbon strategy, the European Council of Barcelona set the target of raising European research efforts to 3% of EU GDP, two thirds of which should come from private investment.

(6) **To that end, many Member States, and European industry, must step up their research efforts in order to help make the promotion of research under the Seventh Framework Programme a success.**

(7) **The overriding aim of the whole Seventh Framework Programme must be to contribute to the European Union becoming the world's leading research area. This requires the Framework Programme to be strongly focused on promoting and investing in world-class research. It is therefore imperative that the implementation of the specific programmes is primarily based upon the principles of excellence in research. Only by creating opportunities for state-of-the-art research is it possible for the EU to become the world's leading research area.**

(8) The European Parliament has repeatedly stressed the importance of research, technological development and the increased role of knowledge for economic growth **and social and environmental well-being,** most recently in its guidelines for future EU policy to support research of March 2005[6].

(9) Taking into account the research needs of all Community policies and building upon wide-spread support from European industry, the scientific community, universities, and other interested circles, the Community should establish the scientific and technological objectives to be achieved under its seventh Framework Programme in the period 2007 to 2013.

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[6] Not yet published in the OJ.

(10) **Particularly relevant for industrial research are the European Technology Platforms (ETPs) and the Joint Technology Initiatives (JTIs). ETPs can evolve to represent a general tool for fostering European competitiveness.**

(11) These objectives should build upon the achievements of the sixth Framework Programme towards the creation of the European Research Area and carry them further towards the development of a knowledge-based economy and society in Europe**.** Among these objectives the following are particularly important:

(12) Trans-national cooperation at every scale across the EU should be supported.

(13) The dynamism, creativity and excellence of European research at the frontier of knowledge should be enhanced. **In view of this, financing more speculative basic research should be a clear priority of the Framework Programme**.

(14) The human potential in research and technology in Europe should be strengthened quantitatively and qualitatively**;** **better education and research training, easier access to research opportunities as well as the recognition of the researcher's "profession", are principal tools for achieving this goal, not least through a significant increase in the presence of women in research, encouraging researchers' mobility and career development. To that end, Member States should be called upon to implement the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers, both instruments being necessary in order to establish a genuine European labour market for researchers. In addition, the excellence of European research institutions and universities should be developed and enhanced.**

(15) **The dialogue between science and society in Europe should be deepened in order to develop a science and research agenda that meets citizens' concerns, including by fostering critical reflection, and aimed at restoring public confidence in science**.

(16) **Special attention should be paid to facilitating the scientific career of researchers in the most productive period of life. Early -stage and early-career researchers should become a major driving force of science in Europe**.

(17) The research and innovation capacities throughout Europe should be enhanced and their optimal use should be ensured.

(18) **Taking note of the Protocol on the Protection and Welfare of Animals to the Amsterdam Treaty, research for the development of alternative testing strategies and in particular non-animal methods in all research areas should be promoted and enhanced in order to reduce the use of animals in research and testing, with a view to ultimately replacing animal use.**

(19) In order to realise these objectives it is necessary to promote four types of activities: trans-national cooperation on policy-defined themes ("Cooperation"), investigator-driven research based on the initiative of the research community ("Ideas"), support of individual researchers ("People"), and support of research capacities ("Capacities").

(20) Under "Cooperation", support should be provided to trans-national co-operation at **appropriate** scale across the European Union and beyond, in a number of thematic areas corresponding to major fields of the progress of knowledge and technology, where research should be supported and strengthened to address European social, economic, environmental**, public health** and industrial challenges**, serve the public good and support developing countries. Where possible, this programme will allow flexibility for mission orientated schemes which cut across the thematic priorities. The programme should also ensure that the EU is able to maintain its leading position in sociology and humanities research into the interaction between people and new technology, and into the significance of technology for the development of society as a whole**.

(21) Under "Ideas", activities should be implemented by a European Research Council ("ERC"), which should enjoy a high degree of autonomy. **It is essential to develop very high-level frontier research at EU level, building on excellence in Europe and raising its profile at international level. The ERC should maintain regular contact with the European Institutions and the scientific community in order to ensure that its work is supported and its interests promoted in the public sphere.**

(22) Under "People", individuals should be stimulated to enter into the researcher's profession, European researchers should be encouraged to stay in Europe, researchers from the entire world should be attracted to Europe and Europe should be made more attractive to the best researchers. **Building on the positive experiences with the "Marie Curie Actions" under previous Framework Programmes, the "People" programme should encourage more gifted individuals to enter the profession of researcher; structure the research training offer and options , extending also to the skills requirements; encourage that European researchers stay in or return to Europe; encourage intersectoral mobility; and attract researchers from all over the world to Europe. To that end, efforts should be made to improve the mutual recognition of diplomas and professional qualifications acquired on the territory of the Community and in third countries. The mobility of researchers is not only key to the career development of researchers but also to share and transfer knowledge between countries and sectors and to ensure that innovative frontier research in various disciplines benefits from dedicated and competent researchers, as well as increased financial resources.**

(23) Under "Capacities", the use and development of research infrastructures should be optimised; innovative capacities of SMEs and their ability to benefit from research should be strengthened; the development of regional research-driven clusters should be supported; the research potential in the EU's convergence and outermost regions should be unlocked; science and society should be brought closer together for the harmonious integration of science and technology in European society; and horizontal actions and measures in support of international co-operation should be undertaken.

(24) The Joint Research Centre **has the crucial role of providing customer-driven scientific and technological support for the conception, development, implementation and monitoring of EU policies. Continuous support should be given to the JRC to allow it to function as a reference centre of science and technology for the EU, independent of private and national interests.**

(25) **The Commission has recognised on numerous occasions that the regions have an important part to play in implementing the European Research Area**[7].

(26) The seventh Framework Programme complements the activities carried out in the Member States as well as other Community actions that are necessary for the overall strategic effort for the implementation of the Lisbon objectives, alongside in particular those on structural funds, agriculture, education, training, competitiveness and innovation, industry, employment and environment.

(27) Innovation and SME-related activities supported under this Framework Programme should be complementary to those undertaken under the framework programme for Competitiveness and Innovation.

(28) Participation in the activities of this Framework Programme should be facilitated through the publication of all relevant information, to be made available in a timely and user-friendly manner to all potential participants.

(29) Given the widely supported enlarged scope of the Framework Programme actions, the leverage effect of funding in national and private investments, the need to enable the Community to meet new science and technology challenges **and make full use of its researchers' potential without any form of discrimination**, the vital role the Community intervention plays in making the European research system more efficient and effective, the contribution of a larger seventh Framework Programme to the **effort of finding solutions to climate change and sustainability, the health of Europe's population as well as** reinvigoration of the Lisbon strategy, there is a pressing need to **progressively increase** ~~double~~ the EU research budget[8].

(30) Taking into account the mid-term review of the use of new instruments under the sixth Framework Programme and the Five Year Assessment of the Framework Programme, a new approach has been defined which should allow the political objectives of EU research policy to be reached more easily, more efficiently and in a more flexible way. To this end, a smaller set of simpler "funding schemes" should be used, alone or in combination, with more flexibility and freedom, to support the different actions, **and stronger management autonomy should be granted to participants.**

(31) Since the objective of the actions to be taken in accordance with Article 163 of the Treaty in contributing towards the creation of a knowledge-based society and economy in Europe cannot be sufficiently achieved by the Member States and can therefore be better achieved at Community level**,** the Community may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty. In accordance with the principle of proportionality, as set out in that Article, this seventh Framework Programme does not go beyond what is necessary in order to achieve those objectives.

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7 ***Commission communication entitled 'The Regional Dimension of the European Research Area' (COM (2001)0549)***

8 As already presented in the Commission Communications COM(2004) 101, 26.0.2004 and COM(2004) 487, 14.7.2004 on the Financial Perspectives 2007-2013.

(32) Implementation of the seventh Framework Programme may give rise to supplementary programmes involving the participation of certain Member States only, the participation of the Community in programmes undertaken by several Member States, or the setting up of joint undertakings or other arrangements within the meaning of Articles 168, 169 and 171 of the Treaty.

(33) The Community has concluded a number of international agreements in the field in research and efforts should be made to strengthen international research cooperation with a view **to reaping the full benefits of internationalisation of R&D, to contributing to the production of global public goods and** to further integrating the Community into the world-wide research community.

(34) **There is already a significant body of scientific knowledge capable of drastically improving the lives of those who live in developing countries; where possible, the Framework Programme will contribute to meeting the Millennium Development Goals by 2010**.

(35) The seventh Framework Programme should contribute towards promoting **growth,** sustainable development and environmental protection.

(36) Research activities supported by this Framework Programme should respect fundamental ethical principles, including those reflected in the Charter of Fundamental Rights of the European Union. The opinions of the European Group on Ethics in Science and New Technologies are and will be taken into account. **Research activities aimed at human cloning, heritable modifications of the human genome[9], or production of human embryos solely for stem cell procurement should not be supported under this programme. Research on human stem cells may be financed under this framework programme, depending both on the contents of the scientific proposal and the legal framework of the Member state(s) involved.**

(37) Under the seventh Framework Programme ~~due regard will be paid to~~ the role of women in science and research **will be actively promoted by appropriate measures** with a view to **encouraging greater numbers to become involved in this domain and** further enhancing their active role in research.

(38) This act establishes a financial framework for the entire duration of the programme which is to be the principal point of reference for the budgetary authority, within the meaning of point **37** of the Interinstitutional Agreement of **17/5/2006** between the European Parliament, the Council and the Commission on budgetary discipline and improvement of the budgetary procedure.

(39) Appropriate measures - **proportionate to the European Communities' financial interests** - should also be taken to prevent irregularities and fraud and the necessary steps should be taken to recover funds lost, wrongly paid or incorrectly used in accordance with Council Regulations (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests[10], (EC, Euratom) No 2185/96 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the Commission in order to protect the European

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9 Research relating to cancer treatment of the gonads can be financed.

10 OJ L 312, 23.12.1995, p. 1.

Communities' financial interests against fraud and other irregularities[11] and Regulation (EC) No 1073/1999 of the European Parliament and of the Council concerning investigations conducted by the European Anti-Fraud Office (OLAF)[12].

(40) It is important to ensure sound financial management of the seventh framework programme and its implementation in the most effective and user-friendly manner possible, **while ensuring legal certainty and the accessibility of the programme** for all participants. It is necessary to ensure compliance with Council Regulation (EC, EURATOM) No 1605/2002 of 25 June 2002 on the Financial Regulation applicable to the general budget of the European Communities; and with the requirements of simplification and better regulation. **The simplification of procedures used to execute the Seventh Framework Programme will help to ensure that flexible implementing measures are included in the rules of participation**.

HAVE DECIDED AS FOLLOWS:

Article 1

Adoption ~~Establishment~~ **of the Framework Programme**

The Framework Programme for Community activities in the area of research and technological development, including demonstration activities, hereinafter the "seventh Framework Programme" is hereby **adopted** ~~established~~ for the period from 1 January 2007 to 31 December 2013.

Article 2

Objectives and activities

(1) The seventh Framework Programme shall support the activities set out in paragraphs 2 to 5. The objectives and the broad lines of those activities are set out in Annex I.

(2) Cooperation: supporting the whole range of research actions carried out in trans-national cooperation in the following thematic areas:

(a) Health;

(b) Food, Agriculture and Biotechnology;

(c) Information and Communication Technologies;

(d) Nanosciences, Nanotechnologies, Materials and new Production Technologies;

(e) Energy;

(f) Environment (including Climate Change);

[11] OJ L 292, 15.11.1996, p. 2.
[12] OJ L 136, 31.5.1999, p. 1.

(g) Transport (including Aeronautics);

(h) Socio-economic Sciences and Humanities;

(i) Security and Space.

(3) Ideas: supporting "investigator-driven" research carried out across all fields by individual **national or transnational** teams in competition at the European level.

(4) People: strengthening, quantitatively and qualitatively, the human potential in research and technology in Europe**, as well as encouraging mobility**.

(5) Capacities: supporting key aspects of European research and innovation capacities such as research infrastructures; regional research driven clusters; the development of a full research potential in the Community's convergence and outermost regions; research for the benefit of small and medium sized enterprises (SMEs); "Science in Society" issues; **support to the coherent development of policies**; horizontal activities of international cooperation.

(6) The seventh Framework Programme shall also support the non-nuclear direct scientific and technical actions carried out by the Joint Research Centre (JRC) as defined in Annex I.

Article 3

The seventh Framework Programme shall be implemented through specific programmes. These programmes shall establish precise objectives and the detailed rules for implementation.

Article 4

Maximum overall amount and shares assigned to each programme

1. The maximum overall amount for Community financial participation in this seventh Framework Programme shall be EUR **50 521**~~72726~~ million. That amount shall be distributed among the activities and actions referred to in paragraphs 2 to 6 of Article 2 as follows (in EUR million):

Cooperation	**32 292**~~44432~~
Ideas	**7 460**~~11862~~
People	**4 727**~~7129~~
Capacities	**4 291**~~7486~~
Non-nuclear actions of the Joint Research Centre	**1 751**~~1817~~

2. The indicative breakdown among the thematic areas of each activity referred to in paragraph 1 is set out in Annex II.

3. The detailed rules for Community financial participation in this Framework Programme are set out in Annex III. **The above amounts may be amended when the financial perspective covering the period of this Framework Programme is revised.**

Article 5

Protection of the Communities' financial interests

For the Community actions financed under this Decision, Regulation (EC, Euratom) No 2988/95 and Regulation (EC, Euratom) No 2185/96 shall apply to any infringement of a provision of Community law, including infringements of a contractual obligation stipulated on the basis of the programme, resulting from an act or omission by an economic operator, which has, or would have, the effect of prejudicing the general budget of the European Communities or budgets managed by them, by an unjustified item of expenditure.

Article 6

(1) All the research activities carried out under the seventh Framework Programme shall be carried out in compliance with fundamental ethical principles.

(2) The following fields of research shall not be financed under this Framework Programme:

- **research activity aiming at human cloning for reproductive purposes**,
- **research activity intended to modify the genetic heritage of human beings which could make such changes heritable,**[13]
- **research activities intended to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer.**

(3) Research on human stem cells, both adult and embryonic, may be financed, depending both on the contents of the scientific proposal and the legal framework of the Member state(s) involved.
Any application for financing research on human embryonic stem cells must include, as appropriate, details of licensing and control measures that will be taken by the competent authorities of the Member States as well as details of the ethical approval(s) that will be provided.
As regards the derivation of human embryonic stem cells, Institutions, organisations and researchers must be subject to strict licensing and control in accordance with the legal framework of the Member State(s) involved.

(4) A revision of the fields of research set out in paragraph 2 of this Article must take place for the second phase of this programme (2010-2013) in the light of scientific advances.

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[13] Research relating to cancer treatment of the gonads can be financed.

Article 7

Monitoring, assessment and review

(1) **The Commission shall continually and systematically monitor the implementation of the Framework Programme and its Specific Programmes and regularly report and disseminate the results of this monitoring.**

(2) Not later than 2010, the Commission shall carry out, with the assistance of external experts, an **evidence-based** interim evaluation of this Framework Programme and its specific programmes **building upon the ex-post evaluation of the Sixth Framework Programme. This evaluation shall cover** the quality of the research activities under way, **as well as the quality of implementation and management**, and progress towards the objectives set.
The Commission shall communicate the conclusions thereof, accompanied by its observations and, where appropriate, proposals for the adaptation of this Framework Programme, to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

The interim evaluation will be preceded by a progress report as soon as enough data becomes available, giving initial findings on the effectiveness of the new actions initiated under the Seventh Framework Programme and of the efforts made on simplification.

(3) Two years following the completion of this Framework Programme, the Commission shall carry out an external evaluation by independent experts of its rationale, implementation and achievements.

The Commission shall communicate the conclusions thereof, accompanied by its observations, to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

Done at Brussels,

For the European Parliament
The President

For the Council
The President
[…]

ANNEX I

SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES, BROAD LINES OF THE THEMES AND ACTIVITIES

The seventh Framework Programme will be carried out to pursue the general objectives described in Article 163[14] of the Treaty to strengthen industrial competitiveness and meet the research needs of other Community policies and thereby ~~in~~ contributing towards the creation of a knowledge-based society, building on a European Research Area and complementing activities at a national and regional level. It shall ~~strengthen~~ promote excellence in scientific and technological research, technological development and demonstration through the following four programmes: cooperation, ideas, people and capacities.

I COOPERATION

In this part of the 7th Framework Programme, support will be provided to trans-national co-operation **in different forms** ~~at every scale~~ across the European Union and beyond, in a number of thematic areas corresponding to major fields of the progress of knowledge and technology, where **the highest quality** research must be supported and strengthened to address European social, economic, environmental and industrial challenges. **The bulk of this effort will be directed towards improving industrial competitiveness, with a research agenda that reflects the needs of users throughout Europe.**

The overarching aim is to contribute to sustainable development.

The nine themes determined for EU action are the following:

(1) Health;

(2) Food, Agriculture and Biotechnology;

(3) Information and Communication Technologies;

(4) Nanosciences, Nanotechnologies, Materials and new Production Technologies;

(5) Energy;

(6) Environment (including Climate Change);

(7) Transport (including Aeronautics);

(8) Socio-economic Sciences and the Humanities;

(9) Security and Space.

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14 **The Community shall have the objective of strengthening the scientific and technological bases of Community industry and encouraging it to become more competitive at international level, while promoting all the research activities deemed necessary by virtue of other chapters of this Treaty.**

These themes are broadly defined at relatively high level, such that they can adapt to evolving needs and opportunities that may arise during the lifetime of the 7th Framework Programme. For each of them, a series of activities have been identified which indicate the broad lines envisaged for Community support. These have been identified on the basis of their contribution to ~~EU~~**Community** objectives, including the transition to a knowledge society, the relevant European research potential and the added value of ~~EU~~**Community** level intervention for these subjects.

Special attention will be paid to **ensuring there is effective coordination between the thematic areas and to** priority scientific areas which cut across themes, such as marine sciences and technologies.

~~Pluridisciplinarity~~**Interdisciplinarity and multidisciplinarity** will be encouraged by joint cross-thematic approaches to research and technology subjects relevant to more than one theme**, with joint calls being an important inter-thematic form of cooperation**.

In the case of subjects of industrial relevance in particular, the topics have been identified relying, among other sources, on the work of different "European Technology Platforms" set up in fields where Europe's competitiveness, economic growth and welfare depend on important research and technological progress in the medium to long term. European Technology Platforms bring together stakeholders, under industrial leadership, to define and implement a Strategic Research Agenda. This Framework Programme will contribute to the realisation of these Strategic Research Agendas where these present true European added value. **European Technology Platforms may play a role to facilitate the participation of industry in research projects relating to their specific field.**

The nine themes also include research needed to underpin the formulation, implementation and assessment of ~~EU~~**Community** policies, such as in the areas of health, safety, consumer protection, energy, the environment, development aid, fisheries, maritime affairs, agriculture, animal welfare, transport, education and training, employment, social affairs, cohesion, and **the creation of an Area of Freedom, Security and Justice**~~justice and home affairs~~, along with pre-normative and co-normative research relevant to improving **interoperability and** the quality of standards and their implementation.

Under each theme, beside these activities, ~~the possibility will be ensured to address~~ two types of opportunities **will be addressed** ~~and needs~~ in an open and flexible way:

- ~~Emerging needs~~**Future and Emerging Technologies: to support research aiming at identifying or further exploring new scientific and technological opportunities in a given field and/or in their combination with other relevant areas and disciplines** through specific support for spontaneous research proposals**, including by joint calls; to nurture novel ideas and radically new uses and to explore new options in research roadmaps** ~~aiming at identifying or further exploring, in a given field and/or at the intersection of several disciplines, new scientific and technological opportunities,~~ in particular linked with a potential for significant breakthroughs; **adequate coordination with the activities carried out under the Ideas programme will be guaranteed in order to avoid overlap and ensure an optimum use of funding**

- **Unforeseen policy needs:** to respond in a flexible way to new policy needs that arise during the course of the Framework Programme, such as unforeseen developments or events requiring a quick reaction like, the new epidemics, emerging concerns in food safety or natural disaster response.

The dissemination and transfer of knowledge is a key added value of European research actions, and measures will be taken to increase the use of results by industry, policy makers and society. Dissemination will be considered an integral task under ~~In order to strengthen the diffusion and use of the output of EU research, the dissemination of knowledge and transfer of results, including to policy makers, will be supported in~~ all thematic areas **with appropriate restrictions for the security theme due to the confidentiality aspects of the activities**, including through the funding of networking initiatives, seminars and events, assistance by external experts and information and electronic services in particular CORDIS.

Complementarity and synergy between this programme and other Community programmes will be ensured. Actions to support innovation will be taken under the Competitiveness and Innovation Programme.

Particular attention should be paid to assure an adequate participation of SMEs[15], in particular knowledge-intensive SME in transnational cooperation. Concrete measures, including support actions to facilitate SME participation, will be taken throughout the "Cooperation" part of the programme in the framework of each theme, which will be accompanied by quantitative and qualitative monitoring. Support will also be provided to initiatives aiming at engaging the dialogue on scientific issues and research results with a **the** broad**est possible** public beyond the research community, and in the field of scientific communication and education**, including the involvement, where appropriate, of civil society organisations or networks of such organisations**. Ethical principles and gender aspects will be taken into account. **The integration of the gender dimension and gender equality will be addressed in all areas of research.**

Raising competitiveness of European research requires that the potential lying within the whole European Research Area is fully unlocked. Therefore, projects will aim at providing scientific excellence. They will also foster a true European Research Area through the formation of broad-based consortia, and by exploring possibilities for optimal use of human and financial resources.

Across all these themes, support to trans-national cooperation will be implemented through:

- Collaborative research;
- Joint Technology Initiatives;
- Co-ordination of research programmes;
- International Co-operation.

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15 **Throughout the Seventh Framework Programme, "SMEs" are understood to include microenterprises.**

Collaborative research

Collaborative research will constitute the bulk and the core of ~~EU~~ **Community** research funding. The objective is to establish, in the major fields of advancement of knowledge, excellent research projects and networks able to attract researchers and investments from Europe and the entire world.

This will be achieved by supporting collaborative research through a range of funding schemes: Collaborative projects, Networks of Excellence, Co-ordination/support actions (see Annex III).

Joint Technology Initiatives

In a **very** limited number of cases, the scope of a RTD objective and the scale of the resources involved **could** justify setting up long term public private partnerships in the form of Joint Technology Initiatives. **This new approach, based mainly on the activities developed by** ~~These initiatives, mainly resulting from the work of~~ European Technology Platforms ~~and~~**will** cover~~ing~~ one or a small number of selected aspects of research in their field**. Implemented** ~~will combine private sector investment and national and European public funding, including grant funding from the Research Framework Programme and loan finance from the European Investment Bank. Joint Technology Initiatives may be decided~~ on the basis of Article 171 of the Treaty**, and decided individually, such Joint Undertakings must combine public and private funds, which can include loan financing from the EIB, inter alia financed through the Risk Sharing Finance Facility, where appropriate.** ~~(this may include the creation of a joint undertaking) or on the basis of the Specific Programme Decisions in accordance with Article 166 of the Treaty.~~

Potential Joint Technology Initiatives will be identified **in an open and transparent way** on the basis of **an evaluation using** a series of criteria including:

- Added value of European-level intervention **measured in terms of excellence**.
- **The existence of a genuine societal need and benefit.**
- **Inability of existing instruments to achieve the objective.**
- **Scale of the impact on industrial competitiveness and growth.**
- The degree and clarity of definition of the objective **and deliverables** to be pursued.
- Strength of the financial and resource commitment from industry.
- ~~Scale of the impact on industrial competitiveness and growth.~~
- Importance of the contribution to broader policy objectives.
- Capacity to attract additional national support and leverage current **and**~~or~~ future industry funding.
- ~~Inability of existing instruments to achieve the objective.~~

The nature of the Joint Technology Initiatives must be clearly defined, in particular with regard to matters concerning:

– **Financial commitments;**

– **Duration of the commitment of the participants;**

– **Regulations for entering and exiting the contract;**

– **Intellectual property rights.**

Considering the wide scope and particular complexity of the Joint Technology Initiatives, significant efforts will be made to ensure their transparent operation in line with the principle of excellence. Any allocation of Community funding by the Joint Technology Initiatives will take place on the basis of the Framework Programme principles of excellence and transparency. Particular attention will be paid to the overall coherence and coordination between Joint Technology Initiatives and national programmes and projects in the same fields**, while respecting their existing implementation procedures. In their implementation, account should be taken of SMEs and of technology transfer opportunities as well as of the need to anticipate education and training needs to fulfil their objectives, and to ensuring that the participation in their projects is open to a wide range of participants throughout Europe, and in particular SMEs. In addition, the experience gained by EUREKA clusters could be relevant to Joint Technology Initiatives in related areas.**

Co-ordination of non-Community research programmes

The action undertaken in this field will make use of two main tools: the ERA-NET scheme and the participation of the Community in jointly implemented national research programmes (Treaty Article 169). The action may cover subjects not directly linked to the nine themes in as far as they have a sufficient ~~EU~~**European** added value. The action will also be used to enhance the complementar~~y~~**ity** and synergy between the Framework Programme and activities carried out in the framework of intergovernmental structures such as EUREKA and COST[16].

The ERA-NET scheme will develop and strengthen the coordination of national and regional research activities by:

– Providing a framework for actors implementing public research programmes to step up the coordination of their activities. This will include support for new ERA-NETs as well as for the broadening and deepening of the scope of existing ERA-NETs, e.g. by extending their partnership, as well as **mutually** opening ~~mutually~~ their programmes**. Where appropriate, ERA-NETs could be applied for programme coordination between European regions and small or medium-sized Member States to enable their cooperation with large scale initiatives**;

– **In a limited number of cases, p**~~P~~roviding additional ~~EU~~ **Community** financial support to those participants that **pool resources** ~~create a common~~

[16] This will include financial support for the administration and coordination activities of COST.

~~fund~~ for the purpose of joint calls for proposals between their respective national and regional programmes ("ERA-NET PLUS").

The participation of the Community in national research programmes jointly implemented on the basis of Article 169 is especially relevant to European co-operation on a large scale in "variable geometry" between Member States sharing common needs and/or interests. **In well identified cases, s**~~S~~uch Article 169 initiatives will be launched in areas to be identified in close association with the Member States, including the possible cooperation with intergovernmental programmes, on the basis of a series of criteria:

- Relevance to ~~EU~~**Community** objectives.
- The clear definition of the objective to be pursued and its relevance to the objectives of this Framework Programme.
- Presence of a pre-existing basis (national research programmes existing or envisaged).
- European added value.
- Critical mass, with regard to the size and the number of programmes involved, the similarity of activities they cover.
- Efficiency of Article 169 as the most appropriate means for achieving the objectives.

International co-operation

International cooperation actions **must show a clearly defined European added value and** under this part of the Framework Programme will be:

- The opening of all activities carried out in the thematic areas to researchers and research institutions from ~~all~~ third countries, **with restrictions for the Security theme if and where appropriate,** with a strong effort to encourage them to seize this opportunity.
- Specific co-operation actions in each thematic area dedicated to third countries in the case of mutual interest in co-operating on particular topics **to be selected on the basis of their scientific and technological level and needs**. Closely associated with the bilateral co-operation agreements or multilateral dialogues between the EU and these countries or groups of countries, these actions will serve as privileged tools for implementing the co-operation between the EU and these countries. ~~Such actions are, in particular~~**As well as serving fields of mutual interest, such actions also include**: actions aiming at reinforcing the research capacities of candidate countries as well as neighbourhood countries~~;~~ **and** cooperative activities targeted at developing and emerging countries, focusing on their particular needs in fields such as health, agriculture, fisheries and environment, and implemented in financial conditions adapted to their capacities.

This part of the Framework Programme covers the international co-operation actions in each thematic area and across themes. They will be implemented in coordination with those under the "People" and the "Capacities" part of the Framework Programme.

THEMES

1. Health

Objective

Improving the health of European citizens ~~and~~, increasing the competitiveness and boosting the innovative capacity of European health-related industries and businesses, while addressing global health issues including emerging epidemics. Emphasis will be put on translational research (translation of basic discoveries in clinical applications including scientific validation of experimental results), the development and validation of new therapies, methods for health promotion and prevention including promotion of healthy ageing, diagnostic tools and medical technologies, as well as sustainable and efficient healthcare systems.

Rationale

The sequencing of the human genome and the recent advances in post-genomics have revolutionised research into human health and diseases. Integrating the vast amounts of data and understanding underlying biological processes **and developing key technologies for health related bio-industries** requires bringing together critical masses of various expertises and resources that are not available at a national level, **with a view to developing knowledge and capacity for intervention**.

Significant advances in translational health research, which is essential to ensure that biomedical research provides practical benefits **and improves life quality**, also requires multidisciplinary and pan-European approaches involving different stakeholders. Such approaches allow Europe to contribute more effectively to international efforts to combat diseases of global importance.

Clinical research on many diseases (e.g. cancer, cardiovascular diseases **and infectious diseases**, mental and neurological diseases, in particular those linked with ageing, such as Alzheimer and Parkinson diseases) relies on international multi-centre trials to achieve the required number of patients in a short time-frame. Epidemiological research requires a large diversity of populations and international networks to achieve significant conclusions. Developing new diagnostics and treatments for rare disorders **as well as performing epidemiological research on those disorders** also require multi-country approaches to increase the number of patients for each study. And performing health policy-driven research at the European level enables comparisons of the models, systems, data, and patient material held in national databases and biobanks.

A strong EU-based biomedical research will help strengthen the competitiveness of the European healthcare biotechnology, medical technology and pharmaceutical industries. **EU collaboration with developing countries will allow those countries to develop research capacities.** The EU also has to play an active role in creating an environment conducive to innovation in the **public and** pharmaceutical sector**s which address public health needs**, in particular to maximise the success of clinical research. Research-based SMEs are the main economic drivers of the healthcare biotechnology and medical technology industries. Although Europe now has more Biotechnology companies than US, most of them are small and less mature than their competitors. Public-private research efforts at the EU level will facilitate their development. EU research will also contribute to the development of new

norms and standards to set up an appropriate legislative framework for new medical technologies (e.g. regenerative medicine). **European research and innovation in the field of alternative testing strategies, in particular non-animal methods, will ensure global leadership in addressing public and stakeholder concerns about the continuing use of animals in biomedical research and could, in addition, provide a market for certain sectors of industry.**

The activities that will be addressed, which include research essential to policy requirements, are set out below. T~~wo~~**he** strategic issues, child health**,** ~~and the~~ health of the ageing population will **receive specific attention** ~~be addressed~~ across activities. **Long-term r**~~R~~esearch agendas **such as those** established by European Technology Platforms, such as the one on innovative medicines, will be supported where relevant. To complement these and respond to new policy needs, additional actions may be supported for example in the areas of health policy issues and occupational health and safety.

Ethical, legal and socio-economic issues will be taken into account within each of the following activities.

Activities

- **Biotechnology, generic tools and medical technologies for human health.**

– *High-throughput research*. To catalyse experimental progress in **genome, post-genome and** biomedical research by enhancing data generation, standardisation, acquisition and analysis.

– *Detection, diagnosis and monitoring.* With emphasis on non-invasive or minimally invasive approaches.

– *Predicting suitability, safety and efficacy of therapies.* To develop and validate biological markers, in vivo and in vitro methods and models, including simulation, pharmacogenomics, targeting **and delivery** approaches and alternatives to animal testing.

– *Innovative therapeutic approaches and intervention*. To **research,** consolidate and ensure further developments in advanced therapies and technologies with potential application in many diseases and disorders **such as new therapeutic tools for regenerative medicine**.

- **Translating research for human health**

– *Integrating biological data and processes: large-scale data gathering, systems biology* **(including modelling of complex systems)**. To generate and analyse the vast amount of data needed to understand better the complex regulatory networks of thousands of genes and gene-products controlling important biological processes **in all relevant organisms and at all levels of organisation**.

– *Research on the brain and related diseases, human development and ageing.* To explore the process of healthy ageing and the way genes and environment interact with brain activity, under normal conditions as well as in brain diseases **including relevant age related illness (e.g. dementia).**

– *Translational research in infectious diseases.* To address anti-microbial drug resistance, the global threats of HIV/AIDS, **including co-infection with hepatitis C,** malaria and tuberculosis as well as **potentially new and re-**emerging epidemics (e.g. SARS and highly pathogenic influenza).

– *Translational research in major diseases:* cancer, cardiovascular disease, diabetes/obesity; rare diseases; and other chronic diseases **including rheumatoid diseases**~~(e.g. osteoarthritis)~~. To develop patient-oriented strategies from prevention to diagnosis **with particular emphasis in** ~~and~~ treatment including clinical research.

- **Optimising the delivery of health care to European citizens**

– *Translating clinical* **research** *outcome into clinical practice.* To ~~understand~~**create the knowledge base for** clinical decision-making and how to translate outcomes of clinical research into clinical practice and especially addressing **patient safety and the better use of medicines (including some aspects of pharmacovigilence and scientifically tested complementary and alternative medicines) as well as** the specificities of children, women and elderly population.

– *Quality, efficiency and solidarity of health* **care** *systems including transitional health* **care** *systems.* To translate effective interventions into management decisions, **to assess the cost, efficiency and benefits of different interventions including as regards patient safety,** to **define the needs and conditions for** ~~ensure~~ an adequate supply of human resources, to analyse factors influencing equity of access to high quality health care **(also by disadvantaged groups)**, including analyses of changes in population (e.g. ageing, mobility and migration, and the changing workplace).

– *Enhanced disease prevention and better use of medicines.* To develop efficient public health interventions addressing wider determinants of health (such as stress, diet**, lifestyle** or environmental factors **and their interaction with medication**). To identify successful interventions in different health care settings for improving the prescription of medicines and improving their use by patients (including pharmacovigilence aspects **and interactions of medicines**).

– *Appropriate use of new health therapies and technologies.* Long term safety **and effectiveness assessment**~~aspects~~ and monitoring of large scale use of new medical technologies (including devices) and advanced therapies ensuring a high level of protection **and benefit** for public health.

2. Food, Agriculture and Biotechnology

Objective

Building a European *Knowledge Based Bio-Economy*[17] by bringing together science, industry and other stakeholders, to exploit new and emerging research opportunities that address social, environmental and economic challenges: the growing demand for safer, healthier and higher quality food and for sustainable use and production of

[17] The term "bio-economy" includes all industries and economic sectors that produce, manage and otherwise exploit biological resources and related services, supply or consumer industries, such as agriculture, food, fisheries, forestry, etc.

renewable bio-resources; the increasing risk of epizootic and zoonotic diseases and food related disorders; threats to the sustainability and security of agricultural, aquaculture and fisheries production including those resulting ~~in particular~~ from climate change; and the increasing demand for high quality food, taking into account animal welfare and rural and coastal contexts and the ways of meeting specific consumer needs.

Rationale

Innovations and advancement of knowledge in the sustainable management, production and use of biological resources (micro-organism, plants, animals), will provide the basis for new, sustainable, **safer,** eco-efficient and competitive products for agriculture, fisheries, **feed,** food, health, forest based and related industries**.** In line with the European strategy on life sciences and biotechnology[18], this will help increase the competitiveness of European **agriculture and** biotechnology**, seed** and food companies, in particular high tech SMEs, while improving social welfare and well-being. Research into the safety of food and feed chains, diet related diseases, food choices and the impact of food and nutrition on health will help to fight food related disorders (e.g. obesity, allergies) and infectious diseases (e.g. transmissible spongiform encephalopathies, avian-flu), while making important contributions to the implementation of existing and the formulation of future policies and regulations in the area of public, animal and plant health and consumer protection.

The diversity **and mainly small size** of the European industries in these areas, while being one of its strengths and an opportunity, leads to fragmented approaches to similar problems. These are better addressed by increased collaboration and sharing of expertise, for example on new methodologies, **technologies,** processes and standards that result from changing ~~EU~~**Community** legislation.

Several European Technology Platforms contribute in setting common research priorities, in fields such as plant genomics and biotechnology, forestry and forest based industries, global animal health, farm animal breeding, food and industrial biotechnology. The research will also provide the knowledge base needed to support[19]: the Common Agricultural Policy ; agriculture and trade issues; food safety regulations; **European Forest Strategy;** Community animal health, disease control and welfare standards; and the Common Fisheries Policy reform aiming to provide sustainable development of fishing and aquaculture **and the safety of seafood products**. A flexible response to new policy needs is also foreseen, in particular with respect to new social or economic trends.

Activities

- **Sustainable production and management of biological resources from land, forest, and aquatic environments**: Enabling research, including 'omics' technologies, such as genomics, proteomics, metabolomics, systems biology**, bioinformatics** and converging technologies for micro-organisms, plants and animals, including exploitation **and sustainable use** of their biodiversity**. For land based biological resources, research will focus on: soil fertility;** improved crops and production systems **in all their diversity**, including organic farming, quality production schemes and **monitoring and assessment of**

[18] "Life Sciences and biotechnology – A strategy for Europe" - COM(2002) 27.

[19] Complementary research relating to the sustainable management and conservation of natural resources is addressed under the "Environment (including Climate Change)" theme.

GMO impacts **on environment and humans**; **plant health;** sustainable, competitive and multifunctional agriculture, and forestry; **integrated** rural development~~;~~**. A** ~~a~~animal[20] **health and** welfare, breeding and production, **including research into vaccines and diagnostics**; ~~plant health; sustainable and competitive fisheries and aquaculture~~; infectious diseases in animals, including **epidemiological studies,** zoonoses **and their pathogenic mechanisms, and diseases linked to animal feedstuffs**; **other threats to the sustainability and security of food production, including climate change;** safe disposal of animal waste~~;~~**. For biological resources from aquatic environments, research will support sustainability and competitiveness of fisheries, provide the scientific and technical basis of fisheries management and support the sustainable development of aquaculture, including breeding and welfare.** ~~conservation, management and exploitation of living aquatic resources,~~ ~~d~~**D**evelop~~ing~~**ment** ~~the~~**of** tools needed by policy makers and other actors in **areas such as** agriculture**, fisheries and aquaculture** and rural development (landscape, land management practices etc.)**; socio-economic and ethical contexts of production**.

- **"Fork to farm": Food, health and well being**: Consumer, societal, **cultural,** industrial and health aspects of food and feed, including behavioural and cognitive sciences; nutrition, diet related diseases and disorders, including obesity **and allergies; health benefits of certain food and diets**; innovative food and feed processing technologies (including packaging); improved quality and safety, both chemical and ~~micro~~biological, of food, beverage and feed; integrity (and control) of the food chain; environmental impacts on and of food/feed chains; **impact on and resistance of food chain to global changes;** total food chain concept (including seafood); traceability.

- **Life sciences and biotechnology for sustainable non-food products and processes**: Improved crops **and forest resources**, feed-stocks, marine products and biomass (including marine resources) for energy, environment, and high added value products such as materials and chemicals, including novel farming systems, bio-processes and bio-refinery concepts; bio-catalysis**, new and improved micro-organisms and enzymes**; forestry and forest based products and processes; environmental **bio-**remediation and cleaner **bio-**processing**, the utilisation of agro industrial wastes and by-products**.

3. Information and Communication Technologies

Objective

Improve the competitiveness of European industry and ~~To~~ **enable Europe to master and shape the future developments of Information and Communication Technologies (ICT) so that the demands of its society and economy are met. Activities will strengthen Europe's scientific and technology base and ensure its global leadership in ICT, help drive and stimulate product, service and process innovation and creativity through ICT use and ensure that ICT progress is rapidly transformed into benefits for Europe's citizens, businesses, industry and governments.**

[20] **Animals include livestock, fish, etc.**

Rationale

Information and Communication Technologies are critical to Europe's future and underpin the realisation of the Lisbon agenda. **They have a catalytic impact in three key areas: productivity and innovation, modernisation of public services; and advances in science and technology.** Half of the productivity gains in our economies are explained by the impact of ICT on products, services and business processes. ICT is the leading factor in boosting innovation and creativity and in mastering change in value chains across industry and service sectors. ICT is essential to meet the rise in demand for health and social care**, in particular for people with special needs including the ageing population,** and to modernise services in domains of public interest such as education, **cultural heritage,** learning, **social inclusion, cohesion,** security, energy, transport and the environment**, and to promote accessibility and transparency of governance and policy development processes.**. And ICT **plays an important role in RTD management and communication and** is catalytic in the advance of other fields of science and technology as it transforms the way researchers conduct their research, co-operate and innovate.

The escalating economic and societal demands, together with the continued mainstreaming of ICT and the need to push further the technology limits **as well as to develop innovative high-value ICT-based products and services** set a growing agenda for research. To bring technology closer to people and organisational needs means: hiding technology complexity and revealing functionality on demand; making technology **functional,** very simple to use, available and affordable; providing new ICT-based applications, solutions and services that are trusted, reliable, and adaptable to the users' context and preferences. Driven by the demand of more-for-less, ICT researchers are **currently** involved in a global race **focusing on**~~to achieve~~ further miniaturisation, ~~to~~ master**ing** the convergence of computing, communications and media technologies, **including further interoperability between systems,** and the convergence with other relevant sciences and disciplines, and ~~to~~ **on** build**ing** systems that are able to learn and evolve. From these diverse efforts a new wave of technologies is emerging. ICT research activities will also draw on **and contribute to** a broader range of scientific and technological disciplines including bio**logy, chemistry** and life sciences, psychology, pedagogy, cognitive and social sciences **and the humanities**.

ICT is one the most research intensive sectors. The ICT research effort, public and private, represents a third of the total research effort in all major economies. Although Europe already enjoys industrial and technological leadership in key ICT fields it lags in investing in ICT research behind its major competitors. Only through a renewed and more intensive pooling of the effort at European level will we be able to make the most of the opportunities that progress in ICT can offer.

The ICT research activities will be closely articulated with policy actions for ICT deployment and with regulatory measures within a comprehensive and holistic strategy. Priorities have been set following extensive consultations including input from a series of European Technology Platforms and industrial initiatives in areas such as nano-electronics, embedded systems, mobile **and wireless** communications, electronic media, **photonics,** robotics and software, services and Grids.

Activities

The role of research into Future and Emerging Technologies is particularly relevant under this theme to support research at the frontier of knowledge in core ICTs and in

their combination with other relevant areas and disciplines; to nurture ideas and radically new uses and to explore new options in ICT research roadmaps, including the exploitation of quantum effects, system integration and smart systems.

- **ICT Technology Pillars**:

– *Nano-electronics, photonics and integrated micro/nano-systems*. pushing the limits of miniaturisation, integration, variety**, storage** and density; increasing performance and manufacturability at lower cost; facilitating incorporation of ICT in range of applications; interfaces; upstream research requiring exploration of new concepts.

– *Ubiquitous and unlimited capacity communication networks*: ubiquitous access over heterogeneous networks - fixed, mobile, wireless and broadcasting networks spanning from the personal area to the regional and global area - allowing the seamless delivery of ever higher volumes of data and services anywhere, anytime.

– *Embedded systems, computing and control*: powerful, secure and distributed**, reliable and efficient** computing**, storage** and communication systems **and products** that are embedded in objects and physical infrastructures and that can **sense,** control and adapt to their environment**; interoperability of discrete and continuous systems**.

– *Software, Grids, security and dependability*: dynamic, adaptive, dependable and trusted software and services, **platforms for software and services, complex systems** and new processing architectures, including their provision as a utility.

– *Knowledge, cognitive and learning systems*: **semantic systems;** capturing and exploiting knowledge embedded in web and multimedia content; bio-inspired artificial systems that perceive, understand, learn and evolve, and act autonomously; learning by **convivial** machines and humans based on a better understanding of human cognition.

– *Simulation, visualisation, interaction and mixed realities*: tools for innovative design and creativity in products, services and digital media, and for natural, language-enabled and context-rich interaction and communication.

New perspectives in ICT drawing on other science and technology disciplines, including insights from physics, biotechnologies, materials- and life-sciences, **mathematics,** for miniaturisation of ICT devices to sizes compatible and interacting with living organisms, to increase performance **and user-friendliness** of systems engineering and information processing, and for modelling and simulation of the living world.

- **Integration of Technologies**:

– *Personal environments*: personal communication and computing devices, accessories, wearables, implants; their interfaces and interconnections to services and resources.

– *Home environments*: communication, monitoring, control, assistance; seamless interoperability and use of all devices; interactive digital content and services.

– *Robotic systems*: advanced autonomous systems; cognition, control, action skills, natural interaction **and cooperation**; miniaturisation**, humanoid technologies**.

– *Intelligent infrastructures*: tools making infrastructures that are critical to everyday life more efficient **and user-friendly**, easier to adapt and maintain, more robust to usage and resistant to failures.

- **Applications Research:**

– *ICT meeting societal challenges*: New systems**, novel materials, structures and technologies** and services in areas of public interest improving quality, efficiency, access and inclusiveness; user friendly applications, integration of new technologies and initiatives such as ambient assisted living.

  – for *health*, improving disease prevention **and health care provisions**, early diagnosis**, treatment** and personalisation; autonomy, safety**, monitoring** and mobility of patients; health information space for knowledge discovery.

  – to improve *inclusion* and equal participation and prevent digital divides; assistive technology **for elderly and for disabled people**; design-for-all.

  – for *mobility*; intelligent ICT-based transportation systems and vehicles **and intelligent service solutions for tourism** enabling people and goods to move safely, **ecologically,** comfortably and efficiently.

  – in support of *the environment***, risk management** and sustainable development, to **prevent or** reduce vulnerability and to mitigate the consequences of natural disasters and industrial accidents **and human activities related to economic development**.

  – for *governments*; efficiency, openness and accountability, for a world-class public administration and links to citizens and businesses, supporting democracy**, allowing access to information to all**.

– *ICT for content, creativity and personal development:*

  – new *media* paradigms and new forms of content**, including entertainment**; creation of interactive digital content; enriched user experiences; cost-effective content delivery**; digital rights management; hybrid media**.

  – technology-enhanced *learning*; adaptive and contextualised learning solutions; active learning.

  – ICT-based systems to support accessibility and use over time of digital *cultural* **and scientific** resources and assets, in a multilingual **and multicultural** environment

– *ICT supporting businesses and industry:*

  – new forms of dynamic networked co-operative *business* processes, digital eco-systems **in particular for small- and medium-sized organisations**; optimised**, distributed** *work* organisation and collaborative work

environments **such as knowledge sharing and interactive services (e.g. for tourism)**.

– *Manufacturing* **including traditional industries***:* rapid and adaptive design, production and delivery of highly customised goods; digital and virtual production; modelling, simulation**, optimisation** and presentation tools; miniature and integrated ICT products;

– *ICT for trust and confidence*: identity management; authentication and authorization; privacy enhancing technologies; rights and asset management; protection against cyber threats.

~~• Future and Emerging Technologies: to support research at the frontier of knowledge in core ICTs and in their combination with other relevant areas and disciplines; to nurture novel ideas and radically new uses and to explore new options in ICT research roadmaps.~~

4. Nanosciences, Nanotechnologies, Materials and new Production Technologies

Objective

Improve the competitiveness of European industry and generate knowledge to ensure its transformation from a resource-intensive to a knowledge-intensive industry, by generating ~~breakthrough~~step changes in knowledge and implementing decisive knowledge for new applications at the crossroads between different technologies and disciplines. This will benefit both new, high-tech industries and higher-value, knowledge-based traditional industries, with a special focus to the appropriate dissemination of RTD results to SMEs. These activities are primarily concerned with enabling technologies which impact all industrial sectors and many other Themes under this Framework Programme.

Rationale

The **increasing difficulties affecting many** ~~decline in~~ industrial activities appears no longer to be limited to traditional sectors with a high labour intensity, but is beginning to be observed in intermediate sectors – which constitute the established strengths of European industry – and even in some high-technology sectors. **A strong industrial base must be maintained by strengthening the knowledge content in existing industry as well as** ~~This trend can and must be reversed by~~ building, in Europe, a strong knowledge-based, knowledge intensive industry**, stressing the exploitation of basic research for industrial applications**. This will include the modernisation of the existing SME base and the creation of new knowledge-driven SMEs, from the dissemination of knowledge and expertise through collaborative programmes.

The competitiveness of the industry of the future will largely depend on nanotechnologies and their applications. RTD in nanosciences and nanotechnologies taken up by several areas can accelerate European industry's transformation. The EU has recognised leadership in fields such as in **nanosciences,** nanotechnologies, materials and production technologies which must be strengthened in order to secure and increase the EU position in a highly competitive global context.

Industry relevant priorities and their integration for sectoral applications can be established through activities like the European Technology Platforms in fields such as nanoelectronics, manufacturing, steel, chemistry, the transport industry, construction, industrial safety, textiles, ~~pulp and paper~~ **forest-based industry and nano-medicine. This will** help establish common research priorities and targets. In addition **by responding flexibly to new policy needs that arise during the lifetime of the 7th Framework Programme** ~~to industry relevant priorities and their integration for sectoral applications~~, the relevant policy, regulatory and standardisation, and impact issues will be addressed~~, including by responding flexibly to new policy needs that arise~~.

Activities

- **Nanosciences, Nanotechnologies**

– Generating new knowledge on interface and size dependent phenomena; nano-scale control of material properties for new applications; integration of technologies at the nano-scale; self-assembling properties; nano-motors; ~~nano-~~machines and ~~nano-~~systems; methods and tools for characterisation and manipulation at nano dimensions; nano~~-and high-~~precision technologies in chemistry **for the manufacture of basic materials and components**; impact on human safety, health and the environment; metrology, **monitoring and sensing,** nomenclature and standards; exploration of new concepts and approaches for sectoral applications, including the integration and convergence of emerging technologies. **Activities will also investigate the impact of nanotechnology on society and the relevance of nanoscience and technology for the solution of societal problems.**

- **Materials**

– Generating new knowledge on high-performance **surfaces and** materials for new products and processes; knowledge-based materials with tailored properties **and predictable performance**; more reliable design and simulation; **computational modelling;** higher complexity; environmental compatibility; integration of nano-~~molecular~~**micro**-macro **functionality**~~levels~~ in the chemical technology and materials processing industries; new nano-materials **including nano-composites**, bio-materials**, artificial materials with electromagnetic properties not found in nature,** and hybrid materials, including design and control of their processing**, properties and performance**. **Materials with new properties are key to the future competitiveness of European industry and the basis for technical progress in many areas such as health, electronics, energy, transportation and security.**

- **New Production**

– Creating conditions and assets for **sustainable** knowledge-intensive production, including construction, development and validation of new paradigms responding to emerging industrial needs **and fostering the modernisation of the European industry base**; development of generic production assets for adaptive, networked and knowledge-based production; development of new engineering concepts exploiting the convergence of technologies ~~(eg, nano, bio, info, cognitive and their engineering requirements)~~ for the next generation of high value-added products and services, and adaptation to the changing needs**; engage high-throughput production technologies**.

- **Integration of technologies for industrial applications**

– Integrating new knowledge**, nano- and micro** ~~and~~ technologies ~~on nano~~, materials and production in sectoral and cross sectoral applications **to address in particular the needs identified by relevant European Technology Platforms.** ~~such as: health, construction, transport, energy, chemistry, environment, textiles and clothing, pulp and paper, mechanical engineering~~.

5. Energy

Objective

Adapting~~Transforming~~ **the current fossil-fuel based energy system into a more sustainable one, less dependent of imported fuels, based on a diverse mix** ~~portfolio~~ **of energy sources and carriers, with particular attention being paid to lower and non-CO2 emitting energy technologies, combined with enhanced energy efficiency and conservation, to address the pressing challenges of security of supply and climate change, whilst increasing the competitiveness of Europe's** ~~energy~~ **industries.**

Rationale

Energy systems are confronted with major challenges. The urgency to **identify and** develop adequate and timely solutions is justified by the alarming trends in global energy demand**, the finite nature of conventional oil and natural gas reserves and** ~~(predicted to rise by 60% in the next 30 years),~~ the need to curb dramatically emissions of greenhouse gases to mitigate the devastating consequences of climate change, the damaging volatility of oil prices (in particular for the transport sector which is heavily oil dependent) and geopolitical instability in supplier regions. **Energy research contributes towards ensuring affordable energy costs for our citizens and industries.** Research and demonstration are needed to provide the most environmentally and cost-effective technologies and measures enabling the EU to meet its targets under the Kyoto Protocol and beyond and to implement its energy policy commitments, as described in the 2000 Green Paper on the security of energy supply[21]**, the 2005 Green Paper on energy efficiency and the 2006 Green Paper on a European strategy for sustainable, competitive and secure energy**.

Europe has developed world leadership in a number of energy **generation and energy efficiency** technologies. It is the pioneer in modern renewable energy technologies, such as **solar energy,** bio-energy and wind energy. The EU is also a global competitor in power generation and distribution technologies and has a strong research capability in the area of carbon capture and sequestration. These positions, however, are **now facing** ~~under~~ severe ~~threat from~~ competition (in particular from the US and Japan). **Therefore, Europe must maintain and develop its leading position which requires large efforts and international collaboration.**

Radically transforming the energy system **into a less- or non-CO2 emitting, reliable, competitive and sustainable energy system** requires new technologies with risks that are too high and the **profits**~~benefits~~ too uncertain for private firms to provide all the investment needed for research, development, demonstration and deployment. Public support should

[21] COM(2000) 769.

therefore play a key role in mobilising private investment and European efforts and resources should be combined in a coherent and more effective manner, to compete with economies that are investing heavily and consistently in similar technologies. European technology platforms play **an important**~~a vital~~ role in this regard, by mobilising the necessary research effort in a coordinated manner. The activities to meet the objective are set out below. A specific activity on knowledge for energy policy making is included which may also provide support to new policy needs that emerge, for example relating to the role of European energy policy in the developments of international climate change actions, and instabilities or disruptions in energy supply and price.

Activities

- **Hydrogen and fuel cells**

Integrated action to provide a strong technological foundation for competitive EU fuel cell and hydrogen industries, for stationary, portable and transport applications. The Hydrogen and Fuel Cells European Technology Platform helps this activity by proposing an integrated research and deployment strategy.

- **Renewable electricity generation**

Technologies to increase overall conversion **efficiency, cost** efficiency **and reliability**, driving down the cost of electricity production from indigenous renewable energy sources, **including biodegradable waste,** and the development and the demonstration of technologies suited to different regional conditions.

- **Renewable fuel production**

Integrated conversion technologies **and fuel production systems**: to develop and drive down the unit cost of solid, liquid and gaseous (including hydrogen) fuels produced from renewable energy sources, **including biomass and biodegradable waste,** aiming at the cost-effective production**, storage, distribution** and use of carbon-neutral fuels, in particular liquid biofuels for transport.

- **Renewables for heating and cooling**

Research, development and demonstration of t~~T~~echnologies **and devices including storage technologies** to increase efficiencies and drive down the costs of **active and passive** heating and cooling from renewable energy sources, ensuring their use in different regional conditions.

- **CO2 capture and storage technologies for zero emission power generation**

Research, development and demonstration of technologies t~~T~~o drastically reduce the **adverse** environmental impact of fossil fuel use aiming at highly efficient **and cost effective** power **and/ or steam** generation plants with near zero emissions, based on CO2 capture and storage technologies**, in particular underground storage**.

- **Clean coal technologies**

To substantially improve plant efficiency, reliability and cost through **research,** development and demonstration of clean coal **and other solid fuel** conversion technologies **producing also secondary energy carriers (including hydrogen) and liquid or gaseous fuels**.

- **Smart energy networks**

Research, develop and demonstrate how t~~T~~o increase the efficiency, safety ~~and~~**,** reliability **and quality** of the European electricity and gas systems and networks **notably within the context of a more integrated European energy market** e.g. by transforming the current electricity grids into an interactive (customers/operators) service network**, developing energy storage options and removing** ~~and to remove~~ obstacles to the large-scale deployment and effective integration of distributed and renewable energy sources.

- **Energy efficiency and savings**

Research, development and demonstration of n~~N~~ew concepts**, optimisation of proved concepts** and technologies to improve energy efficiency and **to reduce further final and primary energy consumption**~~savings~~ for buildings, **taking the life cycle into account, transport,** services and industry. This includes the integration of strategies and technologies for energy efficiency **(including co- and polygeneration)**, the use of new and renewable energy technologies and energy demand management **measures and devices, and the demonstration of minimum climate impact buildings**.

- **Knowledge for energy policy making**

Development of tools, methods and models to assess the main economic and social issues related to energy technologies and to provide quantifiable targets and scenarios for medium and long term horizons **(including providing scientific support for policy development)**.

6. Environment (including Climate Change)

Objective

Sustainable management of the environment and its resources through advancing our knowledge on the interactions between the climate, biosphere, ecosystems and human activities, and developing new technologies, tools and services, in order to address in an integrated way global environmental issues . Emphasis will be put on prediction of climate, ecological, earth and ocean systems changes; on tools and technologies for monitoring, prevention, ~~and~~ **mitigation and adaptation of environmental pressures and risks including on health, as well as for the conservation and recovery of the natural and man-made environment.**

Rationale

Environmental problems go beyond national frontiers and require a coordinated approach at a pan-European and often global level. Earth's natural resources and the man-made environment are under intense pressures from growing population, urbanisation, continuous expansion of the agriculture, **aquaculture, fisheries,** transport**, construction** and energy sectors, as well as climate variability and warming at local, regional and global scales. Europe needs to engage in a new sustainable relationship with the environment while improving **environmentally friendly** competitiveness and strengthening European industry. EU-wide

cooperation is needed to attain critical mass given the scale, scope and high level of complexity of environmental research. It facilitates common planning, the use of connected and inter-operable databases, and the development of coherent and large scale observation and forecasting systems. **Research should address the need for data management and information services and problems about data transfer, integration and mapping.**

Research is needed at EU level for the implementation of international commitments such as **UN Framework Convention on Climate Change (UNFCCC) and its** ~~the~~ Kyoto protocol, the UN Convention on Biological Diversity, **the UN Convention to Combat Desertification, the Stockholm Convention on Persistent Organic Pollutants** the objectives of the World Summit on Sustainable Development 2002, including the EU Water Initiative, and contributions to the Intergovernmental Panel on Climate Change and the Earth Observation initiative. In addition there are significant research needs arising from existing and emerging EU level policies, the implementation of the 6th Environmental Action Plan and associated thematic strategies **(e.g. the EU marine strategy)**, the action plans**, programmes and directives** on Environmental Technologies and Environment and Health, and Directives such as the Water Framework **and NATURA 2000**.

The EU needs to strengthen its position in world markets for environmental technologies. Such technologies **contribute to sustainable consumption and production,** help**ing** deliver sustainable growth providing eco-efficient solutions to environmental problems at different scales and protecting our cultural **and natural** heritage. Environmental requirements act as a stimulus for innovation and can provide business opportunities **and higher competitiveness while at the same time ensuring a more sustainable future for next generations**. European Technology Platforms on water supply and sanitation and on sustainable chemistry confirm the need for EU level action and their research agendas are taken into consideration in the activities below. Other Platforms (e.g. on Construction and on Forestry) partially deal with environmental technology issues and are taken into consideration as well. **Socio-economic aspects particularly strongly influence the development and introduction of environmental technologies to the market and their subsequent application as for example in water resources management. Activities shall consider the socio-economic aspects of policies and technological developments, whenever relevant to the topic.**

A series of activities are listed below[22] many of which are directly relevant to policy needs. However, additional support may be provided to new policy needs that emerge, for example relating to sustainability impact assessments of EU policies; the follow up of the post-Kyoto action on Climate Change; and new environmental policies such as **in the European Soil Strategy and** in maritime policy, standards and regulations.

Activities

- **Climate change, pollution and risks**

– *Pressures on environment and climate:* Functioning of climate and the earth system**, including the polar regions**; adaptation and mitigation measures; pollution in air, soil and water; changes in atmospheric composition and water cycle; **global and regional** interactions between climate **and atmosphere**, land surface**, ice** and the ocean; and

[22] Complementary research relating to the production and use of biological resources is addressed under the "Food, Agriculture and Biotechnology" theme.

impacts on biodiversity and ecosystems**, including the effects of the sea level rise on coastal zones and impacts on particularly sensitive areas such as mountain regions.**.

– *Environment and health:* Interaction of environmental stressors with human health including identification of sources, **biomonitoring research for environment related health, indoor air quality and** links to indoor environment, **urban environment, car emissions** and impact and emerging risk factors; integrated risk assessment methods for ~~toxic~~**hazardous** substances including alternatives to animal testing; quantification and cost-benefit analysis of environmental health risks and indicators for prevention strategies.

– *Natural hazards:* Improve ~~prediction~~**forecasting** and integrated hazards- vulnerability - and risks assessments for disasters related to geological hazards (such as earthquakes, volcanoes, tsunamis) and climate (such as storms**, drought,** ~~and~~ floods**, forest fires, landslides, avalanches and other related extreme events**) **and their impacts**; develop early warning systems and improve prevention**,** ~~and~~ mitigation **and management** strategies**, also within a multirisk approach**.

- **Sustainable Management of Resources**

– *Conservation and sustainable management of natural and man-made resources* **and biodiversity**: ecosystems; water resources management; waste management and prevention; protection and management of biodiversity, **including control of invasive alien species,** soil protection, seabed**, lagoons** and coastal areas protection, approaches against desertification and land degradation**, preservation of landscape**; **sustainable use and management of forests**~~forest management~~; sustainable management and planning of urban environment, **including post-industrialised zones;** data management and information services; assessment and foresight relating to natural processes.

– ~~Evolution~~**Management** *of marine environments*: Impacts of human activities on the marine environment and its resources; pollution and eutrophication in regional seas and coastal areas; deep sea ecosystems; assessment of marine biodiversity trends, of ecosystem processes and of ocean circulation; seabed geology. **Development of strategies, concepts and tools for a sustainable use of the ocean and its resources.**

- **Environmental Technologies**

– *Environmental technologies for observation,* **simulation,** *prevention, mitigation, adaptation, remediation and restoration of the natural and man-made environment*: related to water, climate, air, marine, urban and rural environment, soil, waste treatment, recycling, clean production processes **and sustainable products**, chemicals safety, ~~protection of cultural heritage and of~~ **and** the built environment.

– **Protection, conservation and enhancement of cultural heritage including human habitat, fostering integration of cultural heritage in the urban setting.**

– *Technology assessment, verification and testing*: Methods and tools for environmental risk and lifecycle assessment of processes, technologies and products**, including alternative testing strategies and in particular non-animal methods for industrial chemicals**; support for sustainable chemistry, **forest-based sector technology,** water supply and

sanitation Platforms[23]; scientific and technological aspects of a future European environmental technologies verification and testing programme**, complementing third party assessment instruments**.

- **Earth observation and assessment tools**

– *Earth* **and ocean** *observation* **systems and monitoring methods for the environment and sustainable development***:* Contribute to the development and integration of observation systems for environmental and sustainability issues in the framework of GEOSS **(to which GMES is complementary)**; interoperability between systems and optimisation of information for understanding, modelling and predicating environmental phenomena**, for assessing, exploring for and managing natural resources**.

– *Forecasting methods and assessment tools* **for sustainable development taking into account differing scales of observation***:* modelling links between economy/environment/society including market based instruments, externalities, thresholds and developing the knowledge base and methodologies for sustainability impact assessment on key issues such as land use and marine issues; **urban development,** social and economic tensions related to climate change.

7. Transport (including Aeronautics)

Objective

Based on technological and operational advances and on the European transport policy, develop integrated, safer, "greener" and "smarter" pan-European transport systems for the benefit of ~~the~~all citizens and society, respecting the environment and natural resources; and securing and further developing the competitiveness ~~leading role~~ attained by the European industries in the global market.

Rationale

Transport is one of Europe's strengths - the air transport sector contributes to 2.6% of the EU GDP (with 3.1 million jobs) and the surface transport field generates 11% of the EU GDP (employing some 16 million persons). However, transport is responsible for 25% of all the EU emissions of CO_2, hence the absolute need for a "greening" of the system to ensure more sustainable transport patterns and compatibility with growth rates, as developed in the White Paper on "European Transport Policy for 2010: time to decide".[24]

The enlargement (increasing land surface by 25% and population by 20%) and economic development of the EU present new challenges for transporting people and goods efficiently, cost-effectively and in a sustainable manner. Transport also has direct relevance on other major policies such as trade, competition, **environment,** employment, cohesion, energy, security and the internal market. Investment in RTD in EU transport industries is a

[23] The research agendas of ~~these~~**relevant** European Technology Platforms will be taken into account in the different activities.

[24] COM(2001) 370.

prerequisite to ensure technological competitive advantage in global markets.[25] Activities at European level will also stimulate the restructuring of the industry, including the integration of the supply chain and in particular SMEs.

The research agendas developed by European Technology platforms[26] support the need to take a new "transport systems" perspective that considers the interactions of vehicles **or vessels**, transport networks **or infrastructures** and the use of transport services, which can only be developed at European level. RTD costs in all these fields are rising substantially, and collaborative activity at EU-level is essential to enable a "critical mass" of diverse RTD providers to address the scale and multi-disciplinary challenges in a cost-effective way, as well as meeting the political, technological and socio-economic challenges on issues such as the "clean and safe vehicle" of the future, interoperability and intermodality with particular reference to **waterborne and** rail transport, affordability, safety, capacity, security and environmental impacts in an enlarged Union. Also, developing technologies in support of the Galileo system and its applications will be essential in implementing European policies.

As well as the strong industry relevance of the themes and activities set out below, the needs of policy makers will be addressed in an integrated way covering economic, social and environmental aspects of transport policy. In addition, support will be provided to respond to existing as well as new policy needs, for example relating to developments in maritime policy **or implementation of the European Single Sky**.

Activities

- **Aeronautics and air transport**

– *The greening of air transport:* reduction of emissions**, including green house gases** and noise disturbance, incorporating work on engines and alternative fuels, structures and new aircraft designs, airport operations and traffic management.

– *Increasing time efficiency:* improvement of the efficiency of operating schedules focusing on innovative air traffic management systems in line with the effective implementation of Single Sky policy which integrate air, ground and space components, including traffic flow and more aircraft autonomy.

– *Ensuring customer satisfaction and safety:* improvement of passenger comfort, innovative in-flight services and more efficient passenger handling; improvement of all safety aspects of air transport; wider choice of aircraft ranging from wide body to small**er** size vehicles **suitable for different applications**.

– *Improving cost efficiency:* reduction of costs associated with product development, manufacturing and operating costs focusing on **innovative and** zero maintenance**, repair and overhaul,** aircraft, increased use of automation and simulation.

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[25] The European aeronautics industry invests 14% of its turnover in research, the European car industry almost 5% of its turnover; and the EU shipbuilding industry competitive advantage relies exclusively on RTD.

[26] ACARE: Advisory Council for Aeronautics Research in Europe. Launched in 2001, it is the first operational example of a Technology Platform; ERRAC: European Rail Research Advisory Council; ERTRAC: European Road Transport Research Advisory Council; WATERBORNE Technology Platform.

– *Protection of aircraft and passengers:* enhancement of protection measures for the traveller, crew, aircraft and air transport system such as improved data and identification methods, protecting the aircraft against attack, auto recovery and improved security design of aircraft.

– *Pioneering the air transport of the future:* addressing the longer term challenges of aviation with more radical, environmentally efficient**, accessible** and innovative combinations of technologies which would lead to significant steps forward in air transport.

- **Sustainable surface transport (rail, road and waterborne**)

– *The greening of surface transport*: reduction of environmental and noise pollution**, including green house gases through technological and socio-economic means**; development of clean and efficient engines **and power-trains**, including hybrid technology and the use of alternative fuels for transport applications **in particular hydrogen and fuel cells, taking account cost-efficiency and energy-efficiency considerations**; end of life strategies for vehicles and vessels.

– *Encouraging* **and increasing** *modal shift and decongesting transport corridors:* development of **sustainable,** innovative, intermodal and interoperable regional and national transport **and logistics** networks, infrastructures and systems in Europe; cost internalisation; information exchange between vehicle/vessel and transport infrastructure; optimisation of infrastructure capacity**; modal shift strategies to encourage energy efficient means of transport**.

– *Ensuring sustainable* **and accessible** *urban mobility* **for all citizens including the disadvantaged***:* innovative organisation schemes, including clean and safe vehicles and ~~non-polluting~~ means of transport **with lower levels of pollution**, new **high quality** public transportation modes and rationalisation of private transport, communication infrastructure, integrated town planning and transport **including their relationship with growth and employment**.

– *Improving safety and security*: as inherent to the transport system, in transport operations for drivers, passengers, crew, cyclists and pedestrians **and goods**, in the design **and operation** of vehicles, vessels, **infrastructures** and within the total transport system.

– *Strengthening competitiveness*: improvement of design processes; development of advanced power-train and vehicle **and vessel** technologies; innovative and cost-effective production systems and infrastructure construction; integrative architectures.

- **Support to the European global satellite navigation system (Galileo) and EGNOS:** precise navigation and timing services for use in a range of sectors; efficient use of satellite navigation and support to the definition of second generation technologies **and applications**.

8. Socio-Economic Sciences and the Humanities

Objective

Generating an in-depth, shared understanding of complex and interrelated socio-economic challenges Europe is confronted with, such as growth, employment and competitiveness, social cohesion, intercultural understanding, social, cultural and educational challenges in an enlarged EU, ~~and~~ sustainability, quality of life, demographic change, migration and integration, and global interdependence, in particular with the view of providing an improved knowledge base for policies in the fields concerned and the specific objective of developing the prerequisite for a modern sustainable society.

Rationale

Europe has a strong and high quality research base in socio-economic **and socio-cultural** sciences and the humanities fields. The diversity of approaches within the EU in the economic, social, political and cultural domains provides a highly fertile ground for research in these fields at EU-level. There is a high European added value in collaborative research addressing European socio-economic issues in the areas mentioned. First, the issues and challenges concerned are of high priority at the ~~EU~~**European** level and are addressed by ~~EU~~**Community** policies. Second, comparative research across ~~several or all~~ EU **or other** countries offers a particularly effective tool as well as important learning opportunities across countries and regions.

Third, EU-level research has particular advantages in being able to develop Europe-wide data collection and to employ the multiple perspectives needed to understand complex issues. Finally, the development of a genuinely European socio-economic knowledge base on these key challenges will make an essential contribution to promoting their shared understanding across the European Union and, most significantly, on the part of the European citizens.

The activities to be supported are listed below and are expected to contribute significantly to improve the formulation, implementation, impacts and assessments of policy **and the definition of regulatory measures** in a wide range of areas such as economic, social, education and training, **cultural, gender equality,** enterprise, international trade, consumer, external relations, ~~justice and home affairs,~~ **scientific and technological** and official statistics policies**, and the creation of the area of freedom, security and justice**. In addition, opportunities will be provided to address emerging socio-economic challenges as well as to undertake research on new or unforeseen policy needs. **Use may also be made of social platforms to discuss future research agendas.**

Activities

- **Growth, employment and competitiveness in a knowledge society:** developing and integrating research on the issues affecting growth, **socio-economic stability,** employment and competitiveness, **covering topics such as** ~~ranging from~~ innovation, education including life-long learning and the role of scientific and other knowledge **and intangible goods on a global scale, youth and youth policy, adaptation of labour market policies, and**, ~~to~~ national institutional contexts.

- **Combining economic, social and environmental objectives in a European perspective:** by addressing the two key and highly interrelated issues of continuing evolution of European socio-economic models and economic**,** ~~and~~ social **and regional** cohesion in an enlarged EU, taking into account **sustainability and** the protection of the environment**, sustainable urban planning, energy issues, the role of cities and metropolitan regions, and the socio-economic impact of European policy and legislation**.

- **Major trends in society and their implications:** such as demographic change including ageing **and its effects on pension systems,** ~~and~~ migration **and integration, analysing the implications of demographic change for urban development**; lifestyles, work, families, **reconciling professional and family life,** gender **equality** issues, **disabilities issues,** health and quality of life; **economic and other consumer protection; inequalities;** criminality; the role of business in society and population diversity, **ethnicity, religious pluralism,** cultural interactions**, multicultural issues** and issues related to protection of fundamental rights and the fight against racism and intolerance **and all forms of discrimination**.

- **Europe in the world:** understanding changing interactions and interdependencies**, including inter-cultural relations,** between world regions**, including developing regions,** and their implications for the regions concerned, especially Europe; and addressing emerging threats and risks without undermining human rights, freedom and well-being**, and fostering peace**.

- **The citizen in the European Union:** in the context of the future development of the **enlarged** EU, addressing the issues of achieving a sense of democratic "ownership" and active **and equal** participation by the peoples of Europe; effective and democratic governance **at all levels** including economic governance **including the role of civil society**; ~~and~~**research for** building a shared understanding and respect for Europe's diversities and commonalities in terms of culture, **religions, cultural heritage,** institutions **including legal systems**, history, languages and values **as building elements of European multi-cultural identity and heritage**.

- **Socio-economic and scientific indicators:** their use in policy and its implementation and monitoring, the improvement of existing indicators**, techniques to analyse them,** and the development of new ones for this purpose and for the evaluation of research programmes, including indicators based on official statistics.

- **Foresight activities** on major science, technology and related socio-economic issues such as the future demographic trends and the globalisation of knowledge**, the dissemination of knowledge,** and evolution of research systems, as well as of the future developments in and across major research domains and scientific disciplines.

9. Security and Space

Objective

To develop the technologies and knowledge for building capabilities needed to ensure the security of citizens from threats such as terrorism, natural disasters, and crime, while respecting fundamental human rights and privacy; to ensure optimal and concerted use of available technologies to the benefit of civil European security, and to stimulate the co-operation of providers and users for civil security solutions, improving the competitiveness of the European security industry and delivering mission-orientated research results to reduce security gaps, whilst ensuring transparency and accountability.

Supporting a European Space Programme focusing on applications such as GMES with benefits for citizens and for the competitiveness of the European space industry. This

will contribute to the development of a European Space Policy, complementing efforts by Member States and by other key players, including the European Space Agency.

9.1 Security

Rationale

Security in Europe is a precondition of prosperity and freedom. The EU Security Strategy: 'A Secure Europe in better World', adopted by the European Council, addresses the need for a comprehensive security strategy encompassing both civil and defence-related security measures.

Security related research is an important building block in supporting the Common Foreign and Security Policy as well as for realising a high level of security within ~~an EU-wide~~ **the** area of justice, freedom and security[27] as underpinned by the Hague programme. It will also contribute to developing technologies and capabilities in support of other ~~EU~~**Community** policies in areas such as transport, civil protection, energy and environment **and health**. **Security research needs specific implementation rules to take into account its special nature.**

Existing security related research activities in Europe suffer from the fragmentation of efforts, the lack of critical mass of scale and scope and the lack of connections and interoperability. Europe needs to improve the coherence of its efforts by developing efficient institutional arrangements and by instigating the various national and international actors to co-operate and co-ordinate in order to avoid duplication and to explore synergies wherever possible. Security research at Community level will **maintain an exclusively civil orientation and** focus on activities of clear added value to the national level. As a consequence, **civil** security research at Community level will reinforce the competitiveness of the European security industry. **Recognising that there are areas of 'dual use' technology, close coordination with the activities of the European Defence Agency (EDA) will be needed in order to ensure complementarity.**

Security research should emphasise the Union's capabilities regarding surveillance, distribution of information and knowledge of threats and incidents as well as systems for better assessments and situation control through better use of common ICT-systems in the fields of different operations. The research should be organised in such a way that it contributes to a common defence market in Europe.

When drawing up the rules of participation the recommendation of the high-level group in the field of security research from March 2004 and the findings of the European Security Research Advisory Board are to be taken into account. The special requirements concerning secrecy are to be enforced but the transparency of research findings is not to be unnecessarily restricted. In addition, areas are to be identified that permit the present transparency of research findings.

The **non-defence** activities set out below will complement and integrate the technology- and systems-oriented research relevant to **civil** security which is carried out in other themes. They will be mission-oriented, developing the technologies and capabilities as required by the

[27] Prevention, Preparedness, and response to terrorist attacks - COM(2004) 698, 700, 701, 702; Solidarity/ CBRN programme.

specific security missions. They are by design flexible so as to accommodate as yet unknown future security threats and related policy needs that may arise, stimulating cross-fertilisation and the take-up of existing technologies for the civil security sector, European security research will also encourage the development of multi-purpose technologies in order to maximise the scope for their application.

Activities

- **Protection against terrorism and crime:** delivering technology solutions for **civil protection, including biosecurity and** ~~threat (e.g. CBRN) awareness, detection, prevention, identification,~~ protection, ~~neutralisation and containment of effects of~~ **against risks arising from crime and** terrorist attacks ~~and crime~~.

- **Security of infrastructures and utilities:** analysing and securing existing and future public and private critical/networked infrastructure (e.g. in transport, energy, ICT), systems and services (including financial and administrative services).

- **Intelligence surveillance and** ~~B~~**border security:** focusing on technologies and capabilities to enhance the effectiveness and efficiency of all systems, equipment, tools and processes **and methods for rapid identification** required for improving the security of Europe's land and coastal borders, including border control and surveillance issues.

- **Restoring security and safety in case of crisis:** focusing on technologies **providing an overview of, and** ~~in~~ support **for**~~of~~ diverse emergency management operations (such as civil protection, humanitarian **aid, natural disasters** and rescue tasks, support to CFSP), and on issues such as inter-organisational co-ordination and communication, distributed architectures and human factors.

The above four areas will be supported by the following themes of a more cross-cutting nature:

- **Security Systems Integration interconnectivity and interoperability: Intelligence, information gathering and civil security,** focusing on technologies to enhance the interoperability of systems, equipment, services and processes, including law enforcement**, fire-fighting, civil defence and medical** information infrastructures, as well as on the reliability, organisational aspects, protection of confidentiality and integrity of information and traceability of all transactions and processing. **Increased integration and interoperability is a priority in order for the Union to make full use of achievements in all areas mentioned above.**

- **Security and society:** mission orientated research which will focus on ~~socio-economic~~ analyses **of the cultural, social, political and economic dimensions and consequences of terrorism and crime, the role of human values, policy making**, scenario building and activities related to: ~~crime,~~ **psychology of terrorism and its social environment,** ~~the~~ citizen's perception of security, ethics, protection of privacy and societal foresight **and systematic risk analysis**. Research will also address technologies that better safeguard privacy and liberties, and will address vulnerabilities and new threats, as well as the management and impact assessment of possible consequences.

- **Security Research Co-ordination and structuring:** co-ordination of European and international security research efforts and development of synergies between civil, security

and defence research, improvement of legal conditions, and encouragement to the optimal use of existing infrastructures.

9.2 Space

Rationale

The ~~EU~~**Community** can contribute in this field to the better definition of common objectives based on user requirements and policy objectives; to the coordination of activities, to avoid duplications and maximise interoperability; **to improving cost-effectiveness** and to the definition of standards. Public authorities and decision-makers represent important potential users and the European industry will also benefit from a well defined European Space policy implemented through a European Space Programme, supported in part by the proposed research and technological development actions. European level actions are also needed to support ~~EU~~**Community** policy objectives, for example in the fields of agriculture, **forestry,** fisheries, environment, **health,** telecommunications, security, transport as well as ensuring that Europe is a respected partner in regional and international cooperation.

In the last 40 years, Europe**, nationally and through the ESA,** has built up excellent technological competence. Sustaining a competitive industry (including manufacturers, service providers and operators) requires new research and technologies. Space applications bring important benefits to the citizens **by virtue of technological spin-off effects and are indispensable in a high-tech society**.

The activities set out below aim at: the **efficient** exploitation of space assets **(in coordination with in-situ assets, including airborne assets)** for the implementation of applications, namely GMES (Global Monitoring for Environment and Security) and their contribution to law enforcement in ~~EU~~**Community** policies; as well as space exploration, allowing international cooperation opportunities and dramatic technological breakthroughs **as well as cost-effective missions**; exploitation and exploration of space supported through enabling activities guaranteeing the strategic role of the European Union. These activities will be complemented by other actions included in the Competitiveness and Innovation Framework Programme and in the Education and Training Programme. The public policy benefits of the below activities will also be maximised, included additional support for new policy needs that may arise, for example: space based solutions in support of developing countries; and use of space-observation tools and methods to support developments in Community policies.

Activities

- **Space-based applications at the service of the European Society**

– GMES: development of satellite-based **and in-situ** monitoring **and early-warning** systems**, including for the safety of citizens,** and techniques relating to the management of the environment and security **(including the management of natural disasters)** and their integration with ground-based, ship-borne and airborne components; support to the **integration, harmonisation,** use and delivery of GMES data **(both satellite-based and in-situ, including ground-based, shipborne and airborne)** and services.

– Innovative satellite communication services, seamlessly integrated in the global electronic communication networks, for citizens and enterprises in application sectors encompassing civil protection, e-government, telemedicine, tele-education**, search and rescue, tourism**

and leisure time, personal navigation, fleet management, agriculture and forestry, meterology and generic users.

– Development of **monitoring** technologies **and systems** for reducing the vulnerability of space-based services and for contributing to the surveillance of space.

– **Development of space-based systems for risk prevention and risk management and all kinds of emergencies, enhancing convergence with non-space systems.**

- **Exploration of space**

– ~~Contribution to international~~ **Maximisation of scientific added value through synergies with the European Space Agency and Member States; space agencies' initiatives in the field of** space exploration**; facilitation of access to scientific data.** ~~initiatives.~~

– **Coordination of efforts for the development of space-borne telescopes and detectors as well as for data analysis in space sciences.**

- **RTD for strengthening space foundations**

– **Space research and development for long-term needs including s**~~S~~pace transportation**;** ~~technology~~: research **activities** to increase the competitiveness **and cost-effectiveness** of the European space **technology**~~transportation~~ sector.

– Space sciences including **bio-medicine and** life **and physical sciences** in space.

II IDEAS

Objective

This programme will enhance the dynamism, creativity and excellence of European research at the frontier of knowledge. This will be done by supporting "investigator-driven" research projects carried out across all fields by individual teams in competition at the European level. Projects will be funded on the basis of proposals presented by researchers both from the private and public sectors on subjects of their choice and evaluated on the sole criterion of excellence as judged by peer review. Research results will be communicated and disseminated in accordance with the Rules for Participation and Dissemination.

Rationale

Investigator-driven "frontier" research**, within the framework of activities commonly understood as "basic research"** is a key driver of wealth and social progress, as it opens new opportunities for scientific and technological advance, and is instrumental in producing new knowledge leading to future applications and markets.

Despite many achievements and a high level of performance in a large number of fields, Europe is not making the most of its research potential and resources, and urgently needs a greater capacity to generate knowledge **and translate such knowledge into economic and social value and growth**.

A Europe-wide competitive funding ~~mechanism~~ **structure (in addition to, and not replacing, national funding)** for frontier research executed by individual teams**, which may be of national or transnational character,** is a key component of the European Research Area, complementing other ~~EU~~ **Community** and national activities. It will help reinforce the dynamism and attractiveness of Europe for the best researchers from both European and third countries, and for industrial investment.

Activities

This action will respond to the most promising and productive areas of research and the best opportunities for scientific and technological progress, within and across disciplines, including engineering and social sciences and the humanities. It will be implemented independently of the thematic orientations of the other parts of the Framework Programme, and will pay attention to ~~young~~ **new generation** researchers and new groups as well as established teams.

The ~~EU~~ **Community** activities in frontier research will be implemented by a European Research Council (ERC), consisting of a**n independent** scientific council, supported by a dedicated implementation structure. **The management of the ERC will be carried out by staff recruited for that purpose, including officials from EU institutions, and will cover only the real administrative needs in order to assure the stability and continuity necessary for an effective administration.**

The scientific council will consist of representatives of the European scientific community at the highest level, acting in their personal capacity, independently of political or other interests. Its members will be appointed by the Commission following an independent procedure for their identification. **Members of the scientific council will be appointed for a period of four years, renewable once for a maximum of an additional four years on a rotating system which will ensure the continuity of the scientific council's work.** The scientific council will, inter alia, ~~oversee~~ **have full authority over** decisions on the type of research to be funded and act as guarantor of the quality of the activity from the scientific perspective. Its tasks will cover, in particular, the development of the annual work programme, the establishment of the peer review process, as well as the monitoring and quality control of the programme's implementation from the scientific perspective. **It will adopt a code of conduct addressing, inter alia, the avoidance of conflicts of interest.**

The dedicated implementation structure will be responsible for all aspects of implementation and programme execution, as provided for in the annual work programme. It will, in particular, implement the peer review and selection process according to the principles established by the scientific council and will ensure the financial and scientific management of the grants. **The administration and staffing costs for the European Research Council (scientific council and dedicated implementation structure) will be consistent with lean and cost effective management; administrative expenditure will be kept to a minimum, consistent with ensuring the resources necessary for high quality implementation.**

The implementation and management of the activity will be reviewed and evaluated ~~at appropriate intervals~~ **on an ongoing basis** to assess its achievements and to adjust and improve procedures on the basis of experience. **The scientific council will report annually to the European Parliament and the Council.**

The European Commission will act as the guarantor of the ERC's full autonomy and integrity.

The European Commission shall ensure that the implementation of the ERC is in accordance with the principles of scientific excellence, autonomy, efficiency and transparency, and that it follows precisely the strategy and implementation methodology established by the scientific council.

In the context of the interim evaluation referred to in Article 7.2, an independent review will be carried out, not later than 2010, of the ERC's structures and mechanisms, against the criteria of scientific excellence, autonomy, efficiency and transparency and with the full involvement of the scientific council. The review will look explicitly at the advantages and disadvantages of a structure based on an Executive Agency and a structure based on Article 171 of the Treaty. On the basis of this review, these structures and mechanisms should be modified as appropriate. The Commission will ensure that all the necessary preparatory work is undertaken and presented with a view to a transition to any modified structure required, as soon as possible.

The European Research Council shall have the faculty to conduct its own strategic studies for preparing and supporting its operational activities. In particular, it may consult with European, intergovernmental and national initiatives so as to programme its activities in the light of other research at European and national level.

III PEOPLE

Objective

Strengthening, quantitatively and qualitatively, the human potential in research and technology in Europe, by stimulating people to enter into the researcher's profession, encouraging European researchers to stay in Europe, and attracting to Europe researchers from the entire world, making Europe more attractive to the best researchers. Building on the experiences with the "Marie Curie" actions under previous Framework Programmes, t~~T~~his will be done by putting into place a coherent set of "Marie Curie" actions, particularly taking into account the European added value in terms of their structuring effect on the European Research Area. These actions address ~~addressing~~ researchers at all stages of their careers, in the public and private sectors, from initial research training, specifically intended for young people, to life long learning and career development. Efforts will also be made to increase participation by women researchers, by encouraging equal opportunities in all "Marie Curie Actions", by designing the actions to ensure that researchers can achieve an appropriate work/life balance and by facilitating resuming a research career after a break.

Rationale

Abundant and highly trained qualified researchers are a necessary condition to advance science and to underpin innovation, but also an important factor to attract and sustain investments in research by public and private entities. Against the background of growing competition at world level, the development of an open European labour market for researchers **free from all forms of discrimination,** and the diversification of skills and career paths of researchers are crucial to support a beneficial circulation of researchers and their knowledge, both within Europe and in a global setting. **Special measures to encourage young researchers and support early stages of scientific career, as well as measures to reduce the "brain drain", such as reintegration grants, will be introduced.**

Mobility, both trans-national and intersectoral, including stimulating industrial participation and the opening of research careers and academic positions at European scale, is a key component of the European Research Area and indispensable to increase European capacities and performances in research. **International cooperation between researchers will remain central in order to ensure the highest quality of research under this activity. Another key component is the establishment of appropriate employment conditions, whether in terms of ensuring independence of research, bringing salaries in line with the best international standards, or taking greater care to ensure research workers are covered by social security and insurance schemes. Increasing the mobility of researchers and strengthening the resources of those institutions which attract researchers from other Member States will encourage centres of excellence around the European Union.**

The "People" programme will be coordinated with other parts of the Framework Programme. In order to further exploit Europe's potential for becoming more attractive to researchers, the "Marie Curie" actions will also create concrete synergies with other Community policies, e.g. on education, cohesion and employment. Actions on linking science education to careers, and research and coordination actions on new methods in science education are foreseen under the Science in Society part of the Capacities Specific Programme.

Activities

- **Initial training of researchers** to improve their career perspectives, in both public and private sectors, including through the broadening of their scientific and generic skills, **including those related to technology transfer and entrepreneurship,** and attracting more young ~~researchers~~**people** to scientific careers

  This will be implemented through Marie Curie Networks with the main objective to overcome fragmentation of and to strengthen at European level the initial training and career development of researchers. **Support is foreseen for the best early-stage researchers to join established research teams, for which the mutual recognition of the quality of the training will be required, while encouraging mutual recognition of diplomas and other certificates issued in connection with the programme in question.** Members of the trans-national networks shall exploit their complementary competencies through integrated training programmes. Support will comprise recruitment of early stage researchers, organisation of training events also open to researchers outside the network and senior chairs and/or industry positions for knowledge transfer and supervision.

- **Life-long training and career development** to support the career development of experienced researchers. With a view to complementing or acquiring new skills and competencies or to enhance inter/multidisciplinarity and/or inter-sectoral mobility, support is foreseen for researchers with particular needs for additional/complementary competences and skills, for researchers to resume a research career after a break and for (re)integrating researchers into a longer term research position in Europe, including in their country of origin, after a trans-national/international mobility experience. This action line will be implemented through both individual fellowships awarded directly at Community level and through the co-financing of regional, national or international programmes**, where this fulfils the criteria of Community added value, transparency and openness**. **Initially the co-financing mode will be implemented on a controlled scale allowing the necessary experience to be gained.**

- **Industry-academia pathways and partnerships:** Support to longer term co-operation programmes between organisations from academia and industry, in particular SMEs **and including traditional manufacturing industries,** aims at **stimulating intersectoral mobility and at** increasing knowledge sharing through joint research partnerships, supported by the recruitment of experienced researchers to the partnership, by staff secondments between both sectors, and by the organisation of events.

- **The international dimension,** to increase the quality of European research by attracting research talent from outside Europe and fostering mutually beneficial research collaboration with researchers from outside Europe. This will be addressed through international outgoing fellowships (with an in-built mandatory return phase); international incoming fellowships; partnerships to support the exchange of researchers. Common initiatives between European organisations and organisations from countries neighbouring the EU and countries with which the EU has a Science and Technology agreement will also be supported. The activity will include measures to counter the risk of "brain drain" from developing countries and emerging economies and measures to create networks of European researchers working abroad. These actions will be implemented in line with the international activities under the "Co-operation" and "Capacities" Programmes.

- **Specific actions** to support the creation of a genuine European labour market for researchers, by removing obstacles to mobility and enhancing the career perspectives of researchers in Europe. **Incentive measures for public institutions that promote mobility, quality and quantity of researchers, where these measures clearly fulfil the criteria of distinct European added value, openness and transparency.** Furthermore, awards to improve the public awareness of Marie Curie actions and their objectives will be provided.

IV CAPACITIES

This part of the Framework Programme will enhance research and innovation capacities throughout Europe and ensure their optimal use. This aim will be achieved through:

– Optimising the use and development of research infrastructures.

– Strengthening innovative capacities of SMEs and their ability to benefit from research.

– Supporting the development of regional research-driven clusters.

– Unlocking the research potential in the EU's convergence and outermost regions.

– Bringing science and society closer together for the harmonious integration of science and technology in European society.

– **Support to the coherent development of research policies.**

– Horizontal actions and measures in support of international co-operation.

~~The activities undertaken in this part of the Framework Programme will also support the coherent development of policies, complementing the coordination activities under the Cooperation programme, and contributing to Community policies and initiatives that aim to improve the coherence and impact of Member States policies. This will include:~~

~~– Strengthening and improving the European science system, such as questions of scientific advice and expertise and contributing to "better regulation".~~

~~– Monitoring and analysis of research related public policies and industrial strategies~~

~~– Coordination of research policies, including trans-national cooperation initiatives undertaken at national or regional level on issues of common interest.~~

RESEARCH INFRASTRUCTURES

Objective

Optimising the use and development of the best research infrastructures existing in Europe, and helping to create in all fields of science and technology new research infrastructures of pan-European interest needed by the European scientific community to remain at the forefront of the advancement of research, and able to help industry to strengthen its base of knowledge and its technological know how.

Rationale

Research infrastructures play an increasing role in the advancement of knowledge **and technology** and **their** ~~its~~ exploitation. **The importance of such infrastructures is already well established in areas such as energy, space and particle physics and is increasing in other areas.** For example, radiation sources, data banks in genomics and data banks in social science, observatories for environmental and space sciences, systems of imaging or clean rooms for the study and development of new materials or nano-electronics, are at the core of research. They are expensive, need a broad range of expertise to be developed, and should be used and exploited by a large community of scientist and customer industries on a European scale.

The development of a European approach with regard to research infrastructures, including computing and communication based *e*-infrastructures **and virtual infrastructures**, and the carrying out of activities in this area at Union level, can make a significant contribution to boosting European research potential and its exploitation **and contributing to the development of the European Research Area.**.

While Member States' role will remain central in the development and financing of infrastructures, t~~T~~he **Community** ~~EU~~ can and should play a catalysing and leveraging role by helping to ensure wider and more efficient access to, and use of, the infrastructures existing in the different Member States, by stimulating the development of these infrastructures**, and their networking**, in a coordinated way and by fostering the emergence of new research infrastructures of pan-European interest in the medium to long term. **In this respect, the European Strategy Forum on Research Infrastructures (ESFRI) plays a key role in identifying needs and a roadmap for European research infrastructures.**

Activities

Activities carried out in this field will be executed in the whole field of science and technology. They will be implemented in close cooperation with the activities taking place in the thematic areas to ensure that all the actions undertaken at European level in the ~~EU~~ **Community** framework respond to the needs for research infrastructures in their respective area including international cooperation.

The activities will be the following:

- **Support to existing research infrastructures**

~~– trans-national access to ensure that European researchers may have access to the best research infrastructures to conduct their research, irrespective of the location of the infrastructure~~

~~– integrating activities to structure better, on a European scale, the way research infrastructures operate in a given field and promote their coherent use and development~~

– **integrating activities to structure better, on a European scale, the way research infrastructures operate in a given field and promote their coherent use and development, in particular through trans-national access, to ensure that European researchers, including researchers from industry and SMEs, may have access to** ~~the~~ **high performing** ~~best~~ **research infrastructures to conduct their research, irrespective of the location of the infrastructure**

– *research e-infrastructure* by fostering the further development and evolution **and global connectivity** of high-capacity and high-performance communication and grid infrastructures and reinforcing European high-end computing capabilities, as well as ~~fostering~~ **encouraging** the adoption by user communities **where appropriate**, enhancing their global relevance and increasing the level of trust and confidence, building on the achievements of GEANT and Grid infrastructures **and based on open standards for interoperability**.

- **Support to new research infrastructures**

– *construction of new infrastructures and major up*~~dates~~**grades** *of existing ones* ***focusing mainly on preparatory phases*** to promote the ~~creation~~ **emergence** of new research ~~infrastructures~~**facilities in accordance with the principle of "variable geometry"**, ~~based~~**building primarily** on the work conducted by ESFRI[28] ~~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.~~

– *design studies*, through a bottom-up approach of calls for proposals, to promote the creation of new research infrastructures by funding exploratory awards and feasibility studies for new infrastructures.

Infrastructures projects proposed for funding in this respect will be identified on the basis of a series of criteria including in particular:

– Added value of **Community** ~~EU~~ financial support

– **Inability of existing mechanisms to achieve the objective**

[28] The European Strategy Forum on Research Infrastructures (ESFRI) was launched in April 2002. ESFRI brings together representatives of the 25 EU Member States, appointed by Ministers in charge of Research, and a representative of the European Commission. The countries associated with the Framework Programme for Research were invited to join in 2004.

– **Scientific excellence, notably, c**~~C~~capacity to offer a **world level** service **in response to the needs of** ~~to~~ users from the scientific (academic and industrial) community ~~at European level~~ **throughout Europe**

– Relevance at international level

– **Contribution to technological development capacity**

– **Contribution to developing European Research Area**

– **Contribution to developing 'research-based clusters of excellence'**

– Technological **and organisational** feasibility

– Possibilities for European partnership and **strong financial and other** commitment of **Member States and** major stakeholders, **considering the possible use of EIB loans and Structural Funds**

– Construction and operating costs evaluated.

As far as the construction of new infrastructures is concerned, **the potential for scientific excellence of the convergence regions as well as the outermost regions should be taken into account, whenever appropriate. A**~~a~~n efficient coordination of the Community financial instruments, Framework Programme and Structural Funds in particular, will be ensured. **Local and regional authorities should be closely involved in discussions concerning the construction of these infrastructures.**

RESEARCH FOR THE BENEFIT OF SMEs

Objectives

Strengthening the innovation capacity of European SMEs and their contribution to the development of new technology based products and markets by helping them outsource research, increase their research efforts, extend their networks, better exploit research results and acquire technological know how, bridging the gap between research and innovation.

Rationale

SMEs are at the core of European industry. They should be a key component of the innovation system and in the chain of transformation of knowledge into new products, processes and services. Faced with an increasing competition in the internal market and globally, European SMEs need to increase their knowledge and research intensity**, enhance the exploitation of research**, expand their business activities on larger markets and internationalize their knowledge networks. Most Member states actions relevant to SMEs do not encourage and support trans-national research cooperation and technology transfer. Actions at EU level are necessary to complement and enhance the impact of actions undertaken at national and regional level. In addition to the actions listed below, the participation of SMEs will be encouraged and facilitated, and their needs taken into account, across the Framework Programme.

Activities

Specific actions in support to SMEs are conceived to support SMEs or SME associations in need of outsourcing research to universities and research centres: mainly low to medium tech SMEs with little or no research capability. **Research intensive SMEs may participate as providers of research services or to outsource research to complement their core research capability.** ~~Research intensive SMEs who need to outsource research to complement their core research capability may also participate.~~ Actions will be carried out in the entire field of science and technology **with a bottom-up approach**. **Actions will include support of demonstration and other activities to facilitate the exploitation of results ensuring complementarity with the instruments to promote innovation in SMEs under the Competitiveness and Innovation Programme.** Financial means will be allocated through two schemes:

– ***Research for SMEs:*** To support small groups of innovative SMEs to solve common or complementary technological problems

– ***Research for SME associations:*** To support SME associations and SME groupings to develop technical solutions to problems common to large numbers of SMEs in specific industrial sectors or segments of the value chain.

These two schemes will replace the 'Cooperative' and 'Collective' research activities, implemented for SMEs in the 6th Framework Programme.

The Competitiveness and Innovation Programme will ~~provide support to networks of intermediaries and national schemes for actions to~~ encourage and facilitate the participation of SMEs in the Framework Programme **through its horizontal services in support of business and innovation. Complementarity and synergy with other Community programmes will be ensured.**

REGIONS OF KNOWLEDGE

Objectives

Strengthening the research potential of European regions, in particular by encouraging and supporting the development, across Europe, of regional "research-driven clusters" associating universities, research centres, enterprises and regional authorities.

Rationale

Regions are increasingly recognised as important players in the EU's research and development landscape. Research policy and activities at regional**, interregional and cross-border** level often rely on the development of "clusters" associating public and private actors. The *Pilot Action* on "*Regions of Knowledge*" demonstrated the dynamic of this evolution and the necessity to support and encourage the development of such structures.

The actions undertaken in this area will enable European regions to strengthen their capacity for investing in RDT and carry out research activities, while maximising their potential for a successful involvement of their operators in European research projects **and facilitating the emergence of clusters, thereby promoting regional development in Europe. Actions will facilitate the creation of regional clusters which contribute to the development of the European Research Area.**

Attention must be paid to the specific case of co-operation between adjacent border regions, as it was under the Interreg III programmes, and as laid down under the rules governing the territorial objective. The Regions of Knowledge activity will encourage cross-border regional co-operation in research irrespective of whether the regions concerned fall under either the convergence or the regional competitiveness objective

Activities

The new *Regions of Knowledge* initiative will involve and bring together regional actors involved in research: **such as** universities, research centres, industry, public authorities (regional councils or regional development agencies). Projects will cover joint analysis of research agendas of regional **or cross border** clusters (in coordination with other activities on the broader issue of regional innovation clusters) and the elaboration of a set of instruments to address them in specific research activities, including through "mentoring" of regions with a less developed research profiles by highly developed ones **and direct support to emerging Regions of Knowledge**. This will comprise measures aiming at improving research networking and access to sources of research funding as well as better integration **and linking** of research actors and institutions in regional economies. These activities will be implemented in close relationship with ~~EU~~ **Community** regional policy **(structural funds)** and the Competitiveness and Innovation Programme and the Education and Training Programmes.

In the context of the specific activity of "Regions of Knowledge" synergies will be sought with the ~~EU's~~ **Community** regional policy **and with major national and regional programmes**, in particular with regard to convergence and outermost regions.

RESEARCH POTENTIAL

Objective

Stimulating the realisation of the full research potential of the enlarged Union by unlocking and developing ~~the research potential~~ existing or emerging excellence in the EU's convergence regions and outermost regions[29], and helping to strengthen the capacities of their researchers to successfully participate in research activities at ~~EU~~ Community level.

Rationale

Europe does not fully exploit its research potential, in particular in less advanced regions remote from the European core of research and industrial development. In order to help researchers and institutions**, whether in the public or private sector,** of these regions to contribute to the overall European research effort, while taking advantage of the knowledge and experience existing in other regions of Europe, this action aims at establishing the conditions that will allow them to exploit their potential and will help to fully realise the European Research Area in the enlarged Union. **The actions will build on past and existing measures such as the European Centres of Excellence in the then Acceding and**

[29] Convergence regions are those set out in Article 5 of the proposal for a Council Regulation laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund - COM(2004) 492. This includes "convergence" objective regions, regions eligible for funding from the Cohesion fund, and outermost regions.

Candidate Countries in the Fifth Framework Programme and Marie Curie Host fellowships for the Transfer of Knowledge.

Activities

The action in this domain will comprise support to:

- Trans-national two-way secondments of research staff between selected organisations in the convergence regions, and one or more partner organisations**; support to selected centres of existing or emerging excellence for** the recruitment ~~by selected centres~~ of incoming experienced researchers from other ~~EU~~ countries;

- The acquisition and development of research equipment and the development of a material environment enabling a full exploitation of the intellectual potential present in the selected centres **of existing or emerging excellence** in the convergence regions;

- The organisation of workshops and conferences to facilitate knowledge transfer; promotion activities as well as initiatives aiming at disseminating and transferring research results in other countries and on international markets.

- "Evaluation facilities" through which any research centre in the convergence regions can obtain an international independent expert evaluation of the level of their overall research quality and infrastructures.

Strong synergies will be sought with the ~~EU's~~ **Community** regional policy. Actions supported under this heading will identify needs and opportunities for reinforcing the research capacities of emerging and existing centres of excellence in convergence regions which may be met by Structural and Cohesion funds.

Synergies will also be sought with the Competitiveness and Innovation programme in order to promote the regional commercialisation of R&D in collaboration with industry.

SCIENCE IN SOCIETY

Objective

With a view to building an open effective and democratic European Knowledge society, the aim is to stimulate the harmonious integration of scientific and technological endeavour, and associated research policies in the European social web, by encouraging at European scale reflection and debate on science and technology, and their relation with society and culture.

Rationale

The influence of science and technology on our daily lives becomes increasingly profound. Products of the social activity and shaped by social and cultural factors, science and technology nevertheless remain a remote domain far from the daily concerns of a large part of the public and of policy decision makers, and continues to be the subject of misunderstandings ~~and unfounded hopes and fears~~. Contentious issues relating to emerging technologies should be addressed by society on the basis of well informed debate leading to sound choices and decisions.

Activities

The substantial and integrated initiative undertaken in this field will comprise support to:

- Strengthening and improv~~ement~~**ing** ~~of~~ the European science system, **and will address**~~including~~ **the following**~~:~~ **issues**~~questions~~**: improving the use and monitoring the impact** of scientific advice and expertise **for policy-making (including risk management)**; the future of scientific publications; **measures to make scientific publications more accessible to members of the public wishing to consult them;** safeguards for scientific domains open to misuse; and frauds, trust and "self regulation".

- Broader engagement of researchers and the public at large, including organised civil society, on science-related questions, to anticipate and clarify political and societal issues, including ethical issues.

- Reflection and debate on science and technology and their place in society, drawing on **disciplines such as** history, sociology and philosophy of science and technology.

- Gender research, including the integration of the gender dimension in all areas of research and the ~~role~~ **promotion** of women in research **and in scientific decision-making bodies**.

- Creation of an **open** environment which triggers curiosity for science in young people, by reinforcing science education at all levels including schools and promoting interest and **full** participation in science among young people **from all backgrounds**.

- ~~Development of a policy on~~ **Strengthening** the role of **research based in** universities **and other higher education institutes** and ~~the~~ **their** engagement ~~of universities~~ in ~~the necessary reforms to face~~ the challenges of globalisation.

- Improved **inter**communication **and mutual understanding** between the scientific world and the wider audience of policy-makers, the media and the general public, by helping scientists better communicate **and present** their work and by supporting scientific information**, publications** and media.

These activities will take the form of, in particular, research projects, studies, networking and exchanges, public events and initiatives, prizes, surveys and data collection. In many cases they will imply international partnerships with organisations from third countries.

SUPPORT TO THE COHERENT DEVELOPMENT OF RESEARCH POLICIES

Objectives

Enhancing the effectiveness and coherence of national and Community research policies and their articulation with other policies, improving the impact of public research and its links with industry, and strengthening public support and its leverage effect on investment by private actors.

Rationale

Increasing investment in research and development up to the 3% objective and improving its effectiveness is a top priority of the Lisbon strategy for growth and employment. Thus, developing effective policies to leverage public and private research

investments constitute a major concern of public authorities with a view to accelerate the transition towards a competitive knowledge based economy. This calls for adaptability of research policies, the mobilisation of a broader range of instruments, coordination of efforts across national boundaries and the mobilisation of other policies to create better framework conditions for research.

Activities

The activities undertaken under this heading will complement the coordination activities under the Cooperation programme and will aim at improving the coherence and impact of regional, national and Community policies and initiatives (e.g. funding programmes, legislation, recommendations and guidelines). The activities will be the following:

– Monitoring and analysis of research related public policies and industrial strategies, including their impacts and development of indicators to provide information and evidence in support of the design, implementation, evaluation and trans-national coordination of policies.

– Strengthen, on a voluntary basis, the coordination of research policies via actions to support the implementation of the open method of co-ordination (OMC) and bottom-up trans-national cooperation initiatives undertaken at national or regional level on issues of common interest.

ACTIVITIES OF INTERNATIONAL CO-OPERATION

To become competitive and play a leading role at world level, the European Community needs a strong and coherent international science and technology policy. **The international actions carried out under the different programmes within the Framework Programme will be implemented in the context of an overall international cooperation strategy.**

This international policy has ~~two~~ **three** interdependent objectives:

– To support European competitiveness through strategic partnerships with third countries in selected fields of science and by engaging the best third country scientists to work in and with Europe.

– **To contribute to the production of knowledge in Europe by enabling universities, research institutions and European firms to establish contact with their partners in third countries, thereby making it easier for them to access research carried out elsewhere in the world**.

– To address specific problems that third countries face or that have a global character, on the basis of mutual interest and mutual benefit.

Cooperation with third countries in the Framework Programme will be targeted in particular at the following groups of countries[30]:

– Candidate countries;

[30] At present 10 Mediterranean Partner Countries and 6 countries of Eastern European and Central Asia are part of the European Neighbourhood Policy

– ~~Countries neighbouring the EU,~~ Mediterranean partner countries, Western Balkans **countries (WBC)**[31], and **Eastern European and Central Asian countries (EECA)**[32]~~the Newly Independent States~~;

– Developing countries, focusing on their particular needs **of each country or region concerned;**[33]

– Emerging economies.

The theme-oriented international cooperation actions are carried out under the "Cooperation" programme. The international actions in the area of human potential are carried under the "People" programme.

Under the "Capacities" programme, horizontal support ~~actions~~ and measures ~~with a focus other than a specific thematic or interdisciplinary area~~ will be implemented. ~~Efforts will be undertaken to improve the coherence of national activities by~~ **The focus will be on bi-regional S&T Cooperation including priority setting and definition of S&T Cooperation policies**[34]**; bilateral S&T coordination platforms for the enhancement and development of S&T Cooperation Partnerships and** supporting the co-ordination of national **policies and activities** ~~programmes~~ on international ~~scientific~~ **S&T** co-operation. **Taking into account the experience gained through INTAS in the framework of cooperation with the Eastern European and Central Asian countries, activities providing continuity will be undertaken through this programme and the specific programmes Cooperation and People.** The overall coordination of the international cooperation actions under the different programmes of the Framework Programme**, as well as with other Community instruments,** will be ensured.

NON NUCLEAR ACTIONS OF THE JOINT RESEARCH CENTRE

Objective

To provide customer driven scientific and technical support to the ~~EU~~ Community policy making process, ensuring support to the implementation and monitoring of existing policies and responding to new policy demands.

Rationale

The JRC's independence of special interests, whether private or national, combined with its technical expertise enable it to facilitate communication and consensus building between stakeholders (industry associations, environmental action groups, Member States' competent authorities, other research centres etc.) and policy makers, especially at the ~~EU~~ **Community** level. Through scientific and technological support the JRC helps to make the **Community** ~~EU~~ policy process more effective, transparent and based on sound science. **Where and when**

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31 Other than Associated Candidate countries

32 Formerly called the New Independent States: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. Activities regarding EECA countries currently undertaken by INTAS will be subsumed in the relevant cooperation activities under this heading.

33 Noting that Latin America includes both developing countries and emerging economies.

34 With targeted third countries (International Cooperation Partner Countries as defined in the Rules for participation and dissemination)

appropriate, research conducted by the JRC should be coordinated with the research undertaken under the Themes of the Cooperation Specific Programme, in order to avoid overlap and duplication.

The usefulness and credibility of the JRC's support to ~~EU~~ **Community** policies is closely linked to the quality of its scientific expertise and its integration in the international scientific community. The JRC will therefore continue investing in research and networking with other centres of excellence in relevant fields. It will participate in indirect actions in all its aspects with emphasis on common scientific reference systems, networking, training and mobility, research infrastructure and participation in Technology Platforms and co-ordination instruments where it has the relevant expertise to produce added value.

The JRC will actively pursue promoting the integration of New Member States and Candidate Countries in its activities to the level currently enjoyed by the EU15. **The JRC will strengthen its unique position in the European Research Area in the heart of the European Scientific Culture. In facilitating access to its facilities by European and non-European researchers, in particular young scientists, it will increase its cooperation with other public and private research organisations, consistently improve the scientific quality of its own activities and contribute to scientific education and training, which shall all remain a high priority for the JRC.**

Activities

The JRC's priorities will be in fields which are strategically important for the Union and where its input provides high added value. Scientific and technical support to ~~EU~~ **Community** policies will continue to be delivered in core areas such as sustainable development, climate change, food, energy, transport, chemicals, alternative methods to animal testing, research policy, information technologies, reference methods and materials, biotechnology, risks, hazards and socio-economic impacts. Growth will be in areas of key concern for the ~~Union~~ **Community**:

- **Prosperity in a knowledge-intensive society**

– To carry out and develop advanced econometric modelling and analysis techniques in the context of policy definition and monitoring such as the follow-up of the Lisbon agenda, the Internal Market and the Research and Education Policies.

– To develop models to support a new balance between sustainability objectives and competitiveness in a responsible way.

– **To provide its scientific/technical support to the development of risk assessment and management procedures as a tool for the European decision making process.**

- **Solidarity and responsible management of resources**

– To become a recognised S&T reference centre on sustainable agriculture focusing on food quality, traceability and safety (including GM food and feed), spatial management and cross-compliance and to support the implementation of the CAP.

– To provide S&T support to the Common Fisheries Policy.

– To enhance the provision of harmonised European geo-referenced data and spatial information systems (support to INSPIRE) and to continue developing new approaches to global environmental and resources monitoring (support to GMES).

– **To provide expertise and play a central role in the GMES research activities and in the development of new applications in this field.**

– To support the implementation of the EU Action Plan on Environment and Health including providing support to on-going activities to establish a community integrated Environment and Health information system.

– **To promote and enhance the development and validation of alternative strategies, and in particular non-animal methods, in all relevant areas of research (safety assessment, vaccine testing, health and biomedical research etc.).**

- ~~Security and freedom~~**Freedom, security and justice**

– To develop activities contributing to the establishment of **the area of** freedom, justice and security especially in areas related to ~~fighting~~**protection against** terrorism, organised crime and fraud, border security and prevention of major risks, in ~~relation with law enforcement agencies and relevant EU services~~**cooperation with relevant bodies**.

– To support the Community response to natural and technological disasters.

- **Europe as world partner**

– To strengthen support to ~~EU~~ **Community** external policies in specific areas such as external aspects of internal security, development cooperation and humanitarian aid.

ANNEX II: INDICATIVE BREAKDOWN AMONG PROGRAMMES

The indicative breakdown among programmes is as follows (in EUR million):

Cooperation [*,35]	32 292
Health	5 984
Food, Agriculture and Biotechnology	1 935
Information and Communication Technologies	9 110
Nanosciences, Nanotechnologies, Materials and new Production Technologies	3 467
Energy	2 265
Environment (including Climate Change)	1 886
Transport (including Aeronautics)	4 180
Socio-economic Sciences and the Humanities	607
Security and Space	2 858
Ideas	7 460
People	4 727
Capacities	4 291
Research Infrastructures [*]	2 008
Research for the benefit of SMEs	1 266

[35] Including Joint Technology Initiatives (including financial plan, etc) and the part of the coordination and international cooperation activities to be funded within the themes.

[*] Including a contribution **of an amount of up to 1 billion euro** to the European Investment Bank for the constitution of the "Risk-Sharing Finance Facility" referred to in Annex III. **This amount is to be matched by an equivalent amount from the EIB and will be made available progressively to the EIB taking account of the level of demand. It will come from the specific programmes "Cooperation" (up to 800 millions euro by proportional contribution of all themes, except the Socio-Economic Sciences and the Humanities theme) and "Capacities" (up to 200 million euro from the research infrastructure part)**.The Council decisions adopting the contributing specific programmes shall establish (a) their contribution, and (b) the modalities under which the Commission shall decide on the reallocation of incomes generated by the Community contribution and of any of its leftovers during the lifetime of the seventh framework programme.

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Research Potential	350
Science in Society	359
Activities of International Co-operation	182
Non-nuclear actions of the Joint Research Centre	1 751
TOTAL	50 521

ANNEX III

FUNDING SCHEMES

Indirect Actions

The activities supported by the 7th Framework Programme will be funded through a range of "Funding schemes". These schemes will be used, either alone or in combination, to fund ~~different categories of~~ actions implemented throughout the Framework Programme.

The decisions for specific programmes, work programmes and calls for proposals will ~~mention~~ **specify**, as and when appropriate:

- The type(s) of scheme(s) used to fund different ~~categories of~~ actions;
- The categories of participants (such as research organisations, universities, industry, **SMEs**, public authorities) which can benefit from it;
- The types of activities (**such as** research~~,~~ **and technological** development, demonstration, **management**, training, dissemination~~, transfer of knowledge~~ and **other** related activities) which can be funded through each of them.

Where different funding schemes can be used, the work programmes may specify the funding scheme to be used for the topic on which proposals are invited.

The funding schemes are the following:

a) To support actions which are primarily implemented on the basis of calls for proposals:

1. Collaborative projects

Support to research projects carried out by consortia with participants from different countries, aiming at developing new knowledge, new technology, products, **demonstration activities** or common resources for research. The size, scope and internal organisation of projects can vary from field to field and from topic to topic. Projects can range from small or medium-scale focused research actions to **large-scale** integrating projects ~~which mobilise a significant volume of resources~~ for achieving a defined objective. **Projects may also be targeted to special groups such as SMEs**.

2. Networks of Excellence

Support to **a Joint Programme of Activities** ~~joint research programmes~~ implemented by a number of research organisations integrating their activities in a given field, carried out by research teams in the framework of longer term co-operation. The implementation of **this Joint Programme of Activities** ~~these joint programmes~~ will require a formal commitment from the organisations integrating part of their resources and their activities.

3. Coordination and support actions

Support to activities aimed at coordinating or supporting research activities and policies (networking, exchanges, trans-national access to research infrastructures, studies, conferences, etc). These actions may also be implemented by means other than calls for proposals.

4. ~~Individual projects~~ Support for "frontier" research

Support to projects carried out by individual **national or transnational** research teams. This scheme will ~~mainly~~ be used to support investigator-driven "frontier" research projects funded in the framework of the European Research Council.

5. Support for training and career development of researchers

Support for training and career development of researchers, mainly used for the implementation of the Marie Curie actions.

6. Research for the benefit of specific groups (in particular SMEs)

Support to research **and technological development** projects where the bulk of the research is carried out by universities, research centres or other legal entities, for the benefit of specific groups, in particular SMEs or associations of SMEs. **Efforts will be undertaken to mobilise additional financing from the EIB Group and other financial organisations.**

b) To support actions implemented **on the basis of decisions by the Council and the European Parliament (or by the Council in consultation with the European Parliament)**~~36~~, based on a proposal from the Commission, the Community will provide financial support to multi-financed large-scale initiatives.

- A financial contribution from the Community to the joint implementation of well identified national research programmes, on the basis of Article 169 of the Treaty. This joint implementation will require the establishment or existence of a dedicated implementation structure. Community financial support will be provided subject to the definition of a financing plan based on formal commitments from competent national authorities.

- A financial contribution from the Community to the implementation of Joint Technology Initiatives to realise objectives that cannot be achieved through the funding schemes identified in ~~point 1~~ **part a)** above. Joint Technology Initiatives will mobilise a combination of funding of different nature and from different sources, private and public, European and national. This funding can take different forms and can be allocated or mobilised though a range of mechanisms: support from the Framework Programme, loans from the European Investment Bank, support to risk capital. Joint Technology Initiatives may be decided and implemented on the basis of Article 171 of the Treaty (this may include the creation of joint undertakings) or through the Specific Programme Decisions. Community support will be provided subject to the definition of an overall

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36 ~~Or by the Council in consultation with the European Parliament~~

blueprint of financial engineering, based on formal commitments from all parties concerned.

- A financial contribution from the Community to the development of new infrastructures of European interest. This contribution may be decided on the basis of Article 171 of the Treaty or through the Specific Programme Decisions. The development of new infrastructures will mobilise a combination of funding of different nature and origin: national funding, Framework Programme, Structural funds, loans from the European Investment Bank and others. Community support will be provided subject to the definition of an overall financial plan based on a ~~formal~~ commitment from all parties concerned.

The Community will implement the funding schemes **identified in part a) above** in compliance with the provisions of the regulation **to be** adopted pursuant to Article 167 of the Treaty, the relevant State Aid instruments, in particular the Community framework for state aid to research and development, as well as international rules in this area. In compliance with this international framework, it will be necessary to be able to adjust the scale and form of financial participation on a case-by-case basis, in particular if funding from other public sector sources is available, including other sources of Community financing such as the European Investment Bank (EIB).

In addition to direct financial support to participants **in RTD actions**, the Community will improve their access to **debt finance** through the "Risk-Sharing Finance Facility" by providing a **contribution**~~grant~~ to the **EIB.** The Community **contribution**~~grant~~ shall be used by the **EIB, which will be a risk sharing partner**, to **contribute to** the provisioning and capital allocation for loan **and guarantee** financing **from its own resources. There will be no further liability for the Community budget**. Subject to and in accordance with modalities to be established by the regulation adopted pursuant Article 167 of the Treaty and the Council decisions adopting the specific programmes, this mechanism will enable the EIB **to increase the amount of financing of** European RTD actions (such as joint technology initiatives, large projects-including Eureka projects, ~~and~~ new research infrastructures**, and projects run by SMEs) to help overcome market deficiencies**.

In the case of participants to an indirect action established in a region lagging in development (convergence regions and outermost regions[37]), complementary funding from the Structural Funds will be mobilised wherever possible and appropriate. In the case of participation of entities from the candidate countries, an additional contribution from the pre-accession financial instruments could be granted under similar conditions. As regards actions in the "research infrastructures" part of the "capacities" programme of the 7th Framework Programme, the detailed funding arrangements for these will be defined with a view to ensuring that there is effective complementarity between community research funding and other ~~EU~~ **Community** and national instruments, notably the Structural Funds.

[37] Convergence regions are those set out in Article 5 of the proposal for a Council Regulation laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund - COM(2004) 492. This includes "convergence" objective regions, regions eligible for funding from the Cohesion fund, and outermost regions.

Direct actions

The Community will undertake activities implemented by the Joint Research Centre, which are referred to as direct actions.

LEGISLATIVE FINANCIAL STATEMENT

1. NAME OF THE PROPOSAL :

Proposal for a Decision of the European Parliament and of the Council concerning the 7th framework programme of the European Community for research, technological development and demonstration activities (2007 to 2013) – Building the Europe of Knowledge

2. ABM / ABB FRAMEWORK

RESEARCH, ENTREPRISE, ENERGY AND TRANSPORT. INFORMATION SOCIETY. DIRECT RESEARCH and FISHERIES

3. BUDGET LINES

3.1. Budget lines (operational lines and related technical and administrative assistance lines) including headings :

02 04 01 Security and Space Research; 06 06 01 Research related to energy; 06 06 02 Research related to transport (including aeronautics); 08 02 01 Cooperation — Health; 08 03 01 Cooperation — Food, Agriculture and Biotechnology; 08 04 01 Cooperation — Nanosciences, Nanotechnologies, Materials and new Production Technologies; 08 05 01 Cooperation — Energy; 08 06 01 Cooperation — Environment (including Climate Change); 08 07 01 Cooperation — Transport (including Aeronautics); 08 08 01 Cooperation — Socio-economic sciences and the humanities; 08 09 01 Cooperation – RSFF; 08 10 01 Ideas; 08 11 01 People; 08 12 01 Capacities — Research Infrastructures; 08 13 01 Capacities — Research for the benefit of SMEs; 08 14 01 Capacities — Regions of Knowledge; 08 15 01 Capacities — Research Potential; 08 16 01 Capacities — Science in Society; 08 17 01 Capacities — Activities of International Co-operation; 08 18 01 Capacities - Risk Sharing Finance Facility (EIB); 09 04 01 Support to Research Cooperation in the area of Information and Communication Technologies (ICT - Cooperation); 09 05 01 Capacities - Research Infrastructures; 10 02 01 Non nuclear actions of the Joint Research Centre (JRC)

3.2. Duration of the action and of the financial impact:

2007-2013

3.3. Budgetary characteristics (*add rows if necessary*):

Budget line	Type of expenditure		New	EFTA contribution	Contributions from applicant countries	Heading in financial perspective
02, 06, 08, 09, and 10	Non-comp	Diff[38]/	YES	YES	YES	**No** [1a]
XX.01	Non-comp	Non-diff[39]	YES	NO	NO	**No** [1a…]

[38] Differentiated appropriations.

[39] Non-differentiated appropriations here after referred to as NDA.

XX.01.04	Non-comp	Non-diff	YES	YES	YES	**No** [1a…]
XX.01.05	Non-comp	Non-diff	YES	YES	YES	**No** [1a…]

4. SUMMARY OF RESOURCES

4.1. Financial Resources

4.1.1. Summary of commitment appropriations (CA) and payment appropriations (PA)

EUR million (to 3 decimal places) CURRENT PRICES

Expenditure type	Section no.		**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
Operational expenditure[40]										
Commitment Appropriations (CA)	8.1	a	4.596,105	5.035,523	5.558,406	6.331,855	7.341,771	8.262,346	9.210,139	**46.336,145**
Payment Appropriations (PA)		b	570,307	3.397,368	5.112,937	6.021,808	6.908,373	7.329,833	16.995,519	**46.336,145**
Administrative expenditure within reference amount[41]										
Technical & administrative assistance (NDA)	8.2.4	c	485,903	543,551	560,720	600,868	626,378	663,608	703,827	**4.184,855**
TOTAL REFERENCE AMOUNT										
Commitment Appropriations		**a+c**	**5.082,008**	**5.579,074**	**6.119,126**	**6.932,723**	**7.968,149**	**8.925,954**	**9.913,966**	**50.521,000**
Payment Appropriations		**b+c**	**1.056,210**	**3.940,919**	**5.673,657**	**6.622,676**	**7.534,751**	**7.993,441**	**17.699,346**	**50.521,000**
Administrative expenditure <u>not</u> included in reference amount[42]										
Human resources and associated expenditure (NDA)	8.2.5 d									
Administrative costs, other than human resources and associated costs, not included in reference amount (NDA)	8.2.6 e									

40 Expenditure that does not fall under Chapter xx 01 of the Title xx concerned.

41 Expenditure within article xx 01 05 of Title xx.

42 Expenditure within chapter xx 01 other than articles xx 01 05.

Total indicative financial cost of intervention

TOTAL CA including cost of Human Resources	a+c +d +e	**5.082,008**	**5.579,074**	**6.119,126**	**6.932,723**	**7.968,149**	**8.925,954**	**9.913,966**	**50.521,000**
TOTAL PA including cost of Human Resources	b+c +d +e	**1.056,210**	**3.940,919**	**5.673,657**	**6.622,676**	**7.534,751**	**7.993,441**	**17.699,346**	**50.521,000**

Co-financing details

If the proposal involves co-financing by Member States, or other bodies (please specify which), an estimate of the level of this co-financing should be indicated in the table below (additional lines may be added if different bodies are foreseen for the provision of the co-financing):

EUR million (to 3 decimal places)

Co-financing body		Year n	n + 1	n + 2	n + 3	n + 4	n + 5 and later	Total
	f							
TOTAL CA including co-financing	a+c +d+ e+f							

4.1.2. Compatibility with Financial Programming

☒ Proposal is compatible with next financial programming (Interinstitutional agreement on the financial framework 2007-2013).

☐ Proposal will entail reprogramming of the relevant heading in the financial perspectives.

☐ Proposal may require application of the provisions of the Interinstitutional Agreement[43] (i.e. flexibility instrument or revision of the financial perspectives).

4.1.3. Financial impact on Revenue

☐ Proposal has no financial implications on revenue

☒ Proposal has financial impact – the effect on revenue is as follows:

Certain Associated States may contribute to the funding of the framework programmes.

In accordance with Article 161 of the Financial Regulation, the Joint Research Centre may benefit from revenue from various types of competitive activities and from other services provided for outside bodies.

[43] See points 19 and 24 of the Interinstitutional agreement.

In accordance with Article 18 of the Financial Regulation, certain revenue may be used to finance specific items.

4.2. Human Resources FTE (including officials, temporary and external staff) – see detail under point 8.2.1.

Annual requirements	2007	2008	2009	2010	2011	2012	2013
Total number of human resources	**4.436**	**4.629**	**4.659**	**4.937**	**5.039**	**5.288**	**5.538**

It will be necessary to consider year by year the consequences for human resources of the phasing out of the 6th Framework Programme and the phasing in of the 7th Framework Programme.

5. CHARACTERISTICS AND OBJECTIVES

5.1. Need to be met in the short or long term

The 7th Framework Programme will be an integral part of EU efforts towards the European knowledge economy and society, together with other measures on education, training and innovation. FP7 will cover the main components of European research: cooperative research, basic research, human resources and research capacities. In addition, major efforts to simplify all Framework Programme procedures are being undertaken to make them more user-friendly.

5.2. Value-added of Community involvement and coherence of the proposal with other financial instruments and possible synergy

Intervention at EU level is justified in the field of R&D policy. Some research activities are of such a scale that no single Member State can provide the necessary resources and expertise. EU projects allow research, technological development and demonstration to achieve the required 'critical mass', while lowering financial risks involved and levering private investment. EU-scale actions also play a key role in transferring skills and knowledge across frontiers, helping to foster excellence in R&D through enhancing capability, quality and EU-wide competition, and improving human capacity through training, mobility and career development. EU support can also contribute to a better integration of European R&D; encouraging the coordination of national policies, the EU-wide dissemination of results, and funding research for pan-European policy challenges.

An in-depth analysis is provided in the 'Impact Assessment and Ex Ante Evaluation Report for the Commission proposals for the Council and European Parliament decisions on the 7th Framework Programme (EC and Euratom)' - SEC(2005) 430.

5.3. Objectives, expected results and related indicators of the proposal in the context of the ABM framework

'Reinvigorating' the Lisbon agenda is a key goal of the EU and the European Commission. This implies, as a first priority, the full realisation of the knowledge society. The strategic objectives of the College, COM(2005) 12, have highlighted the importance of R&D as one

of the key drivers of prosperity and growth. In particular this will mean the Union committing to invest 3% of GDP in research, with one third coming from the public sector.

The objectives set out in Annex I aim to support the Lisbon agenda through Community funded research activities.

5.4. Method of Implementation (indicative)

Show below the method(s)[44] chosen for the implementation of the action.

☒ **Centralised Management**

☒ Directly by the Commission

☒ Indirectly by delegation to:

☒ Executive Agencies

☒ Bodies set up by the Communities as referred to in art. 185 of the Financial Regulation

☒ National public-sector bodies/bodies with public-service mission (in part for some Marie Curie individual fellowships)

☐ **Shared or decentralised management**

☐ With Member states

☐ With Third countries

☐ **Joint management with international organisations (please specify)**

Relevant comments:

Externalisation is an important part of the management of this framework programme. It is, in addition, a progressive exercise. Within this context, the Ideas programme will be delegated to a dedicated executive agency (for which this work will be overseen by a scientific council). Other parts of the framework programme will progressively be given to an existing or new agency. These parts are expected to concern the People programme, as well as SME specific measures, in addition to the certain administrative parts of the Co-operation and Capacities programme. The scope of work undertaken by the agencies involved will be determined on the basis of on-going analyses. The management structure for actions deriving from Article 169 or Article 171 of the Treaty will be decided on a case-by-case basis and will be created by the decisions establishing the actions.

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[44] If more than one method is indicated please provide additional details in the "Relevant comments" section of this point.

The detailed implementation of the individual grant schemes resulting from the co-funding of national mobility programmes will be passed to the relevant national or regional public-sector bodies or private bodies with a public service mission established in the Member States.

6. MONITORING AND EVALUATION

6.1. Monitoring system

Monitoring of implementation management would be ensured by operational senior management within the Commission on a continual basis with annual checks using a common set of management performance indicators. The annual results of this exercise will be used to inform senior management and an input to the multi-annual assessment exercise.

The requirements and systems for data collection regarding proposal evaluation and contract preparation are currently under review given the needs of providing a robust and simplified data set while imposing minimum burden on research programme participants.

6.2. Evaluation

6.2.1. Ex-ante evaluation

In line with the Commission requirements, an ex ante evaluation of the FP7 legislative proposals has been undertaken. This evaluation is incorporated in the overall Impact Assessment report of the European Commission's proposals for the European Parliament and Council decisions on the 7th Framework Programme (EC and Euratom).

6.2.2. Measures taken following an intermediate/ex-post evaluation (lessons learned from similar experiences in the past)

A Five Year Assessment of the implementation and achievements of Community research over the five preceding years was carried out between June-December 2004 by a panel of independent high level experts.

The results of the Five Year Assessment were made available on 10 February 2005 and communicated to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

A synthesis of the key findings of the Five Year Assessment report and how these have been integrated into the proposal was given in the original legislative proposal for the 7th Framework Programme.

6.2.3. Terms and frequency of future evaluation

Not later than 2010 the Commission shall carry out, with the assistance of external experts, an interim evaluation of FP7 and its specific programmes on the quality of the research activities underway and progress towards the objectives set.

Two years following the completion of this framework programme, the Commission shall have carried out an external evaluation by independent experts of its rationale,

implementation and achievements. This would be supported by a coherent set of independent studies, the interim evaluation and other evaluation activities carried out over the life-time of the Framework Programme, as listed above. The report of this exercise would be presented to all interested stakeholders, including the Parliament and Council. Furthermore, this report could feed into future ex ante evaluation and impact assessments by the Commission.

An independent ex post programme evaluation would be undertaken 2 years after the end of FP6.

7. ANTI-FRAUD MEASURES

Measures will be taken to ensure that the same anti-fraud measures taken in FP6 will be brought forward and reinforced in FP7. These include measures such as financial collective responsibility, sanctions against overcharging, measures to ensure the effective recovery of amounts due to the Commission, and administrative and legal measures taken to ensure full compliance with the Financial Regulation.

8. DETAILS OF RESOURCES

8.1. Objectives of the proposal in terms of their financial cost

Commitment appropriations in EUR million (to 3 decimal places) Current prices[45]

(Headings of Objectives, actions and outputs should be provided)	Year 2007		Year 2008		Year 2009		Year 2010		Year 2011		Year 2012		Year 2013		TOTAL	
	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost
OPERATIONAL OBJECTIVE No.1[46] **COOPERATION**[47]		3.670,645		3.761,531		3.902,656		4.291,435		4.836,537		5.513,493		6.315,703		**32.292,000**
OPERATIONAL OBJECTIVE No.2[46] **IDEAS**		300,322		549,876		810,395		1.136,863		1.335,048		1.623,971		1.703,525		**7.460,000**
OPERATIONAL OBJECTIVE No.3[46] **PEOPLE**		454,397		494,449		526,169		561,420		778,211		933,537		978,817		**4.727,000**
OPERATIONAL OBJECTIVE No.4[46] **CAPACITIES**[48]		431,614		540,312		638,849		693,510		760,126		587,688		638,901		**4.291,000**
OPERATIONAL OBJECTIVE No5[46] **JRC**		225,030		232,906		241,057		249,495		258,227		267,265		277,020		**1.751,000**
TOTAL COST		**5.082,008**		**5.579,074**		**6.119,126**		**6.932,723**		**7.968,149**		**8.925,954**		**9.913,966**		**50.521,000**

The amount of up to 1 billion euro for the RSFF is to be matched by an equivalent amount from the EIB. The amount is indicative and will be made available progressively to the EIB taking account of the level of demand.

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45 The following amounts represent (cash prices) the heading 1 a) of the financial framework related to "Establishing a European research area, …" not including the part related to Innovation.

46 As described under Section 5.3.

47 Including 800 Mio € for RSFF (proportional contribution by all thematic priorities except socio-economic research).

48 Including 200 Mio € for RSFF from Research infrastructure.

8.2. Administrative Expenditure

8.2.1. Number and type of human resources

Types of post		Staff to be assigned to management of the action using existing and/or additional resources (**number of posts/FTEs**)						
		Year 2007	Year 2008	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013
Officials or temporary staff[49] (XX 01 01)	A*/AD							
	B*, C*/AST							
Staff financed[50] by art. XX 01 02								
Other staff[51] financed by art. XX 01 05	A*/AD	1.587	1.614	1.616	1.644	1.654	1.661	1.680
	B*, C*/AST	1.420	1.440	1.440	1.459	1.466	1.470	1.484
External staff		1.429	1.575	1.603	1.834	1.919	2.157	2.374
TOTAL		**4.436**	**4.629**	**4.659**	**4.937**	**5.039**	**5.288**	**5.538**
The total includes the following statutory posts allocated to executive agencies[52]		**0**	**64**	**66**	**128**	**150**	**166**	**209**

8.2.2. Description of tasks deriving from the action

Implementation of the Framework Programme

8.2.3. Sources of human resources (statutory)

(When more than one source is stated, please indicate the number of posts originating from each of the sources)

☒ Posts currently allocated to the management of the programme to be replaced or extended

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49 Cost of which is NOT covered by the reference amount.

50 Cost of which is NOT covered by the reference amount.

51 Cost of which is included within the reference amount.

52 A total number of 209 statutory posts (157 supplementary and 52 frozen) over the period 2007-2013 corresponds to staff that will be allocated to executive agencies. The indicative breakdown per specific programme, based strictly on a pro-rata budgetary estimate, is as follows: Co-operation (127), Ideas (46), People (19), Capacities (17).

☒ Posts pre-allocated within the APS/PDB exercise for year 2007

☒ Posts to be requested in the next APS/PDB procedure

☒ Posts to be redeployed using existing resources within the managing service (internal redeployment)

☐ Posts required for year n although not foreseen in the APS/PDB exercise of the year in question

8.2.4. Other Administrative expenditure included in reference amount (XX 01 05 – Expenditure on administrative management)

EUR million (to 3 decimal places) Current Prices

Budget line (number and heading)	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013	TOTAL
Statutory staff xx.01 05 01	275,677	317,890	326,339	340,499	351,402	361,876	375,498	**2.349,181**
External staff xx.01 05 02	86,037	85,400	89,209	104,255	111,699	128,170	143,774	**748,544**
Other administrative expenses xx.01 05 03	124,189	140,261	145,172	156,114	163,277	173,562	184,555	**1.087,130**
Total Technical and administrative assistance	**485,903**	**543,551**	**560,720**	**600,868**	**626,378**	**663,608**	**703,827**	**4.184,855**

8.2.5. Financial cost of human resources and associated costs not included in the reference amount

EUR million (to 3 decimal places) current prices

Type of human resources	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013	TOTAL
Officials and temporary staff (08 0101 and)								
Staff financed by Art XX 01 02 (auxiliary, END, contract staff, etc.)								
Total cost of Human Resources and associated costs (NOT in reference amount)								

Calculation – ***Administrative expenditures***
Have been calculated taking into account the following hypothesis for indirect actions: *- includes all administrative expenditures (including executive agencies)* *- the following assumptions in 2004 prices (with 2% inflation) :* *. cost of official permanent staff and temporary agent : 108 000 €/year* *. cost of external staff : 48 000 €/year (except for ERC : 57 000 €/year)* *. cost of other administrative expenses : 35 % of staff cost (40 % for ERC)*
-figures for 2007 correspond to PDB 2007

Calculation – ***Staff financed under art. XX 01 02*** *Reference should be made to Point 8.2.1, if applicable*

8.2.6 Other administrative expenditure not included in reference amount

EUR million (to 3 decimal places) current prices

	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011	Year 2012 and 2013	TOTAL
XX 01 02 11 01 – Missions							
XX 01 02 11 02 – Meetings & Conferences							
XX 01 02 11 03 – Committees							
XX 01 02 11 04 – Studies & consultations							
XX 01 02 11 05 - Information systems							
2 Total Other Management Expenditure (XX 01 02 11)							
3 Other expenditure of an administrative nature (specify including reference to budget line)							
Total Administrative expenditure, other than human resources and associated costs (NOT included in reference amount)							

Calculation - ***Other administrative expenditure not included in reference amount***

The needs for human and administrative resources shall be covered within the allocation granted to the managing DG in the framework of the annual allocation procedure.

2005/0044(CNS)

Amended proposal for a

COUNCIL DECISION

concerning the seventh framework programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities (2007 to 2011)

(Text with EEA relevance)

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular Article 7 thereof,

Having regard to the proposal from the Commission[53],

Having regard to the opinion of the European Parliament[54],

Having regard to the opinion of the European Economic and Social Committee[55],

Whereas:

(1) Joint national and European efforts in the area of research and training are essential to promote and ensure economic growth and citizen's wellbeing in Europe.

(2) The seventh framework programme complements other EU actions in the area of the research policy that are necessary for the implementation of the Lisbon strategy, alongside in particular those on education, training, competitiveness and innovation, industry, employment, and environment.

(3) This framework programme builds on the achievements of its predecessor towards the creation of the European Research Area, and carries them further towards the development of the knowledge economy and society in Europe.

(5) The Commission Green Paper 'Towards a European strategy for energy supply' highlights the contribution of nuclear power in reducing emissions of greenhouse gases and in reducing Europe's dependence on imported energy.

(6) With reference to the Council Decision of 26 November 2004 amending the directives of negotiations on ITER[56], the realisation of ITER in Europe, in a broader approach to

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53 OJ C , , p. .
54 OJ C , , p. .
55 OJ C , , p. .
56 Not published in the OJ.

fusion energy, will be the central feature of the activities on fusion research carried out under the seventh framework programme

(7) Implementation of the seventh framework programme may give rise to the setting up of joint undertakings within the meaning of Title II, Chapter 5 of the Treaty.

(8) Research activities supported by this Framework Programme should respect fundamental ethical principles, including those reflected in the Charter of Fundamental Rights of the European Union. The opinions of the European Group on Ethics in Science and New Technologies are and will be taken into account.

(9) This act establishes a financial framework for the entire duration of the programme which is to be the principal point of reference for the budgetary authority, within the meaning of point **37** of the Interinstitutional Agreement of **17/5/2006** between the European Parliament, the Council and the Commission on budgetary discipline and improvement of the budgetary procedure.

(10) On **24/08/**2005[57]**,** the Commission submitted the conclusions of the external assessment of the implementation and results of the Community activities carried out in the five years preceding that assessment, accompanied by its observations.

(11) It is important to ensure sound financial management of the seventh framework programme and its implementation in the most effective and user-friendly manner possible, as well as ease of access for all participants.

(12) Under the seventh Framework Programme due regard will be paid to the role of women and science and research with a view to further enhancing their active role in research.

(13) The Joint Research Center **has the crucial role of providing customer-driven scientific and technological support for the conception, development, implementation and monitoring of EU policies. Continuous support should be given to the Joint Research Centre to allow it to function as a reference centre of science and technology for the EU, independent of private and national interests**~~should contribute to the attainment of the objectives set out above by carrying out direct activities and by providing customer-driven support for the implementation of EU policies~~.

(14) The international and global dimension in European research activities is important in the interest of obtaining mutual benefits. The seventh Framework Programme is open to the participation of countries having concluded the necessary agreements to this effect, and is also open, on the project level and on the basis of mutual benefit, to the participation of entities from thirds countries and of international organisations for scientific cooperation.

(15) The seventh Framework Programme should contribute to enlargement by bringing scientific and technological support to the candidate countries for the implementation of Community *acquis* and for their integration into the European Research Area.

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(16) Appropriate measures should also be taken to prevent irregularities and fraud and the necessary steps should be taken to recover funds lost, wrongly paid or incorrectly used in accordance with Council Regulations (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests[58], (EC, Euratom) No 2185/96 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the Commission in order to protect the European Communities' financial interests against fraud and other irregularities[59] and Regulation (EC) No 1073/1999 of the European Parliament and of the Council concerning investigations conducted by the European Anti-Fraud Office (OLAF)[60].

(17) The Scientific and Technical Committee has been consulted by the Commission and has delivered its opinion.

HAS DECIDED AS FOLLOWS:

Article 1

Adoption~~Establishment~~ **of the research and training framework programme**

A multiannual framework programme for nuclear research and training activities, hereinafter referred to as the "seventh framework programme" is hereby **adopted**~~established~~ for the period from 1 January, 2007 to 31 December , 2011.

Article 2

Objectives

1. The seventh Framework programme shall pursue the general objectives set out in Article 1 and Article 2(a) of the Treaty, while contributing towards the creation of a knowledge-based society, building on a European Research Area.

2. The seventh framework programme shall comprise Community research, technological development, international cooperation, dissemination of technical information and exploitation activities as well as training, to be set out in two specific programmes:

   The first programme shall cover the following:

   (a) **Fusion energy research**, with the objective of developing the technology for a safe, sustainable, environmentally responsible and economically viable energy source;

   (b) **Nuclear fission and radiation protection** with the objective of **enhancing in particular the safety performance, resource efficiency and cost-effectiveness of** promoting the safe use and

[58] OJ L 312, 23.12.1995, p. 1.
[59] OJ L 292, 15.11.1996, p. 2.
[60] OJ L 136, 31.5.1999, p. 1.

exploitation of nuclear fission and other uses of radiation in industry and medicine.

The second programme shall cover the activities of the Joint Research Centre in the field of nuclear energy.

3. The broad lines of the programmes are described in Annex I.

Article 3

Maximum overall amount and shares assigned to each programme

The overall amount for the implementation of the seventh framework programme for the period 2007 to 2011 shall be EUR **2 751**~~3092~~ million. That amount shall be distributed as follows (in EUR million):

(a)	Fusion energy research	**1 947**~~2159~~
(b)	Nuclear Fission and radiation protection	**287**~~394~~
(c)	Nuclear Activities of the Joint Research Centre	**517**~~539~~

Within the amount foreseen for Fusion energy research, not less than EUR 900 million will be reserved to activities other than the construction of ITER, listed in Annex I

2. The detailed rules for Community financial participation in this Framework programme are set out in Annex II.

Article 4

Protection of the Communities' financial interests

For the Community actions financed under this Decision, Regulation (EC, Euratom) No 2988/95 and Regulation (EC, Euratom) No 2185/96 shall apply to any infringement of a provision of Community law, including infringement of a contractual obligation stipulated on the basis of the programme, resulting from an act or omission by an economic operator, which has, or would have, the effect of prejudicing the general budget of the European Communities or budgets managed by them, by an unjustified item of expenditure.

Article 5

All the research activities carried out under the seventh Framework Programme shall be carried out in compliance with fundamental ethical principles.

Article 6

Monitoring, assessment and review

1. **The Commission shall continually and systematically monitor the implementation of the Framework Programme and its Specific Programmes and regularly report and disseminate the results of this monitoring**

   Not later than 2010, the Commission shall carry out, with the assistance of external experts, an **evidence-based** interim evaluation of this Framework Programme and its specific programmes **building upon the ex-post evaluation of the Sixth Framework Programme. This evaluation shall cover** the quality of the research activities under way, **as well as the quality of implementation and management**, and progress towards the objectives set.

2. Following the completion of this framework programme, the Commission shall carry out an external evaluation by independent experts of its rationale, implementation and achievements.

   The Commission shall communicate the conclusions thereof, accompanied by its observations, to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

Done at Brussels,

For the Council
The President

ANNEX I

SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES, THEMES AND ACTIVITIES

INTRODUCTION

The 7th EURATOM Research Framework Programme is organised in two parts corresponding to the "indirect" actions on fusion energy research and nuclear fission and radiation protection, and the "direct" research activities of the Joint Research Centre.

FUSION ENERGY RESEARCH

Objective

Developing the knowledge base for, and realising ITER as ~~the~~a major step towards, the creation of prototype reactors for power stations which are safe, sustainable, environmentally responsible, and economically viable.

Rationale

There are serious shortcomings in Europe's energy supply with respect to near, medium, and long-term considerations. In particular, measures are needed to address the issues of security of supply, climate change, and sustainable development, while ensuring that future economic growth is not threatened.

Notwithstanding the efforts which the EU is making and should continue to make in the field of research into renewable energies, f~~F~~usion has the potential to make a major contribution to the realisation of a sustainable and secure **energy** supply for the EU ~~in a few decades~~ **approximately fifty or sixty years** from now **after the market penetration of commercial fusion reactors. "fast track" to fusion energy will therefore be pursued in order to shorten as much as possible the time taken to develop an actual fusion power plant**. Its successful development would provide energy which is safe, sustainable and environmentally friendly. The long-term goal of European fusion research, embracing all the fusion activities in the Member States and associated third countries, is the joint creation**, in approximately thirty or thirty-five years,** of prototype reactors for power stations which meet these requirements, and are economically viable.

The strategy to achieve the long-term goal entails, as its first priority, the construction of ITER (a major experimental facility which will demonstrate the scientific and technical feasibility of fusion power), followed by the construction of DEMO, a "demonstration" fusion power station. This will be accompanied by a dynamic programme of supporting R&D for ITER and for the developments in fusion materials, technologies and physics required for DEMO. This would involve European industry, the fusion Associations and third countries, in particular Parties to the ITER Agreement.

Activities

- **The realisation of ITER**

This includes activities for the joint realisation of ITER (as an international research infrastructure), in particular for site preparation, establishing the ITER Organisation and the European Joint Undertaking for ITER, management and staffing, general technical and administrative support, construction of equipment and installations and support to the project during construction.

- **R&D in preparation of ITER operation**

A focused physics and technology programme will exploit the facilities and resources in the fusion programme, ~~including~~**i.e.** JET **and other magnetic confinement devices, existing or under construction (Tokamaks, Stellarators, RFPs)**. It will assess specific key ITER technologies, consolidate ITER project choices, and prepare for ITER operation through experimental and theoretical activities.

- **Technology activities in preparation of DEMO**

This entails the vigorous development of fusion materials and key technologies for fusion, **including blankets,** and the establishment of a dedicated project team to prepare for the construction of the International Fusion Materials Irradiation Facility (IFMIF) to qualify materials for DEMO. It will include irradiation testing and modelling of materials, studies of the DEMO conceptual design, and studies of the safety, environmental and socio-economic aspects of fusion energy.

- **R&D activities for the longer term**

The activities will include further development of improved concepts for magnetic confinement schemes with potential advantages for Fusion power stations (focussed on the completion of the construction of the W7-X stellarator device), theory and modelling aimed at a comprehensive understanding of the behaviour of fusion plasmas and co-ordination**.**~~, in the context of a keep-in-touch activity, of Member States' civil research activities on inertial confinement.~~

- **Human resources, education and training**

In view of the immediate and medium term needs of ITER, and for the further development of fusion, initiatives aimed at ensuring that adequate human resources will be available, in terms of numbers, range of skills and high level training and experience will be pursued. **This would include looking at ways of establishing a European PhD in the physics and engineering of fusion.**

- **Infrastructures**

The construction of the international fusion energy research project ITER will be an element of the new research infrastructures with a strong European dimension.

- **Technology transfer processes**

The ITER will require new and more flexible organisational structures to enable the process of innovation and technological progress which it creates to be swiftly transferred to industry, so that the challenges can be met to enable European industry to become more competitive.

NUCLEAR FISSION AND RADIATION PROTECTION

Objective

Establishing a sound scientific and technical basis in order to accelerate practical developments for the safer management of long-lived radioactive waste, enhancing in particular the safety performance, resource efficiency and cost-effectiveness ~~promoting safer, more resource-efficient and competitive exploitation~~ **of nuclear energy and ensuring a robust and socially acceptable system of protection of man and the environment against the effects of ionising radiation.**

Rationale

Nuclear power currently generates one third of all electricity consumed in the EU and ~~is~~**as** the most significant source of ~~carbon-free~~ base-load electricity **that, during the operation of a nuclear power plant, does not emit CO2, constitutes an important element in the debate on the means of combating climate change and reducing Europe's dependence on imported energy.** ~~presently available.~~ The European nuclear sector as a whole is typified by cutting-edge technology and provides highly skilled employment for several hundred thousand people. ~~As an indigenous and dependable source of energy, nuclear power contributes to the EU's independence and security of supply, with m~~**More** advanced nuclear technology **could** offer~~ing~~ the prospect of significant improvements in efficiency and use of resources, at the same time ensuring even higher safety standards and producing less waste than current designs.

There are, however, important concerns that affect the continued use of this energy source in the EU. **Efforts are still required to ensure a continuation of the Community's outstanding safety record and the improvement of radiation protection continues to be a priority area.** The key issues are operational reactor safety and management of long-lived waste, both of which are being addressed through continued work at the technical level, though allied political and societal inputs are also required. In all uses of radiation, throughout industry and medicine alike, the overriding principle is the protection of man and the environment. All thematic domains to be addressed here are characterised by an overriding concern to ensure high levels of safety. Similarly there are clearly identifiable needs throughout nuclear science and engineering relating to availability of research infrastructures and expertise. In addition, the individual technical areas are linked by key cross-cutting topics such as the nuclear fuel cycle, actinide chemistry, risk analysis and safety assessment and even societal and governance issues.

Research will also be needed to explore new scientific and technological opportunities and to respond in a flexible way to new policy needs that arise during the course of the Framework Programme.

Activities

- **Management of radioactive waste**

Implementation oriented research and development activities on **all remaining key aspects of** deep geological disposal of spent fuel and long-lived radioactive waste and, as appropriate, demonstration on the technologies and safety, and to underpin the development of a common European view on the main issues related to the management and disposal of waste. Research on partitioning and transmutation and/or other concepts aimed at reducing the amount and/or hazard of the waste for disposal.

- **Reactor systems**

Research to underpin the continued safe operation of **all relevant types of** existing reactor systems (including fuel cycle facilities), taking into account new challenges such as life-time extension and development of new advanced safety assessment methodologies (both the technical and human element), **including as regards severe accidents,** and to assess the potential and safety **and waste management** aspects of future reactor systems in the short and medium term, thereby maintaining the high safety standards already achieved within the EU **and considerably improving the long-term management of radioactive waste**.

- **Radiation protection**

Research, in particular on the risks from low doses, on medical uses and on the management of accidents, to provide the scientific basis for a robust, equitable and socially acceptable system of protection that will not unduly limit the beneficial and widespread uses of radiation in medicine and industry ~~(including the generation of nuclear energy)~~. Research to minimise the **impact of** ~~threat posed by~~ nuclear and radiological terrorism and **diversion of nuclear material.** ~~mitigate its impact~~.

- **Infrastructures**

To support the availability of**, and cooperation between,** research infrastructures such as material test ~~reactors~~**facilities and training reactors**, underground research laboratories and radiobiology facilities and tissue banks, necessary to maintain high standards of technical achievement, innovation and safety in the European nuclear sector.

- **Human resources, mobility and training**

To support the retention and further development of scientific competence and human capacity **(for instance through joint training activities)** in order to guarantee the availability of suitably qualified researchers**, engineers** and employees in the nuclear sector over the longer term.

NUCLEAR ACTIVITIES OF THE JOINT RESEARCH CENTRE

Objective

To provide customer driven scientific and technical support to the ~~EU~~ Community policy making process in the nuclear field, ensuring support to the implementation and monitoring of existing policies while flexibly responding to new policy demands.

Rationale

The Joint Research Centre supports the objectives of the European strategy for energy supply, particularly to help matching the Kyoto objectives. **In supporting the objectives of the European Union, the Joint Research Centre shall have specific tasks related to:**

- **Global Security, particularly through its participation in developing techniques and methods for efficient safeguards, to combat illegal trafficking and for nuclear forensics;**

- **Enlargement of the EU, because this has (and will) involve new types of reactors and other nuclear installations;**

- **Energy supply, by contributing to new techniques for a nuclear fuel cycle in line with the principles of Sustainable Development.**

The ~~EU~~ **Community** has a recognised competence in many aspects of nuclear technology, and this is built on a solid basis of past successes in the domain. The usefulness of the JRC in its support to ~~EU~~ **Community** policies and in its contribution to the new trends in nuclear research are based on its scientific expertise and its integration in the international scientific community **and cooperation with other research centres as well as dissemination of knowledge**. ~~On the one hand the~~ **The** JRC has competent staff and state-of-the-art facilities to carry out recognised scientific/technical work**. It shall ensure the quality and the appropriate renewal of its infrastructures to keep European research at the forefront. The Joint Research Centre** ~~; and on the other hand it~~ supports the policy of the ~~EU~~ **Community** to maintain basic competencies and expertise for the future by **giving access to its infrastructures to other researchers, by** training young scientists and fostering their mobility **and thus sustaining the nuclear know how in Europe**. New demand has emerged in particular in the external relations and security related policies. In these cases, in-house and secure information/analyses/systems are needed which cannot always be obtained on the market.

The nuclear activities of the JRC aim to satisfy the R&D requirements to support both Commission and Member States. The objective of this programme is to develop and assemble knowledge, to provide input to the debate on nuclear energy production, its safety and reliability, its sustainability and control, its threats and challenges, including **the assessment of** innovative/future reactor systems.

Activities

The JRC activities will focus on:

Nuclear Waste Management and Environmental Impact aiming to understand the nuclear fuel processes from production of energy to waste ~~storage~~**disposal** and to develop effective solutions for the management of high level nuclear waste following the two major options (direct ~~storage~~**disposal** or partitioning and transmutation)**. In particular, activities will be developed to enhance knowledge and improve the processing or conditioning of long-lived waste and basic research into actinides**;

Nuclear Safety, in implementing research on existing as well as on new fuel cycles**,** ~~and~~ on reactor safety of both Western and Russian reactor types**, and to a greater extent, research on new fuel cycles** as well as on new reactor design. In addition the JRC will contribute and co-ordinate the European contribution to the Generation IV International Forum R&D initiative, in which the best research organisations in the world are involved**. The JRC shall be the integrator of research in this area and ensure both in quality and size the significance of the European contribution to GIF. The JRC's contribution includes primarily safety and safeguard aspects of innovative fuel cycles, in particular characterisation, test and analysis of new fuels, the development of safety and quality goals, safety requirements and advanced evaluation methods for systems**;

Nuclear Security, in supporting the accomplishment of Community commitments, in particular the control of the fuel cycle facilities emphasising the back-end of the fuel cycle, the monitoring of the radioactivity in the environment, or the implementation of the additional protocol and the integrated safeguards, and the prevention of the diversion of nuclear and radioactive material associated with illicit trafficking of such material.

Providing information about nuclear energy to politicians and the public: scientists, politicians and citizens are becoming increasingly persuaded of the existence of global warming, that it is caused by fossil fuel carbon emissions, and that nuclear power which has zero carbon dioxide emissions, is an essential component of the energy mix needed to meet the world's energy needs. A multiannual campaign should therefore be launched to inform politicians and the general public about nuclear energy in order both to promote a fact-based debate and to facilitate informed decision making.

Furthermore, and bearing in mind that comparisons with other energy sources are essential in order to grasp the implications of the use of nuclear power, any information campaigns which are promoted or encouraged will also mention and explain the efforts being made by the EU at other levels to promote other energy sources, with particular regard to renewable sources of energy.

ANNEX II

FUNDING SCHEMES

Subject to the rules for participation established for the implementation of the seventh Framework Programme, the ~~EU~~ **Community** will support research and technological development activities, including demonstration activities in the specific programmes through a range of funding schemes. These schemes will be used, either alone or in combination, to fund different categories of actions implemented throughout the Framework Programme.

1. FUNDING SCHEMES IN FUSION ENERGY

In the field of fusion energy research, the particular nature of the activities in the area necessitates the implementation of specific arrangements. Financial support will be given to activities carried out on the basis of procedures set out in:

1.1. The Contracts of Association, between the Commission and Member States or fully Associated Third States or entities within Member States or fully Associated Third States which provide for the execution of part of the ~~EU~~ **Community** fusion energy research programme according to Article 10 of the Treaty;

1.2. The European Fusion Development Agreement (EFDA), a multilateral agreement concluded between the Commission and organisations in, or acting for, Member States and Associated States providing *inter alia* the framework for further research on fusion technology in associated organisations and in industry, use of the JET facilities and the European contribution to international cooperation;

1.3. The European Joint Undertaking for ITER, based on the provisions of Article 45-51, Chapter 5, Title II of the Treaty;

1.4. International agreements between Euratom and third countries covering activities in the field of fusion energy research and development, in particular the ITER Agreement;

1.5. Any other multilateral agreement concluded between the Community and associated organisations, in particular the Agreement on Staff Mobility;

1.6. Cost-sharing actions to promote and contribute to fusion energy research with bodies in the Member States or the States associated with the Euratom framework programme in which there is no Contract of Association.

In addition to the above activities, actions to promote and develop human resources, fellowships, integrated infrastructures initiatives as well as specific support actions may be undertaken in particular to coordinate fusion energy research, to undertake studies in support of these activities, to support publications, information exchange; and training in order to promote technology transfer.

2. FUNDING SCHEMES IN OTHER FIELDS

The activities in other fields than fusion energy by the Euratom Framework Programme will be funded through a range of funding schemes. These schemes will be used, either alone or in combination, to fund different categories of actions implemented throughout this Framework Programme.

The decisions for specific programmes, work programmes and calls for proposals will mention, as and when appropriate:

- The type(s) of scheme(s) used to fund different categories of actions;
- The categories of participants (such as research organisations, universities, industry, public authorities) which can benefit from it;
- The types of activities (research, development, demonstration, training, dissemination, transfer of knowledge and other related activities) which can be funded through each of them.

Where different funding schemes can be used, the work programmes may specify the funding scheme to be used for the topic on which proposals are invited.

The funding schemes are the following:

a) To support actions which are primarily implemented on the basis of calls for proposals:

1. Collaborative projects

Support to research projects carried out by consortia with participants from different countries, aiming at developing new knowledge, new technology, products or common resources for research. The size, scope and internal organisation of projects can vary from field to field and from topic to topic. Projects can range from small or medium-scale focused research actions to larger integrating projects which mobilise a significant volume of resources for achieving a defined objective.

2. Networks of Excellence

Support to joint research programmes implemented by a number of research organisations integrating their activities in a given field, carried out by research teams in the framework of longer term co-operation. The implementation of these joint programmes will require a formal commitment from the organisations integrating part of their resources and their activities.

3. Coordination and support actions

Support to activities aimed at coordinating or supporting research (networking, exchanges, studies, conferences, etc). These actions may also be implemented by means other than calls for proposals.

4. Actions to promote and develop human resources and mobility

Support for training and career development of researchers.

b) to support actions implemented on the basis of decisions by the Council, based on a proposal from the Commission, the Community will provide financial support to multi-financed large-scale initiatives:

– A financial contribution from the Community to the implementation of Joint Undertakings carried out on the basis of the procedures and provisions set out in articles 45 -51, Chapter 5 of Title II of the Euratom Treaty.

– A financial contribution from the Community to the development of new infrastructures of European interest.

The Community will implement the funding schemes in compliance with the provisions of the regulation **to be** adopted **for** ~~in~~ the rules for participation of undertakings, research centres and universities, the relevant State aid instruments, in particular the Community framework for state aid to research and development, as well as international rules in this area. In compliance with this international framework, it will be necessary to be able to adjust the scale and form of financial participation on a case-by-case basis, in particular if funding from other public sector sources is available, including other sources of Community financing such as the European Investment Bank (EIB).

In the case of participants to an indirect action established in a region lagging in development (convergence regions and outermost regions[61]) complementary funding from the Structural Funds will be mobilised wherever possible and appropriate.

3. DIRECT ACTIONS - JOINT RESEARCH CENTRE

The Community will undertake activities implemented by the Joint Research Centre, which are referred to as direct actions.

[61] Convergence regions are those set out in Article 5 of the proposal for a Council Regulation laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund - COM(2004) 492. This includes "convergence" objective regions, regions eligible for funding from the Cohesion fund, and outermost regions.

LEGISLATIVE FINANCIAL STATEMENT

NAME OF THE PROPOSAL :

Proposal for a Council Decision concerning the 7th Framework Programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities (2007 to 2011) – Building the Europe of Knowledge

1. ABM / ABB FRAMEWORK

Policy Area(s) concerned and associated Activity/Activities: RESEARCH and DIRECT RESEARCH

2. BUDGET LINES

2.1. Budget lines (operational lines and related technical and administrative assistance lines) including headings :

08 19 01 Euratom - Fusion energy (RTD); 08 19 02 Euratom - Joint Undertaking ITER; 08 20 01 Euratom - Nuclear Fission and radiation protection; 10 03 01 Nuclear action of the Joint Research Centre (JRC)

2.2. Duration of the action and of the financial impact:

2007-2011

2.3. Budgetary characteristics :

Budget line	Type of expenditure		New	EFTA contribution	Contributions from applicant countries	Heading in financial perspective
08 and 10	Non-comp	Diff[62]/	YES	NO	YES	**No** [1a]
XX.01	Non-comp	Non-diff[63]	NO	NO	NO	**No** [1a…]
XX.01.04	Non-comp	Non-diff	YES	NO	YES	**No** [1a…]
XX.01.05	Non-comp	Non-diff	YES	NO	YES	**No** [1a…]

[62] Differentiated appropriations.

[63] Non-differentiated appropriations hereafter referred to as NDA.

3. SUMMARY OF RESOURCES

3.1. Financial Resources

3.1.1. Summary of commitment appropriations (CA) and payment appropriations (PA)

EUR million (to 3 decimal places) current prices

Expenditure type	Section no.		2007	2008	2009	2010	2011	Total
Operational expenditure[64]								
Commitment Appropriations (CA)	8.1	a	271,699	335,654	437,318	447,191	456,503	**1.948,365**
Payment Appropriations (PA)		b	82,408	204,629	344,047	417,593	899,688	**1.948,365**
Administrative expenditure within reference amount[65]								
Technical & administrative assistance (NDA)	8.2.4	c	**132,493**	**160,332**	**165,036**	**169,886**	**174,888**	**802,635**
TOTAL REFERENCE AMOUNT								
Commitment Appropriations		**a+c**	**404,192**	**495,986**	**602,354**	**617,077**	**631,391**	**2.751,000**
Payment Appropriations		**b+c**	**214,901**	**364,961**	**509,083**	**587,479**	**1.074,576**	**2.751,000**
Human resources and associated expenditure (NDA)	8.2.5d							
Administrative costs, other than human resources and associated costs, not included in reference amount (NDA)	8.2.6 e							

Total indicative financial cost of intervention

TOTAL CA including cost of Human Resources	a+c +d +e	**404,192**	**495,986**	**602,354**	**617,077**	**631,391**	**2.751,000**
TOTAL PA including cost of Human Resources	b+c +d +e	**214,901**	**364,961**	**509,083**	**587,479**	**1.074,576**	**2.751,000**

64 Expenditure that does not fall under Chapter xx 01 of the Title xx concerned.

65 Expenditure within article xx 01 05 of Title xx.

Co-financing details

EUR million (to 3 decimal places)

Co-financing body		Year n	n + 1	n + 2	n + 3	n + 4	n + 5 and later	Total
	f							
TOTAL CA including co-financing	a+c+d+e+f							

3.1.2. Compatibility with Financial Programming

☒ Proposal is compatible with next financial programming (Interinstitutional agreement on the financial framework 2007-2013).

☐ Proposal will entail reprogramming of the relevant heading in the financial perspective.

☐ Proposal may require application of the provisions of the Interinstitutional Agreement[66] (i.e. flexibility instrument or revision of the financial perspective).

3.1.3. Financial impact on Revenue

☐ Proposal has no financial implications on revenue

☒ Proposal has financial impact – the effect on revenue is as follows:

Certain Associated States may contribute to the funding of the framework programmes.

In accordance with Article 161 of the Financial Regulation, the Joint Research Centre may benefit from revenue from various types of competitive activities and from other services provided for outside bodies.

In accordance with Article 18 of the Financial Regulation, certain revenue may be used to finance specific items.

NB: All details and observations relating to the method of calculating the effect on revenue should be shown in a separate annex.

3.2. Human Resources FTE (including officials, temporary and external staff) – <u>see detail under point 8.2.1.</u>

Annual requirements	2007	2008	2009	2010	2011
Total number of human resources	**1.223**	**1.223**	**1.223**	**1.223**	**1.223**

[66] See points 19 and 24 of the Interinstitutional agreement.

It will be necessary to consider year by year the consequences for human resources of the phasing out of the 6th Framework Programme and the phasing in of the 7th Framework Programme.

4. CHARACTERISTICS AND OBJECTIVES

4.1. Need to be met in the short or long term

The 7th Framework Programme will be an integral part of EU efforts towards the European knowledge economy and society, together with other measures on education, training and innovation. FP7 will cover the main components of European research: cooperative research, basic research, human resources and research capacities. In addition, major efforts have been made to simplify all Framework Programme procedures to make them more user-friendly.

4.2. Value-added of Community involvement and coherence of the proposal with other financial instruments and possible synergy

Intervention at EU level is justified in the field of R&D policy. Some research activities are of such a scale that no single Member State can provide the necessary resources and expertise. EU projects can allow research to achieve the required 'critical mass', while lowering commercial risk and levering private investment. EU-scale actions also play a key role in transferring skills and knowledge across frontiers, helping to foster excellence in R&D through enhancing capability, quality and EU-wide competition, and improving human capacity through training, mobility and career development. EU support can also contribute to a better integration of European R&D; encouraging the coordination of national policies, the EU-wide dissemination of results, and funding research for pan-European policy challenges.

An in-depth analysis is provided in the 'Impact Assessment and Ex Ante Evaluation Report for the Commission proposals for the Council and European Parliament decisions on the 7th Framework Programme (EC and Euratom)' - SEC(2005) 430.

4.3. Objectives, expected results and related indicators of the proposal in the context of the ABM framework

'Reinvigorating' the Lisbon agenda is a key goal of the EU and the European Commission. This implies, as a first priority, the full realisation of the knowledge society. The strategic objectives of the College, COM(2005) 12, have highlighted the importance of R&D as one of the key drivers of prosperity and growth. In particular this will mean the Union committing to invest 3% of GDP in research, with one third coming from the public sector.

The objectives set out in Annex I aim to support the Lisbon agenda through Community funded research activities.

4.4. Method of Implementation (indicative)

Show below the method(s)[67] chosen for the implementation of the action.

☒ Centralised Management

- ☒ Directly by the Commission
- ☒ Indirectly by delegation to:
  - ☐ Executive Agencies
  - ☒ Bodies set up by the Communities as referred to in art. 185 of the Financial Regulation
  - ☐ National public-sector bodies/bodies with public-service mission

☐ Shared or decentralised management

- ☐ With Member states
- ☐ With Third countries

☐ Joint management with international organisations (please specify)

Relevant comments:

The European Joint Undertaking, based on the provisions of Articles 45-51, Title II of Chapter V of the Euratom Treaty, will be used for the creation of **ITER** (International Thermonuclear Experimental Reactor).

The executive agency model may be used for the provision of central implementation support services for the indirect actions Specific Programme, in line with the EC Specific Programmes.

5. MONITORING AND EVALUATION

5.1. Monitoring system

Monitoring of implementation management would be ensured by operational senior management within the Commission on a continual basis with annual checks using a common set of management performance indicators. The annual results of this exercise will be used to inform senior management and an input to the multi-annual assessment exercise.

The requirements and systems for data collection regarding proposal evaluation and contract preparation are currently under review given the needs of providing a robust and simplified data set while imposing minimum burden on research programme participants.

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[67] If more than one method is indicated please provide additional details in the "Relevant comments" section of this point.

5.2. Evaluation

5.2.1. Ex-ante evaluation

In line with the Commission requirements, an ex ante evaluation of the FP7 legislative proposals has been undertaken. This evaluation is incorporated in the overall Impact Assessment report of the European Commission's proposals for the European Parliament and Council decisions on the 7th Framework Programme (EC and Euratom).

5.2.2. Measures taken following an intermediate/ex-post evaluation (lessons learned from similar experiences in the past)

A Five Year Assessment of the implementation and achievements of Community research over the five preceding years was carried out between June-December 2004 by a panel of independent high level experts.

The results of the Five Year Assessment were made available on 10 February 2005 and communicated to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

A synthesis of the key findings of the Five Year Assessment report and how these have been integrated into the proposal was given in the original legislative proposals for the 7th Framework Programme.

5.2.3. Terms and frequency of future evaluation

Not later than 2010 the Commission shall carry out, with the assistance of external experts, an interim evaluation of FP7 and its specific programmes on the quality of the research activities underway and progress towards the objectives set.

Two years following the completion of this framework programme, the Commission shall have carried out an external evaluation by independent experts of its rationale, implementation and achievements. This would be supported by a coherent set of independent studies, the interim evaluation and other evaluation activities carried out over the life-time of the Framework Programme, as listed above. The report of this exercise would be presented to all interested stakeholders, including the Parliament and Council. Furthermore, this report could feed into future ex ante evaluation and impact assessments by the Commission.

An independent ex post programme evaluation would be undertaken 2 years after the end of FP6.

6. ANTI-FRAUD MEASURES

Measures will be taken to ensure that the same anti-fraud measures taken in FP6 will be brought forward and reinforced in FP7. These include measures such as financial collective responsibility, sanctions against overcharging, measures to ensure the effective recovery of amounts due to the Commission, and administrative and legal measures taken to ensure full compliance with the Financial Regulation.

7. DETAILS OF RESOURCES

7.1. Objectives of the proposal in terms of their financial cost

Commitment appropriations in EUR million (to 3 decimal places) Current prices[68]

(Headings of Objectives, actions and outputs should be provided)	Year 2007		Year 2008		Year 2009		Year 2010		Year 2011		Year 2012 (indicative)		Year 2013 (indicative)		TOTAL	
	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost	No. outputs	Total cost
OPERATIONAL OBJECTIVE No.1 [69] (Fission and Fusion) **EURATOM INDIRECT ACTIONS**		307,750		396,170		499,044		510,151		520,885		531,933		545,121		**3.311,054**
OPERATIONAL OBJECTIVE No.2[69] **EURATOM DIRECT ACTIONS-JRC**		96,442		99,816		103,310		106,926		110,506		114,543		118,673		**750,216**
TOTAL COST		**404,192**		**495,986**		**602,354**		**617,077**		**631,391**		**646,476**		**663,794**		**4.061,270**

[68] The Euratom programme covers the period 2007-2011. The figures for 2012 and 2013 are only for information.

[69] As described under Section 5.3.

7.2. Administrative Expenditure

7.2.1. Number and type of human resources

Types of post		Staff to be assigned to management of the action using existing and/or additional resources (**number of posts/FTEs**)						
		Year 2007	Year 2008	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013
Officials or temporary staff[70] (XX 01 01)	A*/AD							
	B*, C*/AST							
Staff financed[69] by art. XX 01 02								
Other staff[71] financed by art. XX 01 05 and 08 01 04 40	A*/AD	491	491	491	491	491		
	B*, C*/AST	475	475	475	475	475		
External staff		257	257	257	257	257		
TOTAL		**1.223**	**1.223**	**1.223**	**1.223**	**1.223**		

The EURATOM programme covers the period 2007-2011. The figures for 2012 are only for information

7.2.2. Description of tasks deriving from the action

Implementation of the Framework Programme

7.2.3. Sources of human resources (statutory)

(When more than one source is stated, please indicate the number of posts originating from each of the sources)

☒ Posts currently allocated to the management of the programme to be replaced or extended

☒ Posts pre-allocated within the APS/PDB exercise for year 2007

☒ Posts to be requested in the next APS/PDB procedure

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70 Cost of which is NOT covered by the reference amount.

71 Cost of which is included within the reference amount. Moreover during the period 2007-2010 the added staff is related to ITER.

☒ Posts to be redeployed using existing resources within the managing service (internal redeployment)

☐ Posts required for year n although not foreseen in the APS/PDB exercise of the year in question

7.2.4. Other Administrative expenditure included in reference amount (XX 01 05 – Expenditure on administrative management)

EUR million (to 3 decimal places) Current Prices

Budget line (number and heading)	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011	TOTAL
Statutory staff **xx.01 05 01 and 08 01 04 40**	77,558	96,903	99,593	102,364	105,217	**481,635**
External staff **xx.01 05 02 and 08 01 04 40**	13,680	14,048	14,428	14,818	15,219	**72,193**
Other administrative expenses **xx.01 05 03 and 08 01 04 40**	41,255	49,381	51,015	52,704	54,452	**248,807**
Total Technical and administrative assistance	**132,493**	**160,332**	**165,036**	**169,886**	**174,888**	**802,635**

The EURATOM programme covers the period 2007-2011.

7.2.5. Financial cost of human resources and associated costs not included in the reference amount

EUR million (to 3 decimal places) current prices

Type of human resources	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011	TOTAL
Officials and temporary staff (08 0101 and)						
Staff financed by Art XX 01 02 (auxiliary, END, contract staff, etc.)						
Total cost of Human Resources and associated costs (NOT in reference amount)						

Calculation– ***Administrative expenditures***

Have been calculated taking into account the following hypothesis for indirect actions:

- for the part related to budget lines XX.01.04.40 : number of staff and related expenditures equivalent to 60 permanent posts, 85 temporary agents and 30 contractual agents in 2007 for ITER.

- the following assumptions in 2004 prices (with 2% inflation) :

. cost of official permanent staff and temporary agent : 108 000 €/year

. cost of external staff : 48 000 €/year

. cost of other administrative expenses : 35 % of staff cost

-figures for 2007 correspond to PDB 2007.

Calculation– ***Staff financed under art. XX 01 02***

Reference should be made to Point 8.2.1, if applicable

	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011	TOTAL
XX 01 02 11 01 – Missions						
XX 01 02 11 02 – Meetings & Conferences						
XX 01 02 11 03 – Committees[72]						
XX 01 02 11 04 – Studies & consultations						
XX 01 02 11 05 - Information systems						
2 Total Other Management Expenditure (XX 01 02 11)						
3 Other expenditure of an administrative nature (specify including reference to budget line)						
Total Administrative expenditure, other than human resources and associated costs (NOT included in reference amount)						

[72] Specify the type of committee and the group to which it belongs.

The EURATOM programme covers the period 2007-2011.

Calculation - ***Other administrative expenditure <u>not</u> included in reference amount***

The needs for human and administrative resources shall be covered within the allocation granted to the managing DG in the framework of the annual allocation procedure.