

RESEARCH IN EUROPE

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Abstract

The present shape of research in Europe reproduces a richness of interactions, and highlights the need to realise a true European Research Area (ERA). Both now and in the future, European research must strive for excellence in science and technology, while preserving the essential characteristics of social cohesion and multi-cultural diversity. The new Framework Programme is one key element for implementing this ERA by focussing on a number of key thematic priorities and introducing new instruments for its implementation. But the concept of an ERA includes far more than the Framework Programme.

1 THE EUROPEAN RESEARCH AREA: AN IDEA WHOSE TIME HAS COME

In just about two years, the concept of a European Research Area (ERA) has become the reference framework for research policy issues in Europe.

Proposed by the Commission in January 2000, this project was endorsed by the Lisbon European Council in March 2000, which made it a central component of the process of developing a knowledge-based economy and society in the EU to promote innovation, competitiveness and employment, sustainable economic growth and social cohesion.

Different reasons were behind the concept of a true ERA. Among the most important ones:

- A continuing gap in public, and especially in private, spending for R&D in the US and in Japan, which raise the real danger of Europe falling behind in prosperity, overall quality of life and relevance on the world scene.
- Life sciences and technologies clearly hold the potential to change our society in ways still difficult to grasp in their full extent and complexity. The advances achieved in the analysis of the human genome and other living organisms are now leaving the way to the advent of the post-genomic era. From the ethics spectre of altering permanently human genetic codes to the vision of single individual DNA-tailored medicaments to the commercial competitiveness of the biotechnology industries, the issues at stake are clearly enormous.

- Information and communication sciences and technologies are playing everywhere in the world a growing role in creating jobs and providing education opportunities. The challenge for Europe is to benefit from the mastering of these technologies, strengthening the competitiveness of the European economy as a whole, while preserving the European model of society.
- Food safety and quality is a major concern for Europeans, as highlighted most evidently during the BSE crisis. It is only prudent to assume that the EU will in all probability have to face in the future more and more problems, significantly affecting its economy, society and citizens. Science is hardly responsible for such problems, but science holds the key to a large extent to their solution.
- Sustainable development, in all its various dimensions, from energy production and distribution to transport, has become a major political objective on the EU's agenda. Assuring to the present generation its chosen standard of leaving, without preventing future generations from choosing theirs, as its definition goes, generates constantly growing needs for specific research in many areas, as well as recourse to interdisciplinary approaches.

The issues at stake, and the challenges associated to them, with the prospects opened up by science and technology require that European research efforts and capacities be integrated to a far greater extent than at present.

The concept of an ERA includes far more than the Framework Programme, the traditional instrument of implementing the Community research policy. It requires: a progressive mutual opening of national research programs; an increased fraction of GDP devoted to R&D; a more favourable environment for both science and innovation in Europe; better mobility of researchers; more powerful networks; improved access to infrastructures; a strengthened role of women in science. The ERA needs to develop both its regional dimension and to open itself to other parts of the world. To succeed, it especially needs to stimulate debate and understanding on the role and increased need for science in a modern knowledge-based society. In this process, the EU must not be a closed shell. Candidate countries to the EU enlargement must of course be fully involved, but, in addition, the ERA must be opened to the world, for the mutual benefit of all.

2 A NEW FRAMEWORK PROGRAMME

The EU's Framework Programme for Research and Technological Development was entirely re-thought out in the light of the ERA concept.

Traditionally, the EU's Framework Programme for research has been a successful instrument to promote co-operation and support collaboration in S&T in Europe.

The challenge now is to step up its contribution to the development of scientific and technical excellence in Europe, both in universities, research centres and in industry, and in particular in the candidate countries. It should also have the effect of fostering innovation in Europe and reinforcing its contribution to the integration of European research, at national, regional and European level. Furthermore, this will both require and generate in turn a genuine partnership between the EU and its Member States, the associated states to the Framework Programme and with other European scientific co-operation organisations.

The new Framework Programme is based on the following main principles:

- concentrating on a selected number of priority research areas in which the EU action can add the greatest possible value;
- defining the various activities in such a way as to enable them to exert a more structuring effect on the research activities conducted in Europe thanks to a stronger link with national, regional and other European initiatives;
- streamlining its implementation, in particular through simplified procedures.

The new Framework Programme is organised around three main blocks of activities, aiming respectively at focusing and integrating research, structuring the ERA and strengthening it, as detailed in the two following tables, according to the latest compromise following the 2nd reading by the European Parliament.

Thematic areas have been selected with a number of subjects linked to economic and societal issues that are especially important to the EU and where its action adds specific value for reasons which may vary according to the themes in question. Of course, the selection was the result of the widest possible debate among the scientific community, industry and national research authorities.

1 EC Framework programme

		Compromise budget between Council, Parliament and Commission
1.	Focussing and integrating Community research	13345
1.1	Thematic priorities :	11285 ¹
1.1.1	Life sciences, genomics and biotechnology for health	2255 ²
	- Advanced genomics and its applications for health	1100
	- Combating major diseases	1155
1.1.2	Information society technologies	3625 ³
1.1.3	Nanotechnologies and nanosciences, knowledge-based multifunctional materials and new production processes and devices	1300
1.1.4	Aeronautics and space	1075
1.1.5	Food quality and safety	685

1.1.6	Sustainable development, global change and ecosystems	2120
	- Sustainable energy systems	810
	- Sustainable surface transport	610
	- Global change and ecosystems	700
1.1.7	Citizens and governance in a knowledge-based society	225
1.2	Specific activities covering a wider field of research	1300
1.2.1	Supporting policies and anticipating scientific and technological needs	555
1.2.2	Horizontal research activities involving SMEs	430
1.2.3	Specific measures in support of international co-operation	315 ⁴
1.3	Non-nuclear activities of the Joint Research Centre	760
2.	Structuring the European Research Area	2605
2.1	Research and innovation	290
2.2	Human resources and mobility	1580
2.3	Research infrastructures	655 ⁵
2.4	Science and society	80
3.	Strengthening the foundations of the European Research Area	320
3.1	Support for the co-ordination of activities	270
3.2	Support for the coherent development of R&I policies	50
TOTAL		16270

¹ of which at least 15% for SMEs

² including up to 400 millions € for cancer related research

³ including up to 100 millions € for further development of Géant and GRID

⁴ this amount of 315 millions € will fund specific measures in support of international co-operation, involving developing countries, Mediterranean countries including the Western Balkans, and Russia and the Newly Independent States (NIS). Another 285 millions € are earmarked to finance the participation of third country organisations in the "Thematic priorities" and in the "Specific activities covering a wider field of research", thus bringing the total amount devoted to international co-operation to 600 millions €. Additional resources will be available under section 2.2 "Human resources and mobility" to fund research training for third country researchers in Europe.

⁵ including up to 200 millions € for further development of Géant and GRID

2 Euratom Framework programme

	Budget
1. Priority thematic areas of research	890
1.1 Controlled themonuclear fusion	750
1.2 Management of readioactive waste	90
1.3 Radiation protection	50
2. Other activities in the field of nuclear technologies and safety	50
3. Nuclear activities of the Joint Research Centre (JRC)	290
TOTAL	1230

3 NEW INSTRUMENTS

The three main instruments used in these areas are the networks of excellence, the integrated projects and the participation of the EU in programmes carried out jointly by several Member States pursuant to Article 169 of the Treaty.

Using these instruments will help mobilise financial resources well in excess of those harnessed so far for joint activities and will result in more marked cross-linkage of national activities between themselves and with EU activities.

Networks of excellence aim to boost European excellence by putting together research capacities present in the various European regions in a series of areas of key importance by helping research entities come together to carry out "common programmes of activities". Setting up and operating these networks should result in the creation of veritable "virtual centres of excellence" of very significant dimensions.

Designed as large-scale activities and preferably conducted as public/private partnerships, integrated projects will help mobilise significant resources around precisely defined objectives in terms of products and processes but also, in many cases, in terms of scientific and technological knowledge.

The EU's participation in the research programmes of the Member States carried out jointly is one of the possibilities offered by the Treaty, which has not been used so far. Making use of this option requires a considerable amount of exploratory work and consultation, which are at present under way in several areas.

4 PROGRAMME IMPLEMENTATION

The running of the programme will be simplified, entrusting the consortia and the participants in networks of excellence with a large degree of autonomy and self-organisation, moving towards greater flexibility for implementing research activities.

Candidate countries to EU accession will be fully equivalent to EU Member States, and, for the first time, International European interest R&D organisations (such as CERN, ESO, ESA, EMBL) will also be treated on an equal footing with any other entity in the Framework Programme.