



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 20.11.1996
COM(96) 595 final

COMMISSION WORKING PAPER

**Towards the Fifth Framework
Programme:
Additional Material for the Policy Debate**

Introduction

On 10 July 1996 the Commission set out, in a communication entitled "Inventing Tomorrow", its proposed guidelines for the Fifth Research and Technological Development Framework Programme. These guidelines were presented to the 7 October Research Council and are now being examined by the European Parliament.

To enable the debate launched in the institutions to proceed and take firmer shape, we now need to go one step further. This is the purpose of this first working paper.

Its specific aim is to clarify the Commission's thinking in terms of structure, objectives and the means for implementation.

At this stage, pending the conclusions of the five-year assessment report on the Union's research activities and the European Parliament's own-initiative report, the intention is mainly to clarify the proposed new guidelines ahead of the 5 December Research Council.

A description of the detailed content proposed for the Fifth Framework Programme will be given in a second working paper that the Commission will produce for the beginning of 1997. The second working paper will be followed by a formal proposal to be tabled by the Commission in March 1997.

It is generally acknowledged that the preparations for the Fifth Framework Programme should provide an opportunity to reassess certain aspects of the Union's research policy. The general approach proposed in "Inventing Tomorrow", namely a greater focus on societal and economic needs, is endorsed on all sides, as is the idea that the Union's research activities should be given the resources to respond appropriately and swiftly to a constantly and rapidly changing situation.

To help explain how this approach can be implemented, this paper addresses the following aspects one by one: structure; objectives; means of implementation (including management); financial resources and timetable.

I. Structure

The Fifth Framework Programme needs to have a simple structure in order to make it easier to achieve the major societal and economic objectives aimed at, and in order to guarantee efficient operation and transparency. This simplicity should be reflected in the Commission's formal proposals for decisions (subject to the constraints imposed by the need to use two separate legal bases, namely the EC Treaty and the EAEC Treaty).

The basis for this simple structure can be taken from the outline given in "Inventing Tomorrow". Accordingly, the Commission proposes that the Fifth Framework Programme should be subdivided into six programmes reflecting the six priorities identified in "Inventing Tomorrow".

These programmes are designed to take account of the public interest and European economic and societal needs in a general perspective; the incorporation, to this end, of new know-how and technologies under development; the focusing of efforts on a number of specific objectives; and the harnessing, to this end, of a variety of disciplines and expertise.

The programmes

- Thematic aspects

These programmes could address the following topics, respectively:

- unlocking the resources of the living world and the ecosystem
- creating a user-friendly information society
- promoting competitive and sustainable growth.

These topics were identified as priorities and described in general terms in COM(96)332 "Inventing Tomorrow" and are being examined within the Commission departments with a view to specifying their content.¹

Each of them should comprise:

¹ The activities concerning the use of nuclear energy will subsequently be dealt with in accordance with the legal provisions of article 7 of the EAEC Treaty.

- several targeted research activities with a major coordination and integration content and activities to demonstrate the technical and economic viability of technologies
- activities for the development of generic technologies and more fundamental research, a category which should be maintained at an adequate level in the Fifth Framework Programme
- activities specific to these programmes reflecting the general objectives of policy with regard to international cooperation, innovation and dissemination/utilization of results, support for SMEs, training and mobility, analysis and monitoring of socio-economic aspects and exploitation of know-how and technologies arising from projects funded.

The activities in support of SMEs in the context of programmes dedicated to thematic aspects (aided by the establishment of a one-stop office and the rationalization of information networks) will enable small and medium-sized enterprises to benefit from the links established with large firms, research centres and universities in connection with the projects.

- Horizontal aspects

These programmes could address the following topics:

- Confirming the international role of European research
- Innovation and participation of SMEs
- Improving human potential.

These programmes should contribute towards the implementation of consistent and structured policies in the sphere of international scientific and technological cooperation, innovation and the promotion of human resources. As with the three abovementioned topics, discussions are taking place within the Commission departments to specify the content of these areas.

To this end, they would encourage:

- coordination and support for activities conducted in the same areas within the programmes dedicated to thematic aspects.
- more general initiatives relating to each of the three topics.

This structure, which should make it possible to increase significantly the overall efficiency of the framework programme, reflects the way in which the Union's RTD activities are covered in Title XV of the Treaty.

Joint Research Centre

As with the previous Framework Programmes, the Joint Research Centre will help implement the Fifth Framework Programme. Drawing on its unique resources in many fields and the expertise developed and maintained as a result of its exploratory research activities, the Centre will make its impartial know-how available for the implementation of the Union's policies while continuing to develop its links with industry.

JRC activities in the context of the Fifth Framework Programme should be based on clearly identified needs, acknowledged expertise and the provision of a European added value. In addition, part of its activities will continue to be conducted in the context of a competitive approach using new ways of operating on the market, in particular new arrangements for partnership with industry.

II. Objectives

The need to focus the Union's research efforts was stressed in "Inventing Tomorrow". It is also reflected in many of the contributions to the discussions on the Fifth Framework Programme provided by the Member States, research organizations and industrial organizations.

In concrete terms, this means that it is appropriate to launch activities focusing on a limited number of topics reflecting European societal and economic needs. As we have seen, that is what is in fact proposed.

However, focusing efforts also means making choices within each major topic and making a selection from among the possible scientific and technological objectives.

On what basis can such a selection be made? The Commission is proposing a general approach and a set of criteria to be applied systematically.

The scientific and technological objectives selected should in all cases correspond to activities with a high European value added on the basis of public interest and social acceptability.

However, before being examined in the light of this fundamental requirement, the objectives in question must satisfy two other criteria:

- **The major political choices expressed in "Inventing Tomorrow".** The scientific and technological objectives in question must, first and foremost, clearly help to achieve the societal and economic objectives set out in "Inventing Tomorrow": quality of life, health and environment (objectives of such societal importance that they should be given special attention); developing the information society; competitiveness of industry, sustainable development and job-creating growth; maintenance and reinforcement of Europe as a centre of scientific excellence and of attraction for investment and innovation (with the enhancement of human resources and mobility deserving special attention); contribution towards implementing the Union's major policies.
- **The level of know-how and technology and Europe's position in the fields concerned.** Only objectives relating to fields where new avenues of research are opening up or where there are serious gaps in our knowledge should be selected; however, fields in which Europe has genuine strengths on which to build or where it has weaknesses which can be overcome by measures at European level should also be considered. The focal point of the Union's research policy, namely boosting Europe's competitiveness, should serve as a guide.

With regard to objectives corresponding to topics already covered by the Fourth Framework Programme, before proposing that they are reselected, a careful examination will be carried out of the **results** of the activities carried out on these topics (on the basis, in particular, of the assessment reports by independent experts); a check will also be made to verify that the **reasons** justifying these activities when they were launched are **still valid**.

It should be added that the objectives must be verifiable and, where possible, quantified and that a specified period of time should be earmarked for their attainment.

III. Instruments

The success of the Fifth Framework Programme will depend to a large extent on its effective implementation, this being closely linked to the quality of instruments adopted to this end. From the guidelines set out in "Inventing Tomorrow" and the many discussions in this connection, it is clear that there are four major areas on which efforts should focus:

- Improving coordination
- Improving flexibility and response capability
- Improving the impact of research on competitiveness
- Management.

Improving coordination

There are three aspects to coordination: coordination within the research programmes and between the different programmes; coordination between the Union's research programmes and its other activities; and coordination between national and European initiatives.

- *Coordination within the research programmes and between the different programmes*

Limiting the number of programmes makes it easier to improve coordination within each programme but also between the different programmes as a result of the smaller number of interfaces.

Research activities which are closely connected with different areas of one or more programmes will be coordinated by mechanisms designed to ensure complementarity and consistency.

In both respects, the research/industry Task Forces could play a special role.

The setting up of the Task Forces represented a major innovation (the importance of which was confirmed by the consultations on the Innovation Green Paper) in the implementation of the Fourth Framework Programme.

The Task Forces should be deployed as means of providing the Commission with expertise and advice, ensuring coordination, consultation and

identifying avenues of research to be explored at European level to develop key technologies needed for the welfare of citizens.

Experience with the use of the Task Forces has proved to be favourable and can be exploited in the Fifth Framework Programme. The Task Forces will act as catalysts to ensure the launching of targeted activities and inter-programme and inter-service coordination.

Coordination between the programmes dedicated to topic-centered aspects and the programmes dedicated to horizontal aspects should also make it possible to further enhance coordination of the Framework Programme as a whole.

● *Coordination between the Union's research programmes and compatibility with its other activities and policies*

Complementarity and coherence with the objectives of other policies of the Union will be ensured in an appropriate manner.

The question of coordination between the Union's research activities and its other activities concerns in particular links between the Framework Programme and the Structural Funds; on the other, the major programmes and frameworks for economic and technical assistance for third countries (PHARE, TACIS, MEDA, EDF and ALA-DCs scheme):

- The inter-relationships built up in recent years between RTD policy and regional policy are developing. The **Structural Funds** are used fairly systematically to strengthen research capabilities in recipient countries through research facilities and human resources (training schemes). On the basis of an in-depth analysis of the situation, the Commission intends to publish shortly a Communication on the subject of "Research and Cohesion". One of the aims of this will be to develop further synergy between the two areas.
- The instruments for technical and financial cooperation and economic cooperation with third countries already make a significant contribution to sustainable development in the countries concerned and to their economic cooperation with the Union, including cooperation in the field of research, technological transfer and adjustment. These countries should be encouraged, through the opportunities opened up by these instruments, to develop greater

synergy with the specific activities under the framework programme which address their requirements.

A clear distinction should be made between political aid for the financing of third country participation in the Framework Programme which could be ensured, for example, through the Union's international cooperation instruments and financing resulting from negotiation of international research agreements the modalities of which must be defined on a case by case basis.

Coordination will also be strengthened between the Framework Programme and other activities and programmes such as those concerning education and vocational training.

● *Coordination between national and European initiatives*

The Framework Programme admittedly represents only a fraction of the total European research effort. Consequently, Europe's research potential can only be fully exploited if there is effective coordination of the efforts made in the various frameworks. Progress in this direction should be made first and foremost on the basis of precise objectives, making use of existing instruments and new mechanisms:

- **Existing instruments.** **EUREKA** (for research close to the market) and **COST** (for targeted basic research) are particularly appropriate forums for coordination between national and Union initiatives. The exchange of information between the different forums should be increased, and the Member States encouraged to improve coordination at national level. Existing links should be strengthened to make them more operational: simple coordination mechanisms should be established.
- **New mechanisms.** The Treaty Articles **130 k** (supplementary programmes), **130 l** (participation in national initiatives) and **130 n** (joint undertakings) provide additional opportunities for measures supplementing the traditional programmes which should continue to form the backbone of Union activities. These opportunities should be used in special circumstances where they can provide extra added value.

Articles 130 k and 130 l provide for the possibility of activities on research topics of special interest to certain Member States.

Activities undertaken on that basis should complement the activities making up the remainder of the Framework Programme the overall balance of which must be maintained. Such activities should focus on specific initiatives of obvious interest to the European Union as a whole.

Improving flexibility and the response capability

The need to make the programmes more flexible and improve the Union's ability to respond to unexpected scientific and technological developments or unforeseen problems is self-evident and has often been stressed. It would be impossible to predict at the beginning of a four year Framework Programme all the major needs that will manifest themselves or all the possible developments during the period covered.

There are two aspects to the issue of constant adjustment of Europe's research efforts: the real-time monitoring of developments and the response adjustment mechanisms:

- Real-time monitoring of scientific and technological developments and the development of societal and industrial needs can be achieved by stepping up the "Technology Watch" activities and establishing closer links between those activities and the activities under the programmes. Needs, particularly in terms of additional targeted activities, could be analyzed continuously on the basis of evaluation and monitoring reports and regular consultations with industry, the scientific community and users.
- A rapid and flexible response can be ensured by various means, in particular:
 - regular adjustment of the programmes, ideally on an annual basis;
 - the provision of a "free space" of limited scale, and subject to strict rules, specifically to respond rapidly to needs that were not originally foreseen.

It should be added that the limited number of programmes is in itself an important factor making for greater flexibility. However, the existence of adequate mechanisms is not enough to guarantee effective flexibility - there must also be a political will to use the mechanisms.

Increasing the impact of research on competitiveness

The Union should encourage the development of research activities which increase competitiveness, in particular as a result of demonstration activities involving a bigger input of private funding than with the traditional shared-cost projects, and appropriate intellectual property provisions, to give a greater incentive to exploit the results.

Management

Sound and efficient management is recognized by all commentators as a condition for the success of the Union's RTD programmes. In its efforts to improve the management projects and programmes still further, the Commission will continue to base itself on the fundamental principles now applied: effectiveness, quality, equality of opportunities, and sound administration of public funds.

On the basis of the progress made with the 4th Framework Programme, the Commission will endeavour to improve the consistency and quality of programme management. The main objective should clearly be to correct the current situation of "oversubscription" of programmes, which tends to place a considerable burden on their management.

Action will be taken to combat this in three ways:

- **Focusing**: limiting the work programmes to a small number of clearly defined priority objectives should limit the number of proposals submitted;
- **Transparency**: the Commission will endeavour to provide sufficiently precise information in order to discourage the submission of proposals which are inadequately substantiated and justified and are not in keeping with the spirit of the programmes. The Member States and those organisations established at national level to disseminate information on the programmes should be able to help the Commission in this task.
- **Pre-inspection of conformity of proposals**: early information for possible participants, in particular small and medium-sized enterprises about the conformity and direction of their proposals with regard to the formal participation conditions and the objectives of the programme.

The organization of the Framework Programme as a limited number of multidisciplinary programmes covering several areas will also make it necessary to move from a programme-centred management method to an approach based on more collegial management.

IV. Budgetary context and timetable

The Fifth Framework Programme will be funded within the limits of a "maximum overall amount" determined by the legislative authority. During the period in which the commitments will be made (1999-2002), this amount cannot exceed the annual ceilings set in the Union's financial perspective.

Research expenditure now appears in heading 3 (internal policies) of the financial perspective. It is by far the biggest component, representing as it does 60% of the funds available under that heading in accordance with the spirit of the Edinburgh agreements (between one half and two-thirds of heading 3 of the financial perspective). This approach could be followed for the fifth framework programme.

Expected GDP growth will be taken into consideration in the forecasts of what might constitute an appropriate level for research expenditure in the Union.

Account will also be taken of the fact that the outlay of the other major technological powers, namely the United States and Japan, is not diminishing. While Japan is devoting 3% of its GDP to research, and the United States 2.5%, the European Union's outlay has been only 2% on average for several years.

The American public research budget, which had been cut in recent years, will increase in 1997 by nearly 3 billion dollars (the NIH budget increasing by 6.9%, to give one example), and the budgets of the Japanese public research agencies is continuing the marked upward trend in evidence for several years (+ 8.3% for the Science and Technology Agency, +16.4% for MITI). Given this outlay by our competitors/partners, we must ensure a substantial rate of investment in public and private research spending in Europe.

Conclusions

All in all, it is urgent and vital that the Fifth Framework Programme should be implemented in the proposed time frame. If it is to be launched, on schedule, in 1999, a fairly steady rate of progress will be needed given the probable duration of the decision-making process.

As indicated at the beginning of this communication, the Commission is planning to submit a detailed working paper at the beginning of 1997 and to make its formal proposal in March 1997 which cannot, however, prejudice the Commission's subsequent proposals concerning the Community's future financial framework which will be made immediately following the IGC. The ultimate objective is formal adoption at the beginning of 1998.

For the preparation of the Fifth Framework Programme, the Commission had deliberately chosen a step-by-step procedure whereby at any given time it can be seen whether the proposed guidelines are sufficiently well understood and applied.

Accordingly, this paper has been drafted in order to guide the debate along clear lines.

On the basis of the conclusions of the debate, the Commission hopes to be able to draft and then submit as soon as possible a more detailed working paper and make its formal proposal. These two documents will make it possible to have an even more precise idea about the practical ways in which the societal and economic objectives set out in "Inventing Tomorrow", on which there is broad agreement, can be achieved.