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Research & technological development activities of the European Union

Annual report

1995

EUROPEAN COMMISSION

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Annual report 1995

Published by the
EUROPEAN COMMISSION

Directorate-General XII
Science, Research and Development

L-2920 Luxembourg

LEGAL NOTICE

Cataloguing data can be found at the end of this publication

Luxembourg: Office for Official Publications of the European Communities, 1996

ISBN 92-827-6918-6

Printed in Italy

SUMMARY

This Annual Report by the Commission on research activities represents a new departure. It appears at a moment when the new research Framework Programme, which will run to the end of the century, has been launched in an enlarged European Union and a new Commission has taken office.

The requirement for an annual report was introduced at Article 130 P of the Treaty. The initiative owed much to the interests of the European Parliament. However, the Commission itself has been increasingly active in seeking to ensure greater openness with regard to its activities and the provision of information. It is very much in this spirit that this first report has been produced. It is the Commission's hope that it will contribute further to that atmosphere of constructive collaboration between the Community institutions which lead to the timely adoption of the Fourth Framework Programme on 26 April 1994 and of the corresponding specific programmes before the end of 1994.

With this annual report a window is opened on the whole wide spectrum of Community research activities now grouped under the common umbrella of the Framework Programme. It also offers a "snapshot" of the situation at the end of 1994 as well as an overview of the work programme and milestones for 1995. The 1995 Report covers the results obtained in 1994 from research activities undertaken mainly under the Third Framework Programme (1990-1994). The description of the 1995 work programme deals with the start of the Fourth Framework Programme (1994-1998).

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For Community research policy, **1994** was a most active as well as challenging year. No fewer than 25 legal texts were needed to implement the Fourth Framework Programme:

The Framework Programme itself (both European Community and Euratom texts) and the eighteen specific programmes; two programmes covering the activities of the Joint Research Centre of the Community (JRC) and the competitive scientific and technical activities in support of Community policies; two decisions covering the rules for participation in Community research programmes; and finally the rules for the dissemination of results.

In July, during an informal meeting of the Council of Research Ministers, the first debate on the coordination of Member States' science and technology policies took place. Subsequently, in October 1994, the Commission presented its Communication "Achieving coordination through cooperation".

Furthermore, 1994 also saw the creation by the Commission of the European Science and Technology Assembly which brings together distinguished representatives of industrial research and the scientific world so as to improve the links between the Commission and the research community.

Members of the European Economic Area participated fully in the non-nuclear research programmes of the Community. The European Union was also active in the arena of international scientific and technical cooperation and conclusion of bilateral agreements: signature with Australia; conclusion of negotiations with Canada; and start of negotiations with Switzerland and with Israel.

In addition, the Commission has continued activities to promote discussion on science and technology in their general cultural context in Europe in the framework of the "European Science and Technology Forum". It also organized the European week for scientific culture in November 1994.

Research activities in 1994 — and the importance of the Community's research efforts in general — can be summed up in just a few figures relating to Third Framework Programme activities, covering Member States and countries of the European Economic Area and of EFTA, and including also the most important accompanying measures: 6 101 new projects involving 18 261 participants were launched in 1994; a total of 10 976 projects were running at the end of 1994; in 1994, Community support amounted to 1 936 MECUs in total payments (JRC excl.). They represented no fewer than 16 407 transnational collaborative links in multi-partner cost- shared actions between research teams spread throughout the Community or the European Economic Area.

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In **1995,** the Commission will ensure the efficient implementation of the specific programmes of the Fourth Framework Programme, taking increasing account of the needs of the citizen and of the market. This has involved, inter alia, a very active and user-focused campaign of publicity and information days on the programmes' first formal calls for proposals on 15 December 1994.

The funds allocated to the Framework Programme should be adapted following the accession of the three new Member States, Austria, Finland, and Sweden. Furthermore, the discussion on supplementary funding of the Framework Programme, to be decided by June 1996, will be initiated; the Commission expects to make proposals later this year.

The Commission will furthermore pave the way for new initiatives, new approaches. The European Union faces problems such as unemployment, widespread changes in society and a rapid pace of technical innovation. The achievements of Community research in helping to develop new options and responses to these challenges should therefore be more visible to its citizens. Concrete steps should be rapidly taken further to increase the coherence and effectiveness of research activities in the Community, based on a consensus among all concerned about the approach to be followed.

The Commissioners concerned therefore agreed to set up a number of "Task Forces" which should help to bring together Community, national and other efforts in common projects of industrial interest, thereby increasing their impact. The instruments already laid down in the Treaty but underused in the past may prove to be useful tools: Articles 130 K, L and N — which provide for supplementary programmes, Community participation in programmes undertaken by several Member States and joint undertakings. The Commission will put forward further ideas to help focus the debate. The vital relationship between research and industry is a theme which merits particular attention.

Other major topics which the Commission plans to address this year include the whole innovation process — where the Framework Programme's special support for small and medium-sized enterprises is particularly important; an overall strategy for international research cooperation; research in the information society; and further simplification of management procedures together with further progress on improving programme evaluations.

* * *

It is the Commission's hope that readers will find this annual report convenient and informative, both for those already involved in Community research and for those who discover it through this report. It is the aim that it should be seen as a useful reference document, a common knowledge base for researchers, enterprises, research organisations, research policy planners, politicians and indeed all those who have the competitiveness of the European Union and the welfare of its citizens close to their hearts.

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INTRODUCTION

This report is the first of its kind. Article 130 P of the **EC Treaty** was introduced by the Treaty on European Union and states[1]:

> ***"At the beginning of each year the Commission shall send a report to the European Parliament and the Council. The report shall include information on research and technological development activities and the dissemination of results during the previous year, and the work programme for the current year".***

The Commission sees this report as an important opportunity to present an overall picture of the research activities of the European Union in an open and accessible way, thus helping wider understanding of their importance and contribution to the prosperity and social "well-being" of the European Union.

The Fourth Framework Programme introduced new obligations on continuous monitoring and evaluation of the Community RTD programmes. At the meeting of the Council of Ministers (Research) in December 1994, the Commission outlined a new strategy for the evaluation of Community research programmes in the light of these new obligations. In the future, this annual report could form a constituent part of the overall assessment process[2].

For evident reasons, this 1995 report cannot take full account of the new evaluation strategy, which has yet to be finalized, nor of all the obligations under the Fourth Framework Programme and its specific programmes, which are just now being implemented.

In practice, the report on 1994 refers principally to activities under the Third Framework Programme (and those accompanying measures (Actions de Préparation, d'Accompagnement et de Suivi, APAS) which are being continued under the Fourth Framework Programme). The report on the work programme for 1995 concerns essentially the Fourth Framework Programme.

The Treaty foresees the report as being presented "at the beginning of each year...". However, taking into account that the report must, to a large extent, be based on reliable statistical and budgetary data, the availability of these data will be a determining factor for the timing of publication.

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[1] This text is quoted in Article 4 (1) second paragraph in the **two decisions (EC and Euratom) enacting the Fourth Framework Programme**. Thus the obligation is accepted for the totality of framework programme activities. Furthermore, in the **decisions (both EC and Euratom) determining the rules for participation in Community research programmes and the rules for dissemination of results**, article 10 (1) and article 4 (1) respectively, reference is made to the annual report in the following way:
"The annual report that the Commission submits to the European Parliament and the Council, in accordance with article 4 (1) of Decision N° **[reference to the relevant Framework Programme decision]**, *shall contain information on the implementation of this Decision".*
Finally, it should be born in mind that the Fourth Framework Programme was adopted according to the provisions introduced by the Treaty on European Union, whereas the Third Framework Programme, to which the retrospective part of this report essentially refers, was adopted according to the Single Act.

[2] It should be noted that the Scientific and Technical Research Committee, CREST, which advises the Commission and the Council, already in the context of its evaluation report on the Second Framework Programme recommended that: *"The statistical resume presented in Annex I, on the basis of an annual analysis, should constitute the basis of the annual report from the Commission provided for in article 130 P of the Maastricht Treaty."* The statistics presented in the present report correspond closely to those of the CREST report.

The report falls into four parts. The first and main part of the report, "European Union research, technological development and demonstration: Summary of activities in 1994 and of work programmes for 1995", provides a synthesis of the results of 1994 and the plans for 1995. **The second part**, "Activities in 1994", presents some of the important research results from each of the specific programmes in more detail. **Part three**, "Work programmes for 1995", summarizes the activities foreseen in 1995 for each of the specific programmes. Finally, the **last part**, "Annexes", gives graphs, tables, and lists of factual data, such as key statistics on projects, funding, participants, research links, etc., major dates and documents in the adoption of the Third and Fourth Framework Programmes, and lists of publications and acronyms, together with an overall calendar for calls for proposals and selection of research projects.

PART ONE

EUROPEAN UNION RESEARCH, TECHNOLOGICAL DEVELOPMENT AND DEMONSTRATION (RTD)
Summary of activities in 1994 and of work programmes for 1995

POLICY DEVELOPMENTS: Fourth Framework Programme and Coordination

Achievements 1994: Launch of the Fourth Framework Programme and renewed commitment to coordination, concentration and stimulation

During 1994, overall Community RTD policy for the period 1994-1998 was discussed and finalized in accordance with the provisions of the Treaty on European Union, which was ratified in November 1993, and with the ***White Paper on "Growth, Competitiveness and Employment"****, which analyzed and confirmed the key role of research and development for the European Union. Specifically, the* ***Fourth Framework Programme (1994-1998) and, following the Commissions proposals in March 1994, the corresponding 20 specific programmes*** *were adopted. The overall* ***rules for participation*** *in the Community programmes* ***and for dissemination of results*** *were agreed upon; the Commission had tabled its proposals in February. Finally, the specific programmes were implemented with the adoption by the Commission of the* ***work programmes*** *and the publication of calls for proposals. Subsequent to debate in the European Parliament and between research ministers, the Commission presented the* ***Communication "Achieving coordination through cooperation"****.*

In its analysis in the **White Paper** of the contribution of research and technological development to growth, competitiveness and employment, the Commission concluded that in particular there is need for: an increased level of RTD funding, greater coordination of national and Community RTD policies and improvements in the capacity to convert scientific breakthroughs and technological achievements into industrial and commercial successes. Specific recommendations included

* **Improved coordination of national and Community policies**

* Establishment of operational mechanisms for **technology transfer**

* **Concentration of efforts** on areas pinpointed as **responding to new needs and markets**

* Definition of new **large-scale projects** with national bodies and companies.

Fourth Framework Programme (1994-1998)

The Framework Programme is established as the essential instrument for implementing the European Union's policy on research, technological development and demonstration. Furthermore, in accordance with the Treaty on European Union, **all Community research is now assembled** under the common umbrella of The Fourth Framework Programme (1994-1998). **Links with other Community policies have also been strengthened** and the **overall structure** of the programme has become **clearer**, reflecting directly the different types of actions mentioned in the Treaty (Article 130 G). This has helped to emphasize the importance of certain activities of a more "horizontal" nature, namely international scientific cooperation, dissemination and optimization of results and training and mobility of researchers.

The Fourth Framework Programme was adopted on 26 April 1994 and the corresponding 20 specific programmes were agreed upon in the course of 1994, (cf. Part Four, Annex IV, for milestones in the decision process and references of decisions in the Official Journal). This means that they were proposed, negotiated and adopted within about two years — or quicker than proved possible for the Third Framework Programme. Bearing in mind the constraints imposed by the combination of the co- decision procedure (Article 189 b of the Treaty) between the European Parliament and the Council of Ministers and the unanimity rule, this represents a genuine tour de force. It could not have been done without the determination of the Institutions to reach a successful conclusion before the end of 1994, closing date of the Third Framework Programme, and thereby to ensure the continuity of Community research activities.

The major characteristics of the Fourth Framework Programme as compared to the Third Framework Programme may be summarized as follows:

* The funding of **ECU 12 300 million**[3] was sufficient to ensure the continuity of Community research. **Supplementary funding may be added** by 30 June 1996.

* Better **coordination** of research efforts.

* A higher **priority** is attributed to fields of **industrial interest**, as well as to those related to the **environment** and to **life sciences and technologies**.

* A number of **new priority areas** appear in the Framework Programme, in particular **transport** and **targeted socio-economic research** which are the subject of two distinct specific programmes.

* Greater importance is attributed to the **dissemination and exploitation of research results**.

* **New means of implementation** are introduced to allow for improved efficiency and impact; for example **thematic networks** and **focused clusters** group research partners from different disciplines around a common objective, with a particular emphasis on the participation of users. In addition, **demonstration projects** are — as set out in the Treaty — explicitly covered by the Framework Programme.

* The participation of **small and medium sized enterprises (SMEs)** is encouraged in most programmes by simplified procedures and specific measures, including feasibility awards and funding for cooperative research (inspired by the CRAFT pilot initiative under the Industrial and Materials Technologies Programme of the Third Framework Programme).

* **Administrative burdens** on proposers are **reduced** and **transparency increased** through fixed dates for calls for proposals; simpler and harmonized information packages, and application and contract negotiation forms; synchronized or joint selection procedures across programmes etc.

* The specific character of the Community's own research centre, the **Joint Research Centre** (JRC), is confirmed. However, the future financing of its activities will be based increasingly on a competitive approach.

* There is the first opportunity for the gradual "phasing-in" of research activities of interest to the coal and steel industries which were hitherto conducted under the aegis of the ECSC Treaty.

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[3] Excluding the funding for the participation in the Framework Programme of the countries of the European Economic Area, which in 1994 amounted to ECU 166 million. In April 1995, the Commission made a proposal for the adaptation of funding under the Fourth Framework Programme by 7 % following the accession of Austria, Finland and Sweden to the European Union.

On 21 November 1994, the Council adopted **common rules governing participation in Community RTD activities and dissemination of results.** The rules governing participation were previously included under each of the specific programmes, whereas the rules for dissemination were set out for the Third Framework Programme by Council Decision 92/272/CEE implemented by Commission Regulation 94/1990/CE.

Improving the coordination of national and European Union RTD policies

Concrete initiatives were taken with the aim of improving the coordination of national and Community RTD policies[4]. Following a resolution of the European Parliament in May 1994, the European Union's Research and Education Ministers held an informal meeting in Schwerin in July 1994 at the invitation of the German Presidency. Subsequently, in October 1994, the Commission adopted the Communication "Achieving coordination through cooperation" (COM(94)438).

This Communication addressed a major challenge for European RTD, highlighted also in the White Paper, namely to **counteract the effects of the fragmentation in Europe of RTD policies.** At present, only an amount equivalent to 13 % of public RTD resources are mobilised by European cooperative RTD frameworks. The communication presented arguments and general lines of action for increased coordination of the remainder, subject to common intents and interests, and in accordance with the principle of subsidiarity. It focused on action at three levels: defining policies; their implementation; and international cooperation. More specifically, it pointed to the effective implementation of **"supplementary programmes"** (Art. 130 K) and **"participations in Member States' initiatives"** (Art. 130 L) as opportunities which deserve due consideration. This could, for example, provide an appropriate response to the need for increased European coordination in relation to industrial RTD. A precondition of coordination is a **systematic exchange of relevant and comparable information on national RTD policies.** Such efforts should help identify and focus on concrete topics of general interest and areas where greater cooperation and coordination could be fruitful.

The perceived need for increased European coordination in RTD has been a major issue during the latest discussions on the future role of the Committee for Scientific and Technical Research (**CREST**). It has been realized that the mandate of CREST should be reconsidered in the light of the central role assigned to European RTD — as a key Community instrument. Discussions have led to the conclusion that CREST should play an important role in the medium and long term development of RTD policy, in particular as regards coordination between national activities and with Community activities and in the preparation of future Framework Programmes. In this context, the reinforcement of CRESTs role in the evaluation of RTD programmes is also considered to be beneficial.

Coordination implies a need to develop further a common **"corpus of knowledge"** regarding developments in science and technology in the wider context of industrial competitiveness and societal needs.

The inclusion in the Framework Programme of a **specific programme of targeted socio-economic research** (TSER) and the creation of the **Seville Institute for Prospective Technological Studies** of the JRC are major steps forward in this respect. The programme covers evaluation of science and

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[4] Article 130 H of the Treaty states:
"1. The Community and the Member States shall coordinate their research and technological development activities so as to ensure that national policies and Community policy are mutually consistent.
2. In close cooperation with the Member States, the Commission may take any useful initiative to promote the coordination referred to in paragraph 1".

technology policy options, research on education and training, and research into social integration and exclusion in Europe. The TSER programme foresees the creation of the **European Technology Assessment Network (ETAN)** which will link experts in the field of science and technology policy studies and decision-makers at European level.

The publication of the first **European Report on Science and Technology Indicators** in October 1994 was another major achievement aiming at the pooling Europe-wide of quantitative information on science and technology. This important new tool will be published by the Commission every two years as a result of the joint efforts of the specialized institutions of the Member States, the national bodies and the international institutions with expertise in the field together with Commission staff. The report addresses six major issues: the place of Europe's science and technology in a world context; industrial RTD and competitiveness; European RTD diversity, convergence and cohesion; RTD cooperation in Europe; the European Union as a world partner; and, finally, European attitudes towards science and technology.

When considering these new initiatives, the existing activities promoting coordination should not be forgotten. **Concerted actions**, which by definition imply support for the coordination of national activities through such means as workshops and conferences, short-term scientific missions, publications and travel expenses for EU delegates etc., are well-known measures in the Framework Programme, notably in the programmes on measurement and testing and biomedicine and health. In total 365 new concerted actions were started in 1994 and 3205 were underway by end 1994.

In order to strengthen the coherence of RTD activities undertaken in Europe, closer **coordination has also been sought between Community RTD activities and other European and international governmental and non-governmental scientific organizations** and the many networks of researchers they have set up.

COST (Cooperation in Science and Technology) contributes to the coordination through concertation of nationally funded research in the 25 European COST member countries. In 1994, 36 new COST actions were started, bringing the total number to 115. Furthermore, coordination has progressed pragmatically on a case-by-case basis between the Community and the pan-European initiative, **Eureka**. Outstanding examples of effective coordination are the close relationships established between the Community programmes for marine science and technology (MAST) and for road transport (DRIVE) and the Eureka activities Euromar and Prometheus, respectively. Finally, **links have been reinforced between the Community and European research organizations** such as CERN (Centre Européen pour la Recherche Nucléaire), EMBL (European Molecular Biology Laboratory) and ESA (European Space Agency). More specifically, the Commission has concluded administrative arrangements with **CERN** on 10 October 1994, and with **EMBL** on 18 January 1995.

Advice and studies in the preparation of future RTD policy

The European Science and Technology Assembly (ESTA), announced in the White Paper, was founded by the Commission on 16 March 1994 and acts as a high-level research advisory body for the Commission. It is composed of one hundred distinguished scientists and industrial researchers appointed by the Commission in their personal capacity, drawn from national and European research organisations and centres, universities, and industrial enterprises and organisations. At the Commission's request, the Assembly will deliver opinions on the implementation of the European Union's RTD policy and more specifically the Framework programme and the specific programmes, in particular on the scientific and technical content of the programmes and certain aspects of their management. On its own initiative, the Assembly will deliver reports and draft opinions on various aspects of the Unions's RTD policy or world wide science and technology trends and implications.

The Industrial Research and Development Advisory Committee (IRDAC) will continue to offer its particular advice and expertise to the Commission.

The **European Science and Technology Forum** has been created in order to stimulate ideas and discussion on socio-economic, ethical, legal, historical and cultural aspects of science and technology in Europe. The Forum brings together academic and industrial researchers, political decision-makers, representatives of government bodies and specialists in selected fields in conferences which have been prepared in depth through studies and preparatory seminars. In 1994, five very well received projects were organised. A European Week of Scientific Culture was also held.

In addition, a number of studies have been launched or completed in order to prepare coming framework programmes. Some illustrative examples are the launch of a study on the definition of public research budgets in the Member States, on industry's diversification in relation to military research, on the assessment of critical technologies in Europe, on European and international cooperation in technology foresight, and on the design of European collaborative programmes. The "Eurobarometer" studies conducted at regular intervals have shown the improvement of the perception of science and technology by the public.

Prospects for 1995: Bringing research in Europe closer to the needs of industry and society

Concentrating resources on major challenges

In line with the Commission's Communication "Achieving coordination through cooperation", all the available options under the Treaty should be used in order to exploit to the full the Community's RTD potential and to generate concrete results. The priorities identified in the Commission's Communication on "An industrial competitiveness policy for the European Union" include the promotion of intangible investment, such as research and training, and the need to take fuller account of the market.

A number of *Task Forces* have been set up in order to launch *common projects of industrial interest.* The Task Forces cover themes such as:

— "the car of tomorrow",
— "educational software multimedia",
— "new generation aircraft",
— "vaccines and viral diseases",
— "the railways of the future",
— "intermodality of transport".

This approach will be continued covering other possible areas of public and industrial interest such as the environment or the maritime industries. Task Forces should mobilise all available expertise, closely associating industry, including SMEs, and especially user groups, so as to have their views on the technical priorities, as well as consulting relevant interest groups and national bodies. Task Forces will conduct a detailed economic, scientific and technical analysis of the prospects. They will propose clustering of projects by identifying relevant areas of the work programmes and by screening projects, including on-going ones, decided under the specific programmes. Task Forces will furthermore make proposals for the possible updating and adaptation of work programmes and for new initiatives, in particular for the possible application of Articles 130 K, L and N of the Treaty, concerning the implementation of supplementary programmes, Community participation in Member States' initiatives and the creation of joint undertakings.

The preliminary results of the work of these Task Forces will be taken into account and their work further discussed in a number of communications announced in the general Work Programme of the

Commission for 1995. They include Communications or Green Papers on the links between research and industry; on the role of research in the Information society; on the promotion of innovation policies; on the prenormative dimension of Community research programmes; on new means of cooperation provided for in Articles 130 K and L of the Treaty; and on the instruments of cooperation in accordance with Article 130 N of the Treaty.

In addition, the Commission will present proposals for Supplementary funding of the Framework Programme, as foreseen in the Framework programme decisions, with a view to the possible launch of the first supplementary programmes.

The Commission has proposed the adaptation of the financial provisions of the two Framework Programmes as a consequence of the enlargement of the Union. An increase of 7 % of the funding of the Framework Programmes, or supplementary funding of ECU 861 million, is proposed in order to maintain the existing level of research effort in the enlarged European Union. This figure corresponds to the increase decided at the budget trialogue last November to be applied to the budget for the Community's internal policies; it also corresponds approximately to the percentage contribution to the Fourth EC Framework Programme from the three new Member States, had they still been members of the European Economic Area in 1995 (7,01 %) and to the percentage contribution to the non-nuclear programmes of the Third Framework Programme from these countries in 1994 (6,87 %).

Further practical steps to improve coordination

The Communication "Achieving coordination through cooperation" has been extensively discussed in various fora, within and outside the institutional framework of the Community. These discussions will be continued in 1995 with a view to the adoption of a Council Resolution and the identification of priority areas for concrete actions.

Further steps in defining the future role of CREST will be taken in parallel with discussions on coordination. One question to be examined is the interaction between CREST and other European bodies with an interest in RTD.

Following a Call for expressions of interest published in March 1995 in the framework of the new programme on targeted socio-economic research, **the European Technology Assessment Network, ETAN**, is being set up in order to facilitate analysis and comparison of research and innovation in Europe. Such a network can, in the long term, help reconcile the points of view of those responsible for research, Members of Parliament, experts on social and economic questions etc. on the common problems which are facing us and on the lines of action to be pursued at national and European level. Its activities concerning exchanges of information and research experience should be demand-driven, guided by the users, namely national governments, Members of Parliament, the Commission, industrialists and all the relevant players on the socio- economic scene. In this context, ideas on the coordination between the activities of national centres and of the Seville Institute for Prospective Technological Studies will be put forward in a working document.

RTD PROGRAMMES: Achievements and prospects

Activities in 1994

The level of Community RTD activity can be easily illustrated by some key figures relating to Third Framework Programme activities, covering Member States and countries of the European Economic Area and of EFTA, and including also the most important accompanying measures: 6 101 new projects involving 18 261 participants were launched in 1994; a total of 10 976 projects were running at the end of 1994; in 1994, Community support amounted to 1 936 MECUs in total payments (excl. the Joint Research Centre). They represented no fewer than 16 407 transnational

collaborative links in multi-partner cost-shared actions between research teams spread throughout the Community or the European Economic Area. More details are given in the tables in Part Four, Annex 1. The activities of each RTD programme and the results obtained in 1994 are set out in more detail in Part Two of this report. In the following, some representative points are highlighted.

According to the Treaty (Article 130F), the Community RTD activities have a two-fold objective: ***"...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"***. The specific programmes of the Framework programme contribute generally to both objectives; the examples of results presented below are intended to illustrate this rather than give a comprehensive description of the objectives and scope of each of the programmes.

The following cites some specific examples of research activities related to the ***competitiveness of European industry***:

In the **information technologies** programme (ESPRIT), 109 actions were launched in the context of the European software Systems Initiative (ESSI) which aims at disseminating software best practices. It also provided seed funds for the European Software Institute (ESI), founded by 15 major software players who started the Europe-wide software process training action. ESSI actions have found particularly high acceptance with SMEs where interest is strong for best practice related to new software technologies with a view to improving their industrial competitiveness.

Another example from this programme includes the initiatives related to Computer Integrated Manufacturing and Engineering (CIME). Advanced information technologies systems have been developed for co-design and concurrent engineering of integrated systems for industrial communications and automation; moreover, major contributions have been made to various standardisation activities, for example in the area of mechanical design. A number of test cases were completed under the feasibility phase of the Intelligent Manufacturing Systems initiative (IMS) involving participants not only from Europe but also from Japan, the US and other regions.

In the field of **advanced communications technologies**, prototypes of integrated communications systems have been developed within projects carried out in close collaboration with users in several sectors, such as transport, manufacturing, culture, publishing, construction, trade and banking. Techno-economic studies and development of network interconnections' standards were included in these projects.

Miniaturised technology is booming. In the frame of the **industrial and materials technologies** programme, recent progress in micro-electronics has given rise to prototypes of "micro-motors": tiny motors whose size is of the order of 1 millimetre or even smaller. They can be applied to a wide range of uses, for example, in the medical field, with micro- surgery, implanted pumps, and more. Their manufacture, however, raises enormous technical problems. These motors are extremely vulnerable to all physical forces (a grain of dust or a particle of grease is enough to stop them) and they are also difficult to assemble. This is why four organisations have joined hands in studying the design of micro-machines with the help of 3-dimensional mathematical models and examining the mechanical and deformation related properties of components, attempting to solve friction problems through the use of electrostatic forces. In order to keep the weight of the micro-motor as low as possible, the partners are working on glue-based assembly techniques.

Under the **biotechnology** programme, 7 Industrial Platforms have been created at the initiative of interested companies and are active in particular technology sectors. Industrial Platforms provide contractors and Commission services with expert advice on industrially relevant topics, thus promoting a dynamic interaction beneficial to all parties. As regards scientific results, significant advances have been made in the field of industrial microorganisms; new ones which can live under extreme conditions have been isolated and characterized.

Some concrete results ***contributing to other Community policies and to the needs of the society***, and thus to the second general objective of Community RTD activities, deserve mention here:

Research on the natural ***environment*** has generated information usable in implementing or refining the European Union's environmental policies and management. Successful examples drawn from the two **programmes in the area of environment** are: the development of a new functional approach to wetland assessment and protection; the understanding of the complex pollution process in the Western Mediterranean Sea; the development of a hydrodynamical and ecological model of the reaction of high mountains lakes to pollution, as a contribution to the Alpine Convention; and the understanding of the mechanisms of the physical processes that shape the coastline.

The **programme on measurement and testing** contributed significantly to the operation of the ***Internal market*** by providing the scientific and technical basis for more than 30 European standards. Of particular interest to industry are the projects on the testing of materials (metals, ceramics, coatings etc.) and construction. A European-wide project to develop improved methods for determining the resistance and reaction to fire of upholstered furniture not only lays the basis for future standards and possible legislation, but also provided training for Member States who have yet to develop their test facilities in this field.

Contributions to ***health*** and ***consumer protection*** policies come from both the **Biomedicine and health programme** and from the **agriculture and agro-industry programme**. Three major projects concentrated on developing effective vaccines to prevent infection by the HIV virus and designing drugs which suppress the progress of AIDS. A methodology has been developed to evaluate the safety of a transgenic tomato; this methodology will prove very useful for the preparation of guidelines for the evaluation of novel foods.

The Telematics Systems of General Interest programme also contributed to ***health policies*** and to other policies such as ***transport, the internal market, culture, and education and training.*** A "multimedia teleschool" which allows a tutor to have face-to face contact with many learners at different locations has been developed in the framework of this programme. Twenty interactive courses on such subjects as foreign language learning, telecommunications, and environmental awareness have been held by the Teleschool for more than 1600 executive learners form major companies in 12 countries.

In terms of the ***Common Agriculture Policy*** and rural development, new projects in the **programme on agriculture and agro-industry, including fisheries,** will produce much needed data and indications of how quantitative models will be used in agriculture in the future. In addition, support to the ***Common Fisheries Policy*** has been provided through the increased knowledge of the major stocks for European fisheries in the Atlantic ocean and in the Mediterranean Sea.

In the ***energy*** field, new tools for strategic analysis and modelling have been developed within the **energy programmes** to analyze the complex energy-environment-economic system and its future trends with the objective of defining a global energy RTD strategy for the European Union. A new generation of mathematical models was developed to characterise this complex system both at European and world scale. An accounting framework was developed to evaluate costs in different fuel cycles (nuclear, coal, gas and renewables) within a joint Community-US collaboration. Within the **thermonuclear fusion programme**, the design of the first experimental fusion reactor, ITER, has progressed in the frame of the quadripartite Agreement ITER-EDA (Engineering Design Activities) between Euratom, Japan, Russia and the USA. An industrial grouping was selected to contribute to the Euratom participation to the overall design of ITER.

Last but not least, a number of activities have been carried out to strengthen the links with the Community's ***regional and structural policies,*** taking into account the Communication of the Commission of 12 May 1993 "Cohesion and RTD policy" (COM(93) 203). The less favoured regions have profited from the RTD Framework Programme at different levels, in particular by:

— the choice of research themes (such as desertification, renewable energy, traditional manufacturing, rural areas, marine sciences etc.)
— measures in favour of SMEs (like the CRAFT-initiative launched under the industrial technologies programme and extended to other programmes)
— networking measures
— the importance attributed to dissemination of research results and technology transfer in particular in the context of the VALUE II and the SPRINT programmes
— specific actions such as the Human Capital and Mobility Programme.

In addition, a series of activities (including studies, seminars and pilot actions) were launched in coordination with the activities undertaken in the context of the Structural Funds. Examples of such activities are the "Awareness seminars" in objective 1 regions (in Lison and Dublin) and the following studies: a vademecum of RTD actions eligible for structural funding: RTD networks between Objective 1 regions and industrialised regions; RTD profile of Objective 1 regions, and on RTD in rural areas and islands; a directory of projects (1989-93) under the STRIDE Programme (Science and Technology for Regional Innovation and Development in Europe). Furtthermore, a pilot project financed by the Structural Funds made it possible to test a mechanism for the ecploitation of results of Community researche in Objective 1 regions. The experience gained in this context will be used when deciding on the activities to be carried out under the third action of the Fourth Framework Programme.

All these efforts seem to have had a positive effect on the overall research capacity of the less favoured regions. The number of participations from the Objective 1 region has increased significantly from the Second to the Third Framework Programme by around 13 %.

A number of other examples of projects within different fields which have proved successful for industry or have satisfied societal needs are included in Part Two on Achievements in 1994 (RTD results).

Major initiatives in 1995

For all programmes the key objective for 1995 is the efficient implementation of the new specific programmes in most cases through calls for proposals, selection of proposals and the start of projects. More detailed descriptions are in Part Three of this report. However, with the implementation of the Fourth Framework Programme a number of new features are introduced in the specific programmes; they are highlighted in the following:

In the field of ***information and communication technologies***, the three specific programmes will contribute to the emergence of a "Knowledge-based Europe"; to the creation of the Information society (based on the recommendations of the European Council and the G7 meeting on the subject); and to the development of a "European Digital Industry". User needs will be taken into account to a greater extent than before, in particular in the areas of multimedia technologies, software and telematics applications which are expected to be carriers of new markets and new jobs.

One of the main tasks of the two programmes in the field of ***industrial technologies*** is to prepare for the "Factory of the Future" in the context of sustainable development, including research aiming at an improved working environment, and new production technologies, materials and organisation models. Research into standards and measurement, and transport technologies, will contribute to the implementation of other Community policies, such as the internal market and transport.

The two programmes in the area of the ***environment*** will focus on: the fundamental mechanisms of climate and natural systems — terrestrial, atmospheric and marine (global change); environmental technologies, including marine technologies and the use of space techniques for Earth observation; and the social dimensions of environmental change. In order to ensure coordination of efforts at international level, activities will be developed in close collaboration with the European Network for Research on Global Change (ENRICH) and other international bodies.

Three specific programmes on ***life sciences and technologies*** will serve a twin objective; they will contribute to strengthening Europe's strategic position in this promising field, and aim at improving the quality of life by adding "life to years" and not just "years to life". This will be achieved by research into biotechnologies, food products, drug evaluation, major diseases (such as cancer and AIDS), the human genome and the brain. In addition, provision has been made for research on legal, ethical and social aspects of life sciences and technologies. Negotiations, by Member States of the European Union, are under way in the Council of Europe for the finalisation of the text of the framework Bioethical Convention. The conclusion of this Convention by the Committee of Ministers of the Council of Europe is foreseen for 1995. A proposal for the participation by the European Community in this convention as a contracting party is likely to be submitted to the Council in due course.

The three programmes on ***energy*** will be implemented with the aim of: increasing the efficiency of energy use (fuel cells, batteries etc.); improving present technologies (nuclear safety, reduction of CO_2-emissions etc.); promoting the development of future energy sources (renewable energy, fusion, etc.) and encouraging socio-economic factors to be taken into account. Demonstration projects on efficient energy technologies will be continued. In the field of nuclear fusion the main focus of the activities will be the engineering design of ITER; an Interim Report will be issued in 1995. Supporting plasma physics and plasma engineering R&D will be pursued on JET (Joint European Torus) and on the specialized devices in the Associations. The activities on fusion technology, safety and social acceptability of fusion power will be expanded.

The new ***transport*** programme will contribute to the definition of a genuine European transport policy which will be implemented through the development of high-performance trans-European networks. The research will cover all forms of transport (rail, air, urban, road, maritime and river) with a view to making them efficient, compatible, coordinated, cost- effective and environmentally acceptable.

For the first time, a programme in the field of ***targeted socio-economic research*** will be implemented. It covers the evaluation of science and technology policy options, research on education and training, and research into social integration and exclusion in Europe. The European Technology Assessment Network (ETAN) is an important component of this programme.

INTERNATIONAL COOPERATION

Activities in 1994

During the past year, international scientific cooperation has become an even more significant aspect of the European Union's research activities. This is illustrated both by the opening up to international cooperation of most of the specific programmes of the Fourth Framework programme and by the adoption of a specific programme (the "Second Activity") providing a coherent frame for international cooperation. In addition, concrete initiatives were undertaken to establish relations or expand existing cooperative arrangements with a number of countries, and to reinforce links with the European organizations specialized in scientific cooperation.

Several factors lay behind these initiatives, such as:

— the Union's responsibilities towards the part of Europe which was separated from the West for 50 years
— the wish to help the regions on the Union's Eastern and Mediterranean flanks and developing countries profit from science in solving the serious problems facing them
— the technology "boost" induced by the Union's participation in joint ventures of mutual interest with the major technological powers
— the need for improved coordination and rationalization of the activities undertaken within the various European cooperation frameworks.

Countries of Central and Eastern Europe and New Independent States

The European Union has undertaken a number of initiatives in order to strengthen scientific and technical cooperation with these countries, based on the criterion of mutual interest. The aim is to promote research and technological development in these countries as an essential factor in their social and economic development and in the consolidation of their democratic outlook.

A particular effort was made under the **PECO initiative** to facilitate the **participation of scientists from Central and Eastern European countries and from the NIS in five specific programmes of the Third Framework Programme:** environment, biomedicine and health, non-nuclear energies, nuclear fission safety and human capital and mobility. Within a budget of ECU 29.5 million, 238 priority projects were selected together with 160 projets on a reserve list. Continuing the activities undertaken in 1992 and 1993, the **COPERNICUS 1994** scheme was launched with a budget of ECU 67 million. 220 joint research projects and networks were selected with more than one thousand partners. Special emphasis was given to strengthening the relations between universities, research institutions and industry from Eastern and Western Europe.

The International Association for the Promotion of Cooperation with Scientists from the New Independent States of the Former Soviet Union (INTAS) was set up in June 1993. Present members are the European Community, its fifteen Member States, Norway and Switzerland. 459 projects with a budget of ECU 21 million were selected. The pilot phase of INTAS was prolonged till the end of 1995. Furthermore, in 1994 the Community continued its support for the **International Science and Technology Centre (ISTC)** created in November 1992 by the European Union, the United States, Japan and Russia in order to encourage military scientists and engineers from the former Soviet Union to retrain for civilian occupations and speed up the disarmament process. The first round of projects supported more than 8200 scientists and engineers.

Industrialized Countries and International Programmes

Scientific and technical cooperation with industrialized countries contributes to a concerted development of science and technology on a worldwide level and facilitates the access of European scientists and engineers to the RTD results of the World's technological "heavy-weights".

In the area of **bilateral relations**, the Council authorized the Commission to negotiate an agreement with ***Switzerland,*** allowing for its participation in the entire Framework Programme (1994-1998), and an agreement with ***Israel,*** which will enable it to participate in all the non-nuclear programmes of the Fourth Framework Programme. An agreement was signed with ***Australia*** and entered into force on 25 July 1994, and negotiations concluded on a similar agreement with ***Canada.*** These two agreements will allow reciprocal participation in certain research programmes, on a project-by-project basis. In addition, the ***United States of America*** and ***South Africa*** approached the Commission with requests for framework agreements on cooperation in science and technology. Enhanced cooperation with ***Japan*** was reflected by the setting up in 1994 of the Euro-Japanese Science and Technology Forum, by two joint seminars in the field of energy and environment, and by an increased number of fellowships allowing European scientists and engineers to study in Japan.

In the context of the ***European Economic Area,*** Austria, Finland, Iceland, Norway and Sweden were fully associated with the specific programmes of the Third Framework Programme, and, during 1994, an extension of the EEA Agreement to cover also the Fourth Framework Programme was agreed.

Multilateral cooperation arrangements have also undergone significant developments. The ***HFSP*** **(Human Frontier Science Programme)** has been continued, and progress was achieved in the pilot phase of the ***IMS*** **(Intelligent Manufacturing Systems)** initiative. The Community has also become an essential partner in both the ***Megascience Forum*** of the OECD and in the ***Carnegie Group*** involving the G7 countries and Russia.

Mediterranean and developing countries

In addition to ***the specific programme on Life sciences and technologies in developing countries*** under the Third Framework Programme, two schemes of a geographical nature outside the Framework Programme, ***AVICENNE*** (concerning the Mediterranean countries), and ***ISC*** (International Scientific Cooperation — related to the Asia, Latin America and Mediterranean countries) have been carried out. These three schemes accounted in all for the launch of around 400 research projects and bursaries in 1994.

A seminar on "Europe of Research and the Mediterranean" on 21 and 22 March 1995 in Sophia-Antipolis was organised at the initiative of the French Ministry of Higher Education and Research in liaison with the Commission.

Major initiatives in 1995:

In the Fourth Framework Programme, a single programme (the second activity) will be the vehicle for cooperation on RTD with third countries and with international organizations. This programme will in the future include activities previously conducted under headings such as those mentioned above: PECO, COPERNICUS, ISC, and AVICENNE, and also under the former programme for cooperation with developing countries. In this way, the Community's contribution will be more apparent to its partners outside the European Union.

The multitude and the diversity of the above activities emphasizes the growing need for a coherent overall strategy for scientific and technical cooperation with third countries and with international organizations, which takes properly into account the opportunities, the responsibilities and the interests of the Community. The Commission will stimulate discussion through communications on an overall strategy and on the perspectives of cooperation in science and technology with the New Independent States (NIS), including through proposals for continuing activities presently covered by INTAS once its pilot phase has concluded at the end of 1995.

More specifically, it is foreseen that agreements associating Israel and Switzerland with the Fourth Framework Programme will be concluded. The scientific and technical cooperation agreement with Canada was signed in June 1995. In addition, a memorandum of understanding with Canada in the area of nuclear fusion is expected to be signed. A negotiating mandate for a continuation of the IMS initiative was agreed by the Council of Ministers (Research) on 10 March 1995.

DISSEMINATION AND OPTIMIZATION OF RESULTS

Activities in 1994

The White Paper stressed the need for improved translation of RTD results into marketable innovations. This challenge has been acknowledged by the Community for some years and indeed in 1990 a programme was adopted alongside the Third Framework Programme, specifically

dedicated to the dissemination and exploitation of results. It had a budget corresponding to 1 % of the amount of the whole Framework Programme and has contributed considerably to making industry, and in particular SMEs, aware of Community research programmes and results which might meet their technological needs.

The activities of the centralized action (VALUE-programme) include the establishment of an infrastructure for dissemination and exploitation of results, notably the Community RTD information Service, CORDIS, a network of pilot Value Relay centres in every Member State, and support for exploitation projects related to Community RTD projects.

Furthermore, an initiative outside the Framework Programme, **SPRINT**, has promoted technology transfer and absorption of new technologies — whether or not the fruit of Community RTD — by industry, with particular attention to SMEs. SPRINT activities included networks of technology brokers, dissemination of innovation management methods, a science park consulting scheme, and a "European Innovation Observatory".

Experience with these programmes, and also for example with the programme on industrial and materials technologies (BRITE- EURAM), has shown that the exploitation of results is most successful if there is a clear statement of company strategy and proposed exploitation routes agreed amongst the partners from the outset. This is the reason why, in the Brite-Euram programme, projects started in 1994 were subject to rigorous selection procedures where such forward planning was specifically taken into account and will be subject also to strict management and progress control.

The following examples, drawn both from the different programmes and from the centralized action, illustrate the variety of measures used to enhance exploitation and show the attention given to it:

— development of **European or international standards** (for example almost 500 in the programme for communications technologies)

— establishment of **patents** (around 50 in each of the biotechnology, the agricultural and the communications technologies programmes)

— conclusion of **technology transfer licences** (about 350 in the communications technologies programme)

— **mid-term review seminars arranged for consortia** to prepare the conclusion and the exploitation phase of projects

— the production of **easy-to-read "success stories"** for wide dissemination

— **circulation of information on the main characteristics of results and potential applications through VALUE Relay Centres**

— dissemination through the **CORDIS database** or through project catalogues of all results obtained through the programmes

— onward transfer of projects requiring **exploitation assistance** via the VALUE programme.

— organisation of **scientific meetings** (conferences, symposia, seminars and workshops) and publication of their proceedings or other scientific reports.

— promotion of **mobility of researchers** (transfer of know- how and experience often being the most effective way of transferring technology)

— **sales of certified reference materials** (measurements and testing programme)

— creation of **data banks of biological materials**, such as malaria antigens and genomes (programmes for biosciences and technologies in developing countries and for biomedicine and health)

— **exhibitions** (Fusion)

Major initiatives in 1995:

A Green Paper on the promotion of innovation policies in the European Union will be presented with the aim both of stimulating the transfer of RTD results into innovations of commercial interest to industry and examining other factors (both obstacles and incentives) which affect successful innovation.

The role of ***SMEs*** is important for economic growth and competitiveness bearing in mind their potential in terms of flexibility and capacity to adapt rapidly to the changing market situation. The specific measures to promote SME participation which have been introduced in practically all programmes should help to exploit this potential. Nevertheless, SMEs may play an even more important role as ***users*** of results from Community RTD projects.

The effort in the field of dissemination and optimization of results will be further rationalised and emphasized under the Fourth Framework Programme, notably by the implementation of a specific programme for the dissemination and optimization of the results of activities in the field of RTD, including demonstration, covering i.a. activities formerly developed under VALUE and SPRINT, and by the coordination of activities of this programme with those of the specific programmes in this field. The new programme for dissemination and optimization of RTD results will implement in a horizontal way one of the four main lines of the Fourth Framework Programme (the "Third Activity") by integrating in a coherent manner initiatives formerly carried out at various levels in this field.

Its main tools of action are:

— the improved CORDIS integrated information system on RTD results, accessible on-line and off-line;
— the technology validation and technology transfer projects;
— an enlarged network of redefined relay centres for dissemination of RTD results;
— the innovation observatory and other schemes for assisting in the promotion of innovation in areas such as science parks, quality assessment design, etc.

The programme will help the regions of the Community least favoured by the RTD programmes and will contribute to economic and social cohesion. It is closely linked to various initiatives in these domains and takes account of the Communication from the Commission on cohesion and RTD policy (COM (93)203 final). The major initiative is the call for proposals launched jointly by different Commission Services, that is to be published in mid September 1995, for the selection of a number of pilot regions in which to carry out Regional Technology Plans and Technology Transfer projects. A second example of a new measure in this area is the technical and management assistance, particularly in the less-favoured regions of the Community which is foreseen for public and private financial intermediaries in Member States. The aim is to offer SMEs the opportunity of obtaining participative co- funding, with particular reference to facilitating the evaluation of technological projects to be submitted by SMEs and allowing optimum exploitation of the research results.

The implementation arrangements of the rules for dissemination set out by the Council for the Fourth Framework Programme are to be adopted by the Commission.

The Commission has established an **interservice coordination group for dissemination and exploitation** composed of representatives from all the RTD programmes. Its main purpose is interprogramme coordination and the drawing up of a Common Action Plan in this field.

TRAINING AND MOBILITY OF RESEARCHERS

Activities in 1994

The rationale behind the Community's activities in the field of training and mobility of researchers is to increase and develop the human resources devoted to scientific research. Although Europe possesses a human capital in the field of research which ranks high in the world, its utilization is often hampered by the lack of effective transnational cooperation and mobility. Indeed, in the past, European researchers often formed stronger links with laboratories across the Atlantic rather than with those in a neighbouring country. For these reasons, raising the quality of advanced training and increasing the number of researchers in Europe has been a clear policy aim of the Community's RTD framework programmes. In 1994 alone, around 1500 new bursaries and networks contracts were signed under the Community programme.

The Commission's White Paper on Competitiveness, Growth and Employment underlines the need to invest in the European Union's human capital, at all levels. It states that the qualifications of researchers, their ability to meet the needs of developing industries and the extent to which the capital they represent is utilized, are essential factors in renewing growth, strengthening competitiveness and boosting employment in the Community. In particular, bold policy initiatives in the areas of training and scientific research are called for.

The central features of the Human Capital and Mobility (HCM) Programme under the Third Framework Programme have been to support the human infrastructure of research at the European level — networking, access to large-scale facilities (that is, scientific installations which are rare or unique in Europe and needed to perform excellent research), training of young researchers (doctoral or post-doctoral fellowships), and high-level scientific meetings ("Euroconferences").

Projects could be proposed in all fields of the exact, natural and economic sciences. In the areas of social and human sciences, the programme covered activities likely to improve European competitiveness and bring about sustainable economic development. The research is non-targeted in that it is selected by the researchers themselves to pursue their own lines of enquiry. Given the nature of a free-research programme, the Commission's experience has been that proposals have tended to come in the basic sciences, with a correspondingly low participation rate from industry. However, in those disciplines which are of more obvious relevance to industry, such as engineering, the participation rate from companies has been significantly higher. Concerning basic research, it should be underlined that over the long-term, advances in research often feed through to commercial application, and in the meantime provide a focus for the continual development of high-level researchers, on which the prosperity of western Europe ultimately depends.

Major initiatives 1995

The links between the two Community policies which are related to immaterial investment, research and education and training, will be strengthened in the context of the Fourth RTD Framework Programme:

— The new programme "Targeted socio-economic research" (within the First Activity of Fourth Framework Programme) includes work in the field of research on education.

— The support for the advanced training of researchers is a permanent feature throughout the Community's RTD programmes, and a specific programme ("Training and Mobility of Researchers", which constitutes the Fourth Activity of the Framework Programme) is devoted to the stimulation of training and mobility of researchers within Europe. This programme is a continuation of the HCM programme; however, a number of significant developments, which are summarized below, have been initiated.

A more flexible 'research training grant' scheme, common to all research programmes offering research training grants, will be established. For 1995, an interim scheme will be set up taking into account the legal, financial and social conditions of the host countries.

The network activity will show a substantial increase, in terms of funding level per partner, as compared with the previous programme. In this way the Commission is seeking to support real advanced training, and not only researcher mobility.

Considerable efforts are being made to stimulate greater industrial involvement in the programme through the more systematic and targeted dissemination of information about the programme to industry and through an increased participation of assessors and reviewers from industrial laboratories at the time of evaluating proposals.

In parallell, cohesion aspects associated to the diffrent activities of the programme have been improved as compared with the previous HCM programme. Those aspects are also under study by an "ad hoc" working group.

Last but not least, serious consideration should be given to the fact that participation in a research project funded by the European Union is in itself valuable training and experience in how to collaborate in and extract the maximum benefit from transnational research activities.

JOINT RESEARCH CENTRE

Activities in 1994

The Joint Research Centre (JRC) plays a unique and valuable role in the European Union's research policy. As a repository of specialised skills, it represents a uniquely independent source of objective and neutral knowledge in particular fields, especially those linked to the implementation of the Union's major policies. The negotiation of the Fourth Framework Programme was the occasion for a further in-depth review of the situation of the JRC and its role within the framework of Community research, to which the Council, Parliament and Commission made very active contributions. The ***institutional role of the JRC*** *and its contribution not only to research policy but also to other Community policies were emphasized. But the Fourth Framework Programme also introduced a major innovation; it opens up the JRC to a greater extent to the outside world, encouraging it to pursue its* ***activities on a competitive basis*** *in the same way as the other public and private research bodies existing in Europe. In this manner, the JRC will be able to participate, through networks or consortia, in the implementation of the specific programmes by replying to Calls for Proposals.*

In 1994, major developments also took place in areas which fall within the remit of the JRC:

— preparations were made, jointly with ESA and the national space agencies, to set up an **Earth observation data centre**,

— the **European Centre for the validation of alternative methods** aimed at reducing or eliminating laboratory experimentation on animals was inaugurated at the JRC Institute in Ispra

— technological advances were achieved in such varied fields as the development of **new materials intended for clean energy technologies** and the campaign to **eliminate fraud** in the implementation of the **Common Agricultural Policy**,

— in the nuclear field, the JRC made a very notable contribution to the campaign to **stamp out illegal trading in radioactive materials**, by putting its expertise at the disposal of the Community and national authorities.

On the administrative side, it was decided that the JRCs **Board of Governors** would have a more prominent role. An **advisory Scientific and Industrial Group** was also set up to provide the Director General of the JRC and the Board of Governors with recommendations on the JRC's scientific and technical activities.

Major initiatives in 1995

The **JRC** is actively tightening its links with the fabric of European research. For example, the **Seville Institute for Prospective Technological Studies** will participate in the ETAN network for technology assessment to be established in the context of the targeted socio-economic research programme. The work accomplished by the Institute's European Science and Technology Observatory will help supply the responsible politicians and Europe's industrialists with the information they need on scientific developments and technological innovations.

Some 30 work schedules define the single projects and make up the JRC Work programme for 1995, as approved by the JRC Board of Governors. Amongst the new features in these programmes are the emphasis on environmental technologies throughout the programmes on environment and climate, industrial technologies and materials technologies and non- nuclear energy as well as the new strategic studies under socio-economic research.

In 1995, activities intended for **scientific and technical support to Community Policies** will for the first time be conducted in the framework of a **competitive approach**. The implementation of this research will be assigned to research bodies, including universities, undertakings and the JRC.

MANAGEMENT

Activities in 1994

Evaluation and impact studies

The evaluation of programmes is essential both to assess the cost-efficiency of the implementation of programmes and to prepare for new programmes or actions. For this reason, the future strategy for evaluation was one of the major topics during the discussions between the Institutions on the Fourth Framework Programme. In December 1994, Commission services presented a **note to CREST on a method for coherent monitoring and evaluation of the Framework programme and of the specific programmes**. The approach complies with the rather complex obligations as regards evaluation and permanent monitoring set out in the decisions on the Fourth Framework Programme and the corresponding specific programmes, while avoiding bureaucracy and evaluation for its own sake. CREST set up an ad hoc group with the mandate to provide it with advice on this subject.

Complementary to the evaluation of programmes are the so- called national impact studies. These are carried out with two aims: to assess the effects of Community RTD policy on the national research landscape in each Member State, and to examine the interactions between Community and

national policies. The main findings resulting from the studies conducted in each of the Member States, on the basis of interviews and questionnaires, is currently being summarized in a synthesis report. Some of the salient points are given below.

Most respondents regarded their EU projects as being in their core technology area, thus forming an integral part of their RTD portfolios. There was some evidence that SMEs were more likely to be involved in a core area, probably because they have less scope for diversification in their RTD activities. **As a percentage of the total RTD budget of participating RTD units**, Community funding varies greatly depending on the country (and on the size of participating firms). Nevertheless, it is generally significant for all types of organization and is widely perceived to be increasing. Most of the participants surveyed indicated that it would have been **impossible to launch the research projects without Community funding and/ or there would have been considerable time-delays**. In many cases the opportunity of applying for Community support provided the catalyst for consortia to form, whether or not they were successful in obtaining Community funding. The findings further suggest that **transnational collaboration** is mostly built upon and expands on existing networks of scientific cooperation with fragments of previous groupings also combining to form new teams.

Part Four, Annex V, provides a list of programme evaluations and impact studies from 1994.

Management: Simplification and harmonization

With the objective of bringing greater **visibility, transparency and efficiency** to all stages of the implementation process, a new approach has been introduced into the management of Community RTD programmes. A number of initiatives have been adopted to simplify and harmonize management procedures, including

— **publication of calls for proposals on four fixed dates a year** (15 March, 15 June, 15 September and 15 December)

— regular **rotation of the experts** employed by the Commission for project evaluation. The experts are now replaced after three evaluation sessions, or after three years

— publication of a "**management manual**", a valuable tool for researchers offering an insight into the handling of project proposals and an introduction to contract negotiation.

— establishment of simpler and **more user-friendly application forms**: the administrative section has been harmonized for the majority of programmes, and the scientific/ technical section, although specific to each programme, has now a common structure.

— adoption of a **harmonized model for the programme information packages**.

— **simplification of the contract negotiation forms**: a simplified standard contract form has been the subject of a very extensive consultation of the scientific society and of industry.

— **improvements to the measures specifically designed for SMEs**, based on experience gained under the existing schemes (CRAFT, feasibility awards, VALUE and SPRINT).

— **increased and transparent inter-programme coordination**: joint or synchronized calls for proposals and project evaluations in specific cross-programme areas, guidance to proposers on cross-programme projects, creation of inter- service groups on specific issues (for example, task forces, interservice group on dissemination and exploitation of results).

All these initiatives have left the fundamental principles unchanged. Community support for RTD is based on equality of access to the programmes for all, and equality of opportunity for all

participants. The administrative procedures are designed to guarantee that the projects supported are selected on the basis of their quality and their contribution to the Community policies.

As regards numbers of Commission personnel, it has been kept largely constant despite the steady growth in annual levels of Community RTD funding. At December 31, 1994, the total number of officials, temporary agents or auxiliaries on the research budget (direct and indirect actions) was 3497 persons. The number foreseen for 1995 is 3623 persons.

Major initiatives in 1995:

The simplification and acceleration of procedures for the evaluation, the selection and the funding of RTD projects is of permanent concern to the Commission. It is essential that researchers and industry should not be unduly hampered by delays, which to a certain extent are nonetheless inevitable in the management of large sums of public money. The simplified contract forms, which will be finalized shortly, and the more generalized use of special measures for SMEs are examples of initiatives pointing in that direction.

Regarding **Community RTD programme monitoring and evaluation**, a Communication based on the approach outlined earlier by the Commission and on the comments from CREST in particular, will set out the Commission's intentions. The Commission services will also launch the first monitoring exercise.

PART TWO

RTD ACHIEVEMENTS IN 1994

INFORMATION AND COMMUNICATION TECHNOLOGIES

INFORMATION TECHNOLOGIES (IT)

Objectives

The main objectives of the IT Programme (ESPRIT III) are:

— to strengthen the scientific and technological basis of European IT industry through cooperative R&D activities,
— to encourage European industry to become more competitive at international level while paving the way to standardisation,
— to contribute, interalia, to the strengthening of the economic and social cohesion of the European Union through high quality research.

The programme was formally divided in the following areas:

1: Micro-electronics
2: Information Processing Systems and Software
3: Advanced Business and Home Systems; Peripherals
4: Computer-integrated Manufacturing and Engineering (CIME)
5: Basic Research.

This last area is an upstream activity whose results feed into several of the more industrially oriented (downstream) sectors of the programme.

S/T Progress

The last ESPRIT III call for proposals took place in spring1993. A total of 202 projects were selected for funding from 1277 proposals received. By shortening administrative delays, 24 contracts were signed before the end of 1993 and the remaining 178 contracts by the beginning of 1994.

Taking into account industrial priorities, two activities were emphasised in the course of the work programme implementation of Area 2, namely: High Performance Computing and Networking; the European Software Systems Initiative (ESSI) which aims at disseminating software best practices. In addition, the Open Microprocessor Systems Initiative (OMI), a horizontal activity across various programme areas, aims at providing Europe with capability in micro-processor systems and to promote their use in application systems; it has pioneered the new concept of a "focused cluster" - a set of projects and accompanying measures contributing in a complementary fashion to a well defined industrial objective.

The following examples may illustrate a few of the programme's results and dissemination activities among several hundred significant achievements that the 1995 programme's evaluation will further analyze:

— Seven European semi-conductor companies announced the availability of a common 0.5 μ CMOS production process technology. The technology resulted from a collaborative ESPRIT founded RTD project undertaken in the context of the EUREKA project "Joint European submicron Silicon project" (JESSI). The results can be exploited throughout the Union in the development of highly complex application specific components for systems applications.

— In the software area, ESSI launched 109 actions and provided seed funds for the European Software Institute (ESI), founded by 15 major software players who started the Europe-wide software process training action. ESSI actions have found particularly high acceptance with SMEs where interest is strong for best practice related to new software technologies with the view of improving their industrial competitiveness.

— The successful GOLDRUSH parallel processing system based on ESPRIT results was launched. The METKIT project provides practical material for systematic measurement of software process performances; it has been used to instruct more than 5000 European software professionals and is used in over 60 major organisations in Europe and now also in the USA.

— Shortening design cycles, lowering development costs and improving quality are major goals of parallel computer simulation pursued by some hundred European organisations. 34 codes are being developed from a wide range of application areas including the automotive, aerospace, ship- building, energy supply and chemical industries. The SYNAPSE-1 neural computer won the German Award for best innovation recently brought to market.

— MULTIDOC, a multimedia electronic folder management system developed by SMEs, is now installed in public administrations and the banking sector. The Personal Communication Computer, combining multimedia and video communications, was successfully launched in 1994.

— For OMI, 1994 has been a turning point both in software and hardware. For example, the PIBus, an interconnect bus for on-chip systems, is fundamental as the basic building block that will pave the way towards inter-operability of cells at hardware level; its design tool-kit is now freely distributed.

— In the CIME area, the main results are advanced IT developments for co-design and concurrent engineering integrated systems for industrial communications and automation; moreover, major contributions have been made to various standardisation activities, for example in the area of mechanical design (ISO STEP). A number of test cases were completed under the feasibility phase of the Intelligent Manufacturing Systems initiative (IMS) involving participants not only from Europe but also Japan, the US and other regions. The main phase of IMS is now under discussion.

— In Long Term Research, 95 projects, 45 working groups and 13 networks of excellence were running in 1994. Besides major achievements in basic research, many projects gave rise to technology breakthroughs with a direct industrial impact. For example, the Maintainable Real Time System (MARS) is a time-triggered architecture for distributed fault tolerant systems; it has been acquired by several companies, in particular in the automotive industry.

Among many other accompanying measures, an Information Technology European Awards Scheme, the ITEA, was announced in 1994 under the auspices of Euro-CASE, the European Council of Applied Sciences and Engineering. The prices will be distributed in November 1995. Three Grand Prizes of 200,000 Ecu each and twenty Finalist Prizes of 5,000 Ecu each will be awarded. They are open to any European organisations and will reward novel products with a high IT content and evident market potential. ITEA could in particular be an efficient instrument of promotion for innovative SMEs.

The European IT Conference, EITC '94, took place in June 1994 as the successor to the ESPRIT Conference Week. The conference had technical days which concentrated on trends in the specific research areas and a forum which examined societal and economic issues related to IT. At the same time, the exhibition focused on themes of IT use (workplace, mobility, leisure) in the context of which the results of about 60 ESPRIT projects were embedded. About 1600 people attended the conference and some 3000 people visited the exhibition.

1994 has also been devoted to the preparation of the new IT programme. On the one hand, about 50 thematic Industrial Working Groups were consulted on various programmes' subareas. On the other hand, and because of the new programme's orientations, a special effort had been made to consult users. For this purpose, 6 Industrial Advisory Panels had been set up which convened about 90 experts and as many organisations' representatives in areas such as Capital Goods, consumer Goods, Producer and Consumer services. Furthermore, more than 25 information days were organised during the second part of 1994, not only in Brussels but also in the main cities of the different EU and EFTA countries.

R&D IN ADVANCED COMMUNICATIONS IN EUROPE (RACE)

Objectives

The main objective of the programme is "the introduction of integrated broadband communication, taking into account the evolving integrated services digital networks and national introduction strategies, progressing to Community-wide services by 1995".

S/T progress

A call for proposals for research projects was made in May 1993, leading to the launching of 25 new projects in 1994. The research projects of Phase II of the RACE programme cover eight priority areas:

1. Research and development into integrated broadband communication (IBC):
Work in this area has led to a clear definition of the principal concepts of broadband communication. Optical network models have been developed, as have enhanced components and systems. The work has resulted in a Community and European approach to the specification of broadband network infrastructures.

2. Intelligence in networks and flexible management of means of communication:
An architecture has been produced for defining interconnectable networks and a service system management has been developed. The work has paved the way for common functional specifications for standardization bodies such as ETSI (European Telecommunications Standards Institute) and ITU (International Telecommunication Union).

3. Mobile and personal communication:
The research projects in this area have contributed to the definition of the standards necessary for the third generation of mobile communication (UMTS-Universal Mobile Telecommunication Systems). They have also studied the problems of using microwave frequencies for mobile broadband systems (MBS).

4. Image and data communication:
Project work in this area has led to the development of interconnection technologies for transmitting images by cable, optical fibre, radio and satellite and via ATM (Asynchronous Transfer Mode). It has also contributed to the development of multimedia services and to the preparation of coding-decoding systems and audiovisual standards (MPEG-2 — Moving Picture Expert Group-2).

5. Integrated service technologies:
This area deals with all the needs of a market in advanced, high- performance telecommunications services, taking account of new user requirements in an environment of interoperability and profitability. The projects have therefore worked on the development of interfaces to exploit the new technologies. They have helped develop and test a harmonized architecture for the definition of services and have paved the way for common functional specifications with a view to forthcoming standardization (IN/TMN — Intelligent Network / Telecommunications Management Network).

6. Technologies for information security:
This area covers the quality and reliability of information transmitted or used in advanced communications applications and services. The projects have contributed to the development of technologies for information security and to the preparation of standards for use in open, distributed and heterogeneous advanced communications systems.

7. Experiments in advanced communications:
The aim here is to verify the feasibility of integrated communication systems. The projects looking at user requirements have led to the development of prototype integrated communication systems in several application sectors, including transport, production, manufacture, culture, publishing, construction, commerce and banking. Techno-economic studies have been carried out with a view to the forthcoming use and implementation of integrated systems on the market. Projects have also contributed to the development of network interconnection standards.

8. Interoperability and testing infrastructure:
This horizontal area underpins all the other areas referred to above, its objective being to ensure that the components of a network are consistent with interoperability at all levels. The projects have therefore contributed to tests on the interconnection of broadband network components at test sites, on the interconnection of test sites and on applications across interconnected sites. They have also helped, through testing, to pave the way for standards (UNI — User Network Interface).

Virtually all the main manufacturers and suppliers of telecommunications equipment are taking part in the RACE programme projects, as are the operators in the communications sector. In addition, the EU Member States and the EFTA States are equally well represented in the programme. SME representation stands at 40 %.

Over 60 % of projects include participants from the less favoured regions of the European Union and almost 20 % of participants come from undertakings located in countries eligible for support from the cohesion funds. Through this high level of participation these undertakings are helping to transfer technology and to disseminate results towards their regions.

Many technical and scientific cooperation links have been set up with ETSI, CEN/Cenelec (European Committee for Electro-technical Standardization), EBU (European Broadcasting Union) and other standardization bodies. Links have also been established with ETNO (European Telecommunications Network Operators Group) and Eurescom (European Institute for Research and Strategic Studies in Telecommunications). Scientific collaboration also exists with COST and EUREKA.

Regular inter-project concertation is an essential feature of the RACE programme: all the projects take part in technical meetings held every two months or so. The results are integrated and consolidated by a central project, particularly as regards common functional and practical specifications.

DIGITAL IMAGE TRANSMISSION AND DISPLAY

In June 1993 the Council adopted a resolution on advanced TV systems and asked the Commission to present a communication on digital television with a view to reaching an agreement on the

Community prospects for development and standardization. The European Parliament subsequently approved a budget of ECU 12 million for preparatory work in the field of digital image transmission and display. The objectives were:

— to pave the way for and accelerate European consensus on the technical specifications for the transmission of digitized images and on a joint strategic approach to systems implementation;
— to finalize demonstrations of digitized image transmission systems;
— to assess the economic consequences of a transition to digitized image transmission systems.

A call for proposals was made in 1993. The Commission received 22 proposals, 7 of which were selected as preparatory actions. Another 4 proposals were selected in 1994.

TELEMATIC SYSTEMS OF GENERAL INTEREST

Objectives

The Telematics Systems of General Interest programme seeks to:

— improve the overall performance of large public services throughout the Union by overcoming the technological, social and economic challenges that confront them;
— strengthen the scientific and technological base of European industry, particularly in strategic sectors of applications of advanced technology, with a view to assisting European industry to become more competitive at the international level;
— reinforce the economic and social cohesion of the Union and promote its overall harmonious development;
— contribute to the successful completion of the internal market.

S/T progress

The programme was launched in 1992; the majority of projects finished before the end of 1994. The Telematics Systems of General Interest programme has produced a large number of successful results in the form of specifications for new systems, tools and applications, architectures, hardware and software standards, common procedures, models, and impact or cost-benefit analyses. One example is given below for each area of the programme.

1. Administrations:
The European Water Traffic Information System, under the auspices of the EWTIS project, set up an information network between European ports. The central database supplies details of each vessel and its route and indicates whether the ship is carrying dangerous goods. This information is made rapidly available to the search and rescue organisations in the event of an emergency at sea.

2. Transport:
The SOCRATES and ACCEPT projects have developed traffic information and route guidance systems for drivers that can be used across Europe in their native language, based on cellular radio and broadcasting. Tests using cars equipped with the resultant RDS-TMC receivers (radio data system- traffic message channel) or with a cellular radio system have been carried out in motorway corridors and in cities, and pre- standards have been produced for location referencing and for an enhanced data format for digital road maps.

3. Health care:
A pilot project, DIABCARD, has developed a chipcard-based medical information system designed for the care of patients with chronic diseases. The project has focused on diabetes mellitus, one of the most prevalent chronic diseases, afflicting about 20 million people in the European Union, most

of them elderly. It examined ways of improving the treatment of the disease by enhancing communication between general practitioners, hospitals and the patients themselves at home.

4. Education and Training:
One project has set up a "multimedia teleschool", which allows a tutor to have face-to-face contact with many learners at different locations. The teleschool has held 20 interactive courses on such subjects as foreign language learning, telecommunications, and environmental awareness for more than 1600 executive learners from major companies in 12 countries.

5. Libraries:
New projects and accompanying measures were selected and negotiated in 1994, completing the coverage of the Libraries workprogramme. Significant results are already emerging from projects launched in the previous years, for instance in library networking based on open standards (document delivery and search and retrieval in remote library catalogues); in imaging systems for access to photographic, map and slides collections; in optical character recognition in conjunction with hypertext and other technologies e.g. for the creation of structured machine readable catalogue records. Many projects focus on new innovative library services, for instance: equipping mobile libraries to provide modern electronic library services in rural areas; or access to a sound archive in conjunction with the corresponding bibliographic references. Attention has been paid to copyright and a platform was created to sensitize libraries across the EU to these issues.

6. Linguistic Research and Engineering:
Pilot applications incorporating more advanced language technologies in various fields such as medicine, law, software and aeronautics, have been identified as a highly effective way of transferring technology from research laboratories to industry.

7. Rural Areas:
The RUTOTEL project has developed a multimedia terminal which will make it easier for tourists to plan holidays off the beaten track. People planning a journey could start with a map of a selected region displayed on a computer terminal. They could then zoom in on a more precise area where leisure amenities and areas of scenic beauty could be highlighted. Moving pictures accompanied by sound would show what particular sites really look like. The computer would then provide lists of available accommodation, lists of local guides and other practical information. Ultimately, the customer should be able to book the holiday directly on the computer terminal.

In order to prepare the future activities in Telematics Applications a Call for Preparatory and Accompanying Measures was launched in March 1994 resulting in projects and feasibility studies in telematics engineering (6 projects), language engineering (13 projects), information engineering (22 projects and 7 studies), air traffic management (14 projects), and telematics for urban areas (9 projects). In addition, different Commission Services launched a joint Call for accompanying measures in education and training.

The programme brings together the users and providers of telematic services and products, allowing the users to become more aware of the potential benefits brought by the technology and the providers to become more aware of the needs of the users, be they intermediate- or end-users.

This contact builds confidence on both sides and encourages increased investment and the development of a wider range of new systems and services, thus stimulating job creation. The Telematics Systems of General Interest programme promotes market development, which should result in stronger and steady demand for telematics based services. The use of telematics helps European industry to produce better products at lower costs, hence increasing industrial competitiveness. Training of employees becomes cheaper, easier and more effective. Health care, education, transport, libraries and other public services are encouraged to switch resources from overheads to services to the public, ensuring a better quality of life for Europe's citizens.

The Telematics Systems of General Interest programme had an excellent record in terms of SME participation, with SMEs representing some 50 % of the companies involved (though this is an average figure spanning a wide range — 29 to 63 % — depending on the sector).

In May 1994, the Commission submitted to the European Parliament and the Council a report on the mid-term review of the Telematics Systems of General Interest programme, its implementation and its results. The review found that the programme was succeeding in developing practical applications for the new technologies, and was clearly driven by users, involving people likely to operate, benefit from and ultimately buy the telematic applications being developed.

The review board — an independent team of industrialists and academics — recommended that the Commission integrate the different areas of the programme to give a wider perspective to the research and allow the development of a long-term strategic plan, stressing that the programme should be seen as a long-term venture. The board welcomed the Commission's plan to bring the seven research areas together under a common management. It also praised the regular meetings held between project representatives to exchange information, noting that this had demonstrably helped build cohesion between users and suppliers. Finally it noted that the lack of a common, cheap, readily available infrastructure was holding back the take-up of the results of telematics projects. It said that concerted public investment is the only realistic way to build up this infrastructure, and that the programme was central to this task.

TIDE (Telematics for the Integration of Disabled and Elderly people)

Information and communication technologies can make a strong contribution to improving the quality of life of disabled and elderly people. These technologies can facilitate their social and economic integration in the community and enable them to live as independently as possible. The approach is to take existing technology and match it to the capabilities of disabled and elderly users. This covers a wide range of devices and services, from Braille screens to enable blind people to access the new graphical interfaces to today's computers, through robot arms for wheelchairs, to adapted interfaces to smart house technology. Stimulating coherence in this market through technical standards, new relationships between sector actors etc. so as to improve the competitiveness of European industry and the quality of life for these citizens, are the major results to be obtained from this Community initiative.

A pilot phase (1992-1994) with 18 MECU funded 21 projects and a study. A second phase called the Bridge Phase (1993-1997) with 42 MECU is funding 55 projects and horizontal actions. In the Fourth Framework Programme the TIDE activities will be followed up as a sub- programme of the Telematics Applications programme.

The Pilot Phase has recently been evaluated in 1994 by a technical committee including disabled users and senior researchers who were supervised by a high level review board. The overall result of this evaluation is very positive. The review board characterised the TIDE Pilot Phase as:

— Remarkably successful in mobilising the sector - enabling large companies, SMEs and users to work together
— Investment in TIDE has been extremely worthwhile, especially considering the short time frame and modest resources
— TIDE focuses on users and has demonstrated the benefits delivered to them.

The recommendations of the Review Board following the evaluation highlight some major emphases for the follow on of TIDE Bridge and Telematics Phases. These are that:

— Users must continue to be involved. They must be involved at all the stages of the project
— Manufacturers right across Europe should include the requirements of disabled and elderly people at the design stage of their products ("design for all").

MULTIMEDIA PUBLICATIONS

In order to prepare the ground for activities in the new area of Information Engineering in the Telematics Applications programme under the Fourth Framework Programme, a budget of 4 MECU was made available for exploratory actions in multimedia publishing. A call for proposals for exploratory actions in multimedia publishing, published on 15th March 1994 (ref. O.J. C78/51), led to the submission of 412 proposals.

22 projects were selected for funding within five areas, namely electronic newspapers and magazines, multimedia catalogues, multimedia asset trading (including advertising), STM publishing and technical services/documentation. Partners in the successful consortia include major European publishers, research organisations, specialist SME's and user groups.

Results due in mid-1995 will provide focus to RTD activities in the Information Engineering sector of the Telematics Applications Programme (1994-1998).

To prepare the Information Engineering contribution to the Telematics Applications workprogramme, more than 600 experts representing academia, industry and user groups, cooperated with the Commission's services in an intensive consultation phase.

INDUSTRIAL TECHNOLOGIES

INDUSTRIAL & MATERIALS TECHNOLOGIES ("BRITE-EURAM II")

Objectives

The basis of the programme on Industrial and Materials Technologies continues to be the revitalization of the European manufacturing industry by reinforcing its scientific and technological base through research and development work. Its main objectives are:

— to increase the competitiveness of European industry in the face of strong international challenges, particularly in strategic sectors of advanced technology;
— to strengthen European economic and social cohesion consistent with the pursuit of scientific and technical excellence.

A number of other strategic aims complement the overall objectives of the programme:

— to increase implementation of advanced technologies by small and medium sized enterprises (SMEs);
— to increase involvement of manufacturing SMEs in European RTD thereby developing links with other enterprises and to better manage their resources;
— to encourage and diversify the training of research workers and engineers for modern European industry;
— to give full consideration to the social, human and environmental impact of new technologies;
— to concentrate the effort necessary for the appropriate dissemination and exploitation of results.

The programme is formally sub-divided into the following three areas:

1.1. Raw materials and recycling
1.2. Materials
2. Design and manufacturing
3. Aeronautics research

S/T Progress

The means to achieving the objectives of the programme included the promotion of multisectoral and multidisciplinary collaboration in basic technical research and the implementation of new technologies by end users. The acquisition of scientific and technical knowledge both at a fundamental level and at a level necessary for establishing standards and codes of good practice remain important. All these elements facilitate the effective transfer of technologies.

During 1994 the main activity was the initiation of the remaining research contracts selected under the second call for proposals for Brite-EuRam II (deadline February 26, 1993). 654 new research contracts were the subject of financial commitments, of which 568 (accompanying measures excluded) were signed and started, corresponding to 158 collaborative research contracts, involving industry- research centre-university partnerships, 267 cooperative research contracts (CRAFT), 42 training grants, 77 feasibility/expansion awards and 24 targeted research actions;

142 collaborative projects finished during the year. These will be evaluated in April 1995. The results of the evaluation of projects completed in 1993 have shown the continuous trend of successful achievements of Brite-EuRam projects: 75 % achieved their objectives and, on average, 1 ECU invested in research generates 6 ECU of potential economic impact within the 5 years following the completion of the project. This is the first time direct financial evidence of the benefits of Commission sponsored RTD has been demonstrated from within a single programme.

During 1994, as in each year, the programme arranged for the evaluation of finished projects with the assistance of independent consultants. It included interviews and analyses of indicators such as management, collaboration, research performance, economic benefits, SME involvement, environment and societal impacts and exploitation strategy. In general, the following data were obtained:

— 48 % of the results obtained would lead to at least 5 applications; 58 % of the results could be applied to at least 3 different industrial sectors;
— 38 % of the projects analyzed were expected to lead to financial gains of at least 5 MECU within the next 5 years;
— 74 % of the results were estimated to be likely to be "on market" within 3 years;
— 67 % of the SMEs participating stated that they had achieved a significant boost to their capacity to innovate and had improved their competitiveness.

From a qualitative viewpoint, the growing experience within Brite- EuRam shows that the exploitation of results becomes really effective if there is a clear statement of company strategy and proposed exploitation routes amongst the partners from the start. For this reason, the projects which began in 1994, as a result of the second call for proposals, were subject to rigorous selection procedures and will be subject also to strict management and progress control. During 1994, the stringency of mid- term and final assessments on projects was brought into line with the indicators employed in the annual evaluation report and analysis referred to above.

The programme was characterized by a range of "success stories".

The textile industry uses enormous amounts of water and energy: it takes around one kilogram of water and assorted chemicals to process every kilogram of textile. Treating the resulting waste water is difficult and expensive, and so, despite recent environmental concerns, most of it is still dumped into Europe's rivers and seas. In today's difficult economic climate, an environmental friendlier

solution must also pay for itself economically if it is to be enthusiastically taken up by industry. Just such a solution has resulted from a BRITE-EURAM project, involving 5 partners. The secret of the new system is a special polymer. Designed to be semi-permeable and resistant to heat, acidity and the chemical attacks of the waste water, the polymer is produced in large sheets. These are rolled into long cylinders and the waste water passed through them. The salts and other impurities are removed through reverse osmose. In addition to drastically reducing the quantity of chemicals dumped in Europoe's waterways, the system allows 90 % of the water to be recycled. This means it pays for itself in two years, and as a result has already been adopted by some textile factories. In addition, it is equally applicable to other industries, multiplying both environmental and economic benefits throughout Europe.

Another project of an industrial nature shows the capacity of Europe to resist successfully to the international technological competition, in particular Japan and America, in the field of integrated components liabilities. The constant miniaturization of the components in the electronic industry requires the development of new technologies for the integration of the liability components: a multi-layer ceramic technology was optimized to obtain a miniaturized monolithe, multipurpose component; its applications are multiple in the field of filters for the motor industry, the electric household appliances, etc.

Mechanics, one of the strong points in Europe, is also one of the important fields of the programme. A project brings a solution to the problem of the ball bearings and smooth bearings in the precision engineering, being subjected to important constraints and to a high temperature. Within the framework of cooperation between various institutes and companies, a thermoplastic slip system was developed, as well as the lubrication system for two applications in micromechanics.

Various conferences and workshops were held throughout the year with partial support from the Programme, which culminated in the "Fifth EC Conference on RTD on Industrial Technologies" held in Brussels over December 8-12, 1994. This event was attended by 1500 people and was an excellent opportunity to review the achievements of Brite-EuRam II and to present the next programme on "Industrial and Materials Technologies 1994-98" - Brite-EuRam III.

MEASUREMENTS & TESTING

Objectives

The aim of the programme is to improve measurements, testing techniques and chemical analyses where they are not sufficiently accurate to enable laboratories to agree on their results, to satisfy the new challenges facing industry or for the purposes of monitoring the environment, food quality or health. The programme is sub-divided into four areas, namely:

1. *Support to regulations and directives*
2. *Sectorial testing problems*
3. *Common means of calibration for the Community*
4. *The development of new measurement methods.*

S/T Progress

During 1994, as well as funding the remaining projects from a call for proposals on area four, the programme concentrated its efforts on areas two and three. Particular emphasis was placed upon research in support of the development of written standards required for the operation of the Internal Market and of certified reference materials necessary for the use of such written standards.

By the development and improvement of analytical and test methods, reference materials and transfer standards, the programme has contributed significantly to a number of Community policies.

Notable activities in support of the ***Common Agricultural policy*** seek to improve the detection of growth hormones and veterinary drugs in farm animals, to characterize animal feedstuffs chemically, biologically and medicinally and to detect fraud resulting from the adulteration of agricultural products (e.g. butter, olive oil, durum wheat pasta) by lower grade ingredients. ***Consumer protection*** will also be enhanced by the development of better methods to detect food contamination by potential packaging materials and for the more accurate labelling of products for vitamins and dietary fibre in foods.

In the environmental field, the programme has continued to act as a source of high grade reference materials and coordination necessary to ensure accurate and comparable results in the monitoring of chemical pollution. The quality assurance scheme, originally developed for the monitoring of the North Sea, is being extended to the Mediterranean. It now involves more than 200 laboratories and has promoted mutually beneficial cooperation with countries outside the European Union. A similar scheme for the monitoring of microbiological activity in the seas surrounding the Union is under development. Of relevance to both industry and health and safety are the improvements in the detection and determination of hazardous substances.

In the biomedical field, as well supporting the development of a number of novel real time biosensors for use in both clinical and industrial applications, the programme has assisted in the development, coordination and harmonization of European External Quality Assurance Schemes (EQAS) in the fields of clinical chemistry and microbiology.

The specific call for proposals on ***novel instrumentation*** gave industry, and in particular the SME's which dominate the field, the chance to both solve measurement problems and develop the basis of future products. Applications ranged from the on-line monitoring of robots, industrial discharges and the quality of food to miniaturized systems for patient monitoring during surgical interventions.

By supporting improvement of the scientific and technical basis of more than 30 ***European Standards*** being developed by CEN, CENELEC and ETSI, many of which are covered by Commission mandates, the programme also contributed significantly to the operation of the ***Internal Market***. Of particular interest to industry are the projects on the testing of materials (metals, ceramics, coatings etc) and construction and other products. A European wide project to develop improved methods for determining the resistance and reaction to fire of upholstered furniture not only lays the basis for future standards and possible legislation, but also provided training for Member states who have yet to develop their test facilities in this field.

The sales of BCR (Bureau Communautaire de Référence) ***certified reference materials*** continued to grow and to be an effective way of disseminating results and promoting improved quality control of measurements within the Union.

In addition, the organisation of more than 30 workshops and training courses centred around the results of clusters of projects enabled those not directly involved to benefit, as well as allowing the identification of future needs, particularly those of industry.

ENVIRONMENT

ENVIRONMENT

Objectives

The programme directs research activities towards an understanding of the fundamental mechanisms of the environment and towards devising and implementing integrated prevention strategies in all areas of human activity. It provides a response to the scientific challenges which arise from global change and continuity in scientific support for the environmental policy of the Union.

In addition, the programme supports multidisciplinary research to study all the elements which make up the biosphere and follow its historical development. Such research tends to examine both the relationship between man and his natural environment and his relationship with his economic, social and cultural environment etc., since these form an indivisible whole.

S/T Progress

1. Global Change and Natural Environment

1.1. Research on Climate:
A substantial contribution was provided through many research projects to areas such as

(a) the reconstruction and modelling of the evolution of the climate system in the past, in particular during the quaternary period, in order to understand better how the climate may evolve under the influence of human factors,
(b) the understanding, the description and the forecasting of climatic change resulting from the enhanced greenhouse effect due to human activities, in order to provide the scientific basis for preventive and adaptative measures.

Community action also covered climate change impacts on natural resources, forest agriculture and ground water, on land degradation and desertification in the Mediterranean area and on forest fires. Scientific information generated within these projects is necessary for the progressive setting up of sustainable management strategies, and protection measures.

Example of this can be found in the frame of the MEDALUS project (aiming at investigating the desertification processes in Mediterranean areas): a CD-ROM was produced which contains information about the extensive field programme, the complete set of field and weather data and the MEDALUS model which forecasts hillslope vegetation, hydrology and soil changes.

1.2. Research on atmosphere:
The preliminary analysis of the measurements made at the occasion of the Second European Stratospheric Arctic and Middle Latitude Experiment (SESAME) launched in 1994 to study the stratospheric chemistry and the ozone depletion indicated that the total ozone over European middle latitude has been a few percent below the long term average. This ozone decline is broadly consistent with the long term trends in total ozone that have been observed over the last 10 years. A correlation between ozone concentration in the stratosphere and the UVB radiation has also been shown.

SESAME is a European contribution to the on-going World Meteorological Organisation/United Nations Environment Programme assessment of the ozone layer, required by the Montreal Protocol on substances that deplete the ozone layer. SESAME is supported by the EU and many national funding agencies (55 research groups from 21 countries are involved), and is a good example of the significant results that can be achieved through coordinated national and EC RTD activities.

1.3. Research on Ecosystems:
Research on the natural environment has also generated scientific information usable to implement or refine EU and Member States environmental policy and management. Successful examples of such a contribution are

(a) the development of a new functional approach to wetland assessment intended to improve the EU policy on wetland habitat protection
(b) the understanding of the complex pollution process in the Western Mediterranean sea and the related coastal areas

(c) the development of an hydrodynamical — ecological model of the reaction of high mountains lakes to pollution, as a scientific contribution to the Alpine Convention.

2. Technologies and engineering for the environment:
Innovation products in the field of environmental technologies were presented to new users and technology transfer between companies in different regions of Europe was promoted at the occasion of the European Innovation Convention (Stuttgart, 11 and 12 of October 1994).

In the field of waste recycling, a workshop was organised to explore requirements for further research investigations that could alleviate environmental pollution, addressing a wide range of waste producing sectors. In the perspective of the EU Environmental policy, needs for technical assistance in characterising and quantifying hazardous wastes and needs in identifying barriers to recycling and measures to reduce disposal problems have been identified.

Progress achieved in the area of environmental technology by RTD projects funded under the environment programme have been reviewed in a number of sectoral oriented workshops: pulp and paper industry, metal finishing processes, bleaching of textiles, sugar crystallisation, substitute for halons, brick-making, cement industry. Similar reviews have also been organised for plastics recycling, biological and chemical and physical wastewater treatment, integrated wastewater treatment and emission abatement (including photocatalysis).

New techniques for environmental monitoring have been developed in particular in the field of biosensors techniques.

3. Research on economic and social aspects of environmental issues:
Under this research area several projects have provided substantial support to other community policies, providing in particular the scientific basis which could be used into the future elaboration of environmental policies, i.e. research projects on implementation of EU policies related to climate change, acidification, waste management and others. The integration of environmental factors into other policy areas, such as agriculture, transport and urban planning, has also been addressed.

Other themes of Community interest which are treated in this area are: green accounting, the relations between environment and employment and environmental awareness and behaviour.

Concerning the evolution of S&T cooperation through Community, it should be pointed out that the research on economic and societal aspects of the environment has contributed to the development of a network of experts from different disciplines (sociology, economy, law, natural sciences) throughout the EU and Central and Eastern European countries.

4. Technological and natural risks:
In the field of technological risks, a suite of new methods has been developed for the risk assessment of chemical compounds, in order to improve the coverage and reliability of EU risk assessment schemes.

The activities in the field of natural risks contributed to fulfil the general objective of understanding the courses, mechanisms and consequences of hazardous environmental phenomena (telluric, meteorological and hydrogeological hazards, including research on forest fires and floods).

— The objective of the ***"SPACE"*** action is to facilitate the development and exploitation of earth observation applications and, in particular, to contribute to the setting up of a European operation system in the field of environmental observation and research.

This action takes into consideration (a) the need to develop synergies and complementarities with other EU RTD programmes and national and ESA Space Programmes (b) the need expressed by other EU sectoral policies, (c) the benefit that could emerge from the development of a competitive European space industry (d) the advantage that could come from the development of an international cooperation in the area of space, (e) the need to set up appropriate legal instruments to frame the development of new market opportunities and satellite communication services.

— The objective of the ***"SPOT IV"*** action is to support the development of the space instrument "végétation". This space instrument will be designed for the observation of continental ecosystems. It will provide data usable for the implementation of several community policies such as agriculture, research and development and international cooperation.

These actions (a) prepared the ground for integrating information from remote sensing into the Community statistical systems (b) contributed to the design of an operational airborne remote sensing system (c) contributed to research and observation projects on tropical forests (TREES project) and to the better understanding of global processes associated with tropical vegetation burning (FIRE project).
Concrete actions in the field of space research were implemented mainly by the JRC.

MARINE SCIENCE AND TECHNOLOGY (MAST-II)

Objectives

The aims of the programme are to

— contribute to establishing a scientific and technological basis for the exploration, exploitation, management and protection of European coastal waters and of the seas surrounding the Community Member States.

— introduce the necessary Community dimension to various on-going research activities, and to aim to achieve a balance in the marine scientific potential between the various areas of the European Community.

S/T Progress

The launch of 25 new shared-cost actions brings the total to 93 involving 660 partnerships.

These new projects cover most major topics in each of the main research areas of the programme:

1-5. Marine Science (including Large-Scale Targeted projects),
2. Coastal Zone Science and Engineering,
3. Marine Technology.

5 of them are aimed at the assessment of any possible risk likely to affect the marine environment in association with research, monitoring and surveying in marine sciences and technologies.

More specifically, the main results can be summarized as follows:

— Consolidation of the two large-scale targeted projects initiated in 1993:

  • the Mediterranean Targeted Project (MTP), involving 180 scientists from 70 scientific institutions in 14 EEA Countries.
  • the North Atlantic Targeted Project (NATP), involving 110 scientists from 32 institutions in 10 EEA countries.

  These 2 projects seek to promote trans-European cooperation on a hitherto unparalleled scale. The MTP is in this respect even more innovative than the NATP, due to a weaker tradition of international collaboration in the Mediterranean.

— Continuation of the G8-Coastal Morphodynamics project, which is contributing in a unique way to the formation of a large network of European institutes with both academic and commercial interests in 12 EEA countries. It is acknowledged, notably in Japan and the USA, that the synergy and collaborations achieved through MAST-II has put Europe in the world lead on research on coastal physical processes.

— Launching of a concerted action on the application of high performance computing techniques in marine sciences and in model intercomparison.

— Launching of several Supporting Initiatives (area IV of the programme) on oceanographic data management: Assistance in data management for the MTP; electronic data publishing and delivery of reference data bases.

— Co-organization of the 2nd European Conference on underwater acoustics, Copenhagen, 4-8 July 1994. Underwater Acoustics is a major research topic in MAST-II Marine Technology. The conference, attended from such diverse countries (apart from EU-EFTA), as PECO, USA, Canada, South Africa, China, India, has demonstrated the strong status of European research in this field.

LIFE SCIENCES AND TECHNOLOGIES

BIOTECHNOLOGY

Objectives

The objectives of this programme are to

— extend the objectives of the BRIDGE programme;
— carry out prenormative research with emphasis on the safety assessment of new techniques and novel products;
— monitor the ethical, social and economic implication of biotechnology;
— use throughout the programme information technology for collecting, pooling, analyzing, distributing or simulating data;
— carry out research at the level of molecules, cells, organisms and populations.

Four research areas are supported by the Community:

1: Molecular approaches
2: Cellular and Organism approaches
3: Ecology and population biology
4: Horizontal activities common to all areas

S/T Progress

Several innovative approaches to research and training support such as the B (Basic), G (Generic)[5], and PTP (Projects of Technological Priority)[6] projects, Industrial Platforms and decentralised management and training are serving to enhance the cohesion and efficiency of Community and Member States' research programmes.

Industrial platforms have been created at the initiative of interested companies in a particular industrial sector and the amount and type of information going to the Industrial Platforms is regulated by the contractors as they hold the intellectual property over the results generated in the frame of the Community programme. Industrial Platforms provide contractors and Commission services with expert advice on industrially relevant topics related to the project, thus promoting a dynamic interaction which is beneficial to all parties. At present 7 Industrial Platforms have been established and are active, each under a different technology focus. As many as 128 companies participate in the different platforms of which 52 are small to medium-sized enterprises (SMEs), representing about 41 % of the total. Two additional platforms are in the process of being established.

The following could be considered as the major RTD results:

— Improvement of the understanding of catalytic mechanisms of enzymes associated with biological membranes, interaction of antibodies with antigens and the relationship between structure and function of receptors.
— The DNA sequencing activities, carried out by many closely coordinated networks of European laboratories, has lead to the sequencing of an important part of the yeast genome (14 Mb), the *Bacillus subtilis* genome (4 Mb) and the much larger (100 Mb) *Arabidopsis* genome.
— Studies in animal reproduction, mapping of the bovine and pig genomes were carried out seeking to improve animal husbandry.
— In the alternatives to animal experiments in pharmaco-toxicology field, G-projects have already developed several new *in vitro* assays facilitating the prediction, in a rather sensitive way, of some major immunotoxic reactions.
— In the plant biotechnology area, it has been possible to organize five networks with mechanisms of internal and external coordination. The whole activity is included into a Project of Technological Priority (PTP) for making steps in directions pointing at desirable future applications, namely: plant development, reactions to abiotic stress, storage processes e.g. in the grain or in the tuber, nitrogen utilization efficiency and transposition of results into the applied research of peripheral countries.
— Significant advances have been made in the different research topics dealing with industrial microorganisms. A G-project on the biotechnology of extremophile microorganisms found new exciting results in the field of extremophily. New exotic micro-organisms that can live under extreme conditions have been isolated and characterized.

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[5] Twenty-three G-projects have been supported covering aspects of Areas 1, 2 and 3.

[6] Nine PTP projects are supported for research work on genomes and on plant biology.

The information centre known as BIODOC has continued to monitor biotechnology developments worldwide and to provide an information resource for Commission services, Member State Administrations and interested members of the public.

The European Biotechnology Information Service (EBIS) with an Inter-service Editorial Board has continued to provide information to the wider community and a means of access to relevant documents. It has become closely linked to the activities of the Commission's Biotechnology Coordination Committee (BCC) in the Secretariat General.

BIOMEDICINE AND HEALTH (BIOMED I)

Objectives

The objective of the programme is to contribute to an improvement in the efficacy of medical and health research, pooling European resources and applying the results throughout the Community. Priority has been given to four areas:

1. *Development of coordinated research on prevention, care and health systems.*
2. *Major health problems and diseases of great socioeconomic impact including AIDS, cancer, cardiovascular disease, mental illness and age-related problems.*
3. *Human genome analysis.*
4. *Research on biomedical ethics.*

S/T Progress

Following calls for proposals, the programme was implemented mainly through concerted actions, which bring together accumulated expertise in research networks.

In 1994, from a list of 303 proposals declared eligible in 1993 for Community funding, 140 projects for concerted actions and 1 project for a cost-shared action have been selected for a total commitment of 38,092,650 ECU. Among accompanying measures, 45 contracts for research fellowships have been concluded, for a total commitment of 3 035 MECU.

An example of specific results achieved in 1994 which should be mentioned is an important meeting on Pharmaceutical Research which was held in Brussels in December 1994, on the prospects for European clinical trials. The meeting gathered together eminent scientists, representatives of the pharmaceutical industry and regulatory authorities. Among the activities was an important round table discussion on the ethics, necessary controls and rationale for conducting clinical trials during pregnancy. The proceedings of the meeting will be published by mid-1995.

A meeting focusing on Cancer Research at the European Level was organized in Brussels in December 1994. The 57 project leaders of the Cancer Research Area of BIOMED 1 were invited to attend discussions about their work. The projects are grouped as follows: basic research (30), clinical research (16), screening studies and research (3), chemoprevention studies and research (3), epidemiological studies and research (5). The aim of this discussion was to summarize the various activities and to discuss the progress of these projects (results to be published end 1995).

Specific EU projects that concentrated on developing effective vaccines to prevent infection by the

HIV virus and devising drugs which suppress progression of AIDS in 1994 are:

— "The Monkey Models for AIDS Research", which has developed a vaccine for Simian Immunodeficiency Virus, or SIV, in macaques.
— "European Vaccine against AIDS" (EVA), which is also developing vaccines against SIV.
— "Design, Synthesis and Evaluation of New Antiviral Compounds against AIDS", which is screening more than 10,000 compounds for future treatment of AIDS patients.

In the framework of the international Human Genome Project, close links have been strengthened with the Human Genome Organization (HUGO) representing genome scientists with offices for Europe (London), the Americas (Bethesda), and Pacific (Osaka). The Commission was again represented at its Human Genome conferences (London - UK 1991, Nice - France 1992, Kobe - Japan 1993, Washington - USA 1994, Heidelberg - Germany 1996) and provided a substantial contribution to the HUGO programme on Single Chromosome Workshops with regard to participation of European genome researchers. The Commission is also involved in the recent HUGO initiative, started at the 1994 conference in Washington with a first follow-up meeting in London in January 1995, on patentability and free access to cDNA sequence data balancing researchers' and commercial interests.

AGRICULTURE AND AGRO-INDUSTRY, INCLUDING FISHERIES (AIR)

Objectives

The specific objectives of the AIR programme are to

— increase the viability and competitiveness of the agricultural and agro-industrial sector, especially in the less developed regions and in those regions where agriculture suffers from chronic structural problems,
— provide a better match between production of biological resources and their use by consumers and industry, in particular to encourage the potential non-food uses for agricultural production
— encourage the participation of SMEs in this programme,
— provide healthy foods for consumers,
— protect the environment,
— support the Common Agriculture and Fisheries Policies.

S/T Progress

17 % of the proposals submitted to the third call for proposals of the AIR programme were selected for funding and received contracts in 1994. 85 projects submitted to the second call and evaluated in 1993 were selected and received contracts in 1994.

Competitiveness of the agricultural and agro-industrial sector: Primary producers, industry and the European science base have collaborated with a view to establishing a competitive advantage for the Community. The development of a significant number of high technology SMEs have been supported. Research for and technology transfer to the lower technology SMEs has usually been provided by research associations and cooperatives acting as participants on their behalf.

Processes have been developed to enhance quality while maintaining safety of food products, e.g. novel shaped tubular heat exchangers, continuous microwave tubular heater, on-line sensors for the detection of fouling/microbial contamination in food processing equipment. A method for establishing Eucalyptus plantations in drier areas has been developed. A new dehuller has been developed for small seeds as have processes for the transformation of rapeseed oil into 'green chemicals'. Oral vaccines have been developed for salmonids and maricultured fish.

Coordination of national research activities: The cooperation between researchers achieved through concerted actions has been very effective in establishing networks, coordinating their research activities and establishing new collaborative research projects.

A particularly successful concerted action has produced a simple and practical guide for the implementation of HACCP, a system for the quality and safety control of foodstuffs in the food industries. Concerted actions on resistant starch and sensorial analysis have greatly improved the scientific bases in these fields and have generated interesting collaborative projects.

Support to the Common Fisheries Policy: The projects funded have improved the knowledge of the major stocks of the European fisheries in the Atlantic ocean and in the Mediterranean sea. The behaviour of fishing gear and their interaction with the marine environment have been further understood.

The control of diseases in aquaculture has improved, its interaction with the environment have been studied and the way has been paved for the genetic improvement of reared species. Methods to ensure the quality and hygiene of fish species with limited consumption have been developed.

Support to the Common Agriculture Policy: The projects funded are responding to the needs of the reformed CAP and rural development. Emphasis has been placed on non-food and its primary production. Interesting new research has been launched on extensification, low input and organic farming, on the use of set-aside land and the special needs of regions lagging behind in development.

Certain problems of plant health and animal health which are vital for the Community as a whole have received special attention. In terms of the CAP and rural development new projects will produce much needed data and indications of how quantitative models will be used in agriculture in future. There has been more research supported at the interface between agriculture and the environment on aspects of soils, waste, water and fertiliser use.

Methodology has been developed to evaluate the safety of a transgenic tomato. This methodology will be very useful for the preparation of guidelines for the evaluation of novel foods by the scientific committee for food.

Lactic bacteria based starter cultures for malolactic fermentation for direct inoculation have been developed and are now being commercialized.

ENERGY

NON- NUCLEAR ENERGY (JOULE II)

Objectives

The objective of the programme is to contribute to the development of new non-nuclear energy options by paying increasing attention to those emerging energy technologies which, despite their large potential and environmental soundness, have not yet had a substantial market penetration.

The emphasis in the programme was on energy technologies having the potential to reduce the environmental impact of energy supply and in particular CO_2 emissions, without pre-empting other important objectives such as improving security of energy supply, strengthening the competitiveness of the European energy industry or contributing to rural development and internal cohesion.

S/T Progress

The bulk of the JOULE-II programme has been implemented following two general calls for proposals, the first in September 1991 and the second in April 1993. Globally JOULE II over its life span supported some 400 projects for a Community budget of about 260 MECU, this not including the budget for the participation in the projects of organisations from EFTA countries and from Central and Eastern European countries. The participation of industry in the projects has increased from the previous years and particularly that of SMEs for highly-innovative technologies.

Significant progress has been obtained in all four areas of the programme as is shown in the following examples.

In the area *analysis of strategies and modelling* new tools have been developed to analyze the complex energy-environment-economic system and its future trends with the objective to define a global "energy RTD" strategy for the Union. A new generation of mathematical models was developed to characterise this complex systems both at European and world scale. An accounting framework was developed to evaluate external costs in different fuel cycles (nuclear, coal, gas and renewables) within a joint EC-US collaboration.

In the area *fossil fuels*, the programme covered two distinct themes: reduction of harmful emissions, including greenhouse gases, during combustion, and better understanding of hydrocarbon reservoirs to improve supply and enhance the competitiveness of European industry. The "clean coal" area addressed combustion of solid fuels, residues and wastes, paying particular attention to the emission reduction that can be achieved by controlled co-combustion of coal with biomass or with sewage sludge. In the "hydrocarbons" area, significant advances have been made in understanding the influence of fuel composition (especially diesel fuel) on pollutant formation, while the emphasis in the exploration and production sector has been on understanding the mechanisms that control fluid occurrence and mobility within reservoir structures. The importance of this work has been emphasised by the fact that, while most of the projects were originated by universities or research institutes, in many cases the larger oil companies have joined subsequently, invariably at their own expense.

In the area *renewable energies* progress was achieved in all sectors. In "wind energy", highly innovative MW-sized wind turbines, which are expected to become the next commercial generation, were developed together with European manufacturers with a view to consolidate Europe's leading position on the world market. Significant results have been achieved in "photovoltaics" and particularly in thin-film solar cells (for $CuInSe_2$ cells the highest efficiency at world scale was recorded). "Building" projects of excellence using renewable energies were developed together with leading European architects, including the new Reichstag in Berlin. The two first European pilot projects in the field of "wave energy" started in the Azores and Scotland which will be rated at 0.5 and 2 MW. In "biomass", a breakthrough was achieved in the liquefaction of ligno- cellulosic material via pyrolysis. Upgrading of bio-crude oil was obtained though a new electrochemical method.

In the area *rational use of energy*, work addressed different end- use sectors. In "industry", advanced unit operations and generic system engineering models were developed along with innovative methodologies and design procedures. In the "building" sector, emphasis was on the integration of low-energy components with renewable energies. More corrosion resistant electrodes for molten-carbonate "fuel cells" were identified and the scale-up of solid-oxide fuel cells to 7 kW was achieved. New lithium-carbon liquid and solid polymer batteries have been developed with specific energy exceeding 95 kWh/kg suitable for electric vehicles. A study on flywheels energy storage for vehicles indicated favourable economics compared to advanced batteries. A better knowledge and control of "combustion processes" was achieved by simplifying chemical kinetics, simulating turbulent combustion and developing new diagnostic tools.

JOULE II has promoted innovation in a sector of strategic importance for Europe as a whole through the support of multi-national consortia merging research establishments, industry, universities and energy suppliers on projects of European-wide significance.

THERMIE

The THERMIE Programme, with a budget of 700 MECU for the period 1990-1994, has allowed the EC to support the demonstration and dissemination of new clean and efficient energy technologies through 3 main areas of activity. The first area, to which 85 % of the budget was allocated, has covered financial support for energy technology projects in the field of rational use of energy, renewable energy sources, solid fuels and hydrocarbons.Up to 15 % of the THERMIE budget was allocated to the second area of activity which covers the associated measures designed to help technologies achieve more widespread application.

Three types of projects were eligible for financial support under the THERMIE regulation: innovative projects for the first commercial application of new energy technologies; dissemination projects which aim to promote the use of existing energy technologies under different economic and geographical conditions; and targeted projects set up to develop technologies of a strategic nature which could not be developed otherwise. Thus, during the five-year-implementation of THERMIE, the Community has supported 713 sectoral projects amounting to some 573 MECU.

The associated measures includes market studies and evaluation of market potential, monitoring and evaluation of projects, dissemination of information on energy technologies (through the organisation of exhibitions, seminars and workshops, participation at energy-related fairs, press-related activities and the production of a wide range of publications). Most of the associated measures have been carried out by the OPET Network (Organisations for the Promotion of Energy Technology), set up in 1991 by the Commission. In December 1994 this was composed of nearly 50 such organisations throughout the European Union, complemented by 15 EC Energy Centres established in Central and Eastern Europe and the CIS. By December 1994, 1200 specific actions had been implemented for approximately 47 MECU. Specific actions have also been undertaken in third countries where a potential market for the deployment of EU energy technologies exists (Latin America, Mediterranean region, South East Asia, EFTA countries, US, Japan).

In order to avoid duplications and to achieve the best use of available funds, the third area of the programme implementation has been devoted to the coordination of THERMIE's activities with those of similar programmes executed in the Member States and with other Community support instruments such as ALTENER, SAVE, JOULE, TACIS, PHARE, etc.

From 1995, the bulk of THERMIE will be carried out within the Fourth Framework Programme RTD. Those THERMIE activities which are out of scope are the subject of a separate Commission proposal, THERMIE II.

RENEWABLE ENERGIES

The main purpose of this action was to provide a bridge between the renewable-energy activities in the Third Framework Programme and a new line of action in the Fourth Framework Programme for the large scale integration of renewable energies. Five areas for the application of renewable energies have been identified:

1. Integration of renewable energies in regions;
2. Water desalination plants powered by renewable energies for Mediterranean area;

3. The development of "bio-electricity";
4. Urban planning maximizing the use of renewable energies;
5. Photovoltaic electricity generation in cooperation between Europe and developing countries.

The choice of these particular application fields is justified by the assumption that renewable energies are expected to make a large impact in the short to medium term. Particular care was exerted on the need to consider both technological problems and related socio- economic issues.

Within the 1994 budgetary procedure, a special budget of 25 MECU was allocated to activities in the field of renewable energies. This action has been implemented through a call for proposals which met a very large response. Out of the 340 proposals received, the Commission retained 80 projects for priority funding. Out of the 25MECU engaged in 1994, contracts were signed for 19 MECU prior end December, while the remaining ones are expected to be signed beginning 1995.

The activities will continue in the Non-Nuclear Energy programme in the Fourth Framework Programme. Building on the preliminary results of these preparatory action, important initiatives will be set up for large-scale introduction of renewable energies in the five sectors which foresee the start of pilot projects.

NUCLEAR FISSION SAFETY

Objectives

The research related to the nuclear fission safety under the third framework programme up to 1994 were implemented through actions in the following areas: radioactive waste management and storage, reactor safety, decommissioning of nuclear installations, TELEMAN (remote handling) and radiation protection research.

S/T Progress

The *radioactive waste management and storage programme* is subdivided into: "waste management and associated R&D projects" (management systems; waste treatment; safety of the multi-barrier system of geological disposal) and "construction and/or operation of underground research facilities". In 1994 three research contracts have been launched: in situ research on gas release in saliferous backfill, modelling of thermo-mechanical behaviour of clay, and natural analogue in a cryptokarsts area. Several work programmes have been extended to adapt them to newly identified research needs. The research activities, specially in situ and underground laboratory investigations have permitted essential progress to be made in a "confidence building" process and provide a scientific and technical basis for a better safety assessment of radioactive waste disposal.

The reinforced concerted action in 1994 on *reactor safety* continued to investigate the confinement of radioactivity under severe accident conditions in PWRs and BWRs. The action comprises eight projects. Good progress was made in developing a consensus in this safety area at the level of the European Union was achieved with regard to the existing know-how, its application to outstanding problems and their solution. A few preliminary results merit mentioning, such as: (i) the consensus obtained in understanding the chemistry involved in the interactions of molten materials in comparison with the more traditional thermo-mechanical approach, (ii) the feasibility of ex- vessel molten core cooling systems and an assessment of reactor passive safety features.

The main areas of the programme on *decommissioning of nuclear installations* are: research and development projects, identification of guiding principles, testing of new techniques in practice, including four pilot projects. Most of the research projects were concluded and the results were reviewed at the conference on "Decommissioning of Nuclear Installations". Contracts on pilot

decommissioning projects and some on the testing of dismantling techniques under real conditions were extended. Two decommissioning data bases (EC DB TOOL and EC DB COST) are being developed to take advantage of all the results and experience gained since 1979.

The *TELEMAN* activities in 1994 included projects on: photogrammetry and telemetry, a master-slave manipulator, a radiation-tolerant gripper, and a legged robot. Two projects directly included SMEs directed at exploiting the results. Two handbooks on environmental tolerance were published and an EC/ESA database has been developed. The mid-term evaluation of the programme made particular mention of its exploitation potential, the large number of patents, publications and research degrees, the network of industrialists, researchers and academics and its active management.

Radiation protection research contributes to the continuing development of radiation protection philosophy and practices. The programme contained three elements: human exposure to radiation and radioactivity, consequences of radiation exposure to man, and risks and management of radiation exposure. The programme has continued to mark significant progress as is indicated in the following examples.

— The products of some DNA repair genes form part of the transcription complex which reads the DNA genetic code. Two contractors have been awarded the prestigious Jeantet Prize for their part in this work.
— An important new agent, code named LIHOPO, has been synthesised and developed which is the best compound investigated up to now for the removal of plutonium from the body.
— European collaboration in dosimetry research has been a main contributor to the development of coherent and universally applicable dosimetric concepts and procedures made by the international committees ICRP and ICRU which are important for the revision of the Basic Safety Standards.
— Optimisation of dose reduction methods and quality criteria for adult and paediatric radiology are improving the safety of patients during the day-to-day medical use of ionizing radiation.
— A better understanding of the influence of living conditions and other physico-chemical variables on indoor air quality has improved the estimate of lung dose from indoor Radon.
— The measurement of radioactive contamination among different organs and animal products have reached a stage such that appropriate animal husbandry can reduce the transfer of radioactivity into the human food chain.
— A comprehensive decision support system, RODOS, for the off site management of nuclear emergencies in Europe is being developed by 18 European institutes to provide the basis for a European wide emergency response network.

COOPERATION WITH THE SOVIET UNION IN THE FIELD OF NUCLEAR FISSION SAFETY (COSU)

Since 1992, the Commission has been supporting a EC/CIS collaborative programme on the consequences of the Chernobyl accident notably in the fields of health effects, environmental consequences and emergency management. A total EC funding of 22 MECU is allocated to this programme, in which 16 collaborative projects are being implemented involving about 200 laboratories (80 from the EU, and 120 from the CIS). So far, this programme has produced important results. Its most notable results are briefly summarised below:

Health effects
— Cooperation with TACIS and ECHO programmes has enabled crucial medical equipment and training to be provided to improve the treatment of the thyroid cancer victims.
— The possible treatments for radiation injuries to the skin of fire fighters and clean-up workers involved in the accident are being optimised.

— The protocol defining how bone marrow transplantation can be successfully applied for the treatment of victims of high dose accidental irradiation is being set up.

Environmental consequences
— The dose to the rural population is considerably higher than expected.
— Natural production systems like forests and meadows recycle the radionuclides so that the contamination is not eliminated as rapidly as had been anticipated.
— The insight in the behaviour of Caesium has gained an enormous momentum so that for example an optimal planning of soil based restoration techniques will be possible.

Emergency management issues
— An on-line decision support system to aid management of possible future nuclear accidents is currently being installed in Russia, Ukraine and Belarus.
— The adoption of overly restrictive intervention levels after the accident has resulted in increased anxiety among the affected population and placed a major burden on the national economies.

Synopses of each collaborative project can be made available for the First International Conference of the European Union, the Russian Federation, the Ukraine, and Belarus on the consequences of the Chernobyl accident to be held in Minsk on 18-22 March 1996.

CONTROLLED THERMONUCLEAR FUSION

Objectives

The long-term objective is "the joint creation of safe, environmentally sound prototype reactors" based on fusion by magnetic confinement.

The first priority objective of the programme is "to provide the scientific and technological base, to establish environmental and safety criteria and to prepare industry for the construction of a Next Step device", the first experimental fusion reactor. Other objectives are: to proceed along the demonstration of the safety and environmental feasibility of fusion power; to enlarge the involvement of European industry; to determine the reactor potential of toroidal magnetic configurations akin to the Tokamak.

S/T Progress

All magnetic fusion research is integrated into ***one*** Community programme which presents itself as a single body in its relations with other fusion programmes in the world. The Commission is responsible for the implementation of the programme which is executed mainly through contracts of Association with Member States (plus Switzerland) or organisations within Member States, the JET Joint Undertaking, the NET Agreement which takes account of the Euratom participation in the ITER- EDA, the JRC, contracts of limited duration (in particular with organisations in Member States without Association) and industrial contracts. Community financial participation continued to be about 25 % of the running expenditure of the Associations, 45 % of capital cost of projects having been awarded priority status, 80 % of JET expenditure.

In 1994, the advisory committee, CCFP, concluded an assessment of the medium-term devices and facilities planning which has been instrumental in the preparation of the 1994-1998 programme decision. Through the multipartite Agreement for "Promotion of Staff Mobility", the mobility of scientists and engineers was developed. In coordination with the "Human Capital and Mobility" programme, fellowships were awarded. Industry has been encouraged to participate more fully in the programme, in particular through the setting up of fusion-industry workshops. An itinerant exhibition was further developed and attracted a large public.

1. Next Step design:

— The Next Step design has progressed in the frame of the quadripartite Agreement on cooperation (Euratom, Japan, Russia and the USA) in the Engineering Design Activities (EDA) for ITER (International Thermonuclear Experimental Reactor, the Next Step at world level); the Outline Design report was issued in January 1994; Protocol 1 was completed and Protocol 2 (covering the period up to the scheduled completion of the EDA in July 1998) signed on 21 March 1994.

— An industrial grouping was selected to contribute to the overall design activities for the Next Step: lists of qualified firms have been established for R&D and the supply of prototypes for the Next Step.

2. Longer-term technical developments:

— The Safety and Environmental Assessment of Fusion Power (SEAFP) was performed as a collaborative effort by the NET Team, the Euratom- UKAEA Association and a temporary grouping of industries, and with the participation of other Associations and the JRC (report to be issued in 1995);

— The conceptual design of a powerful source of high-energy neutrons for fusion-relevant materials has started in the multilateral framework (presently Euratom, Japan, USA) of an Implementing Agreement of the International Energy Agency.

3. JET:

A major upgrading of the device, including the installation of a pumped diverter in order to establish reliable methods of plasma purity control and essential for supporting the Next Step design, was completed and plasma operation successfully resumed showing improvements in the power handling capability of the device.

4. Support programme:

— *Scientific support to the Next Step and to JET:* progress in the understanding and control of confinement, plasma-wall interaction, fuelling and exhaust, as well as heating and current drive was achieved on the specialised devices and in the accompanying programmes; divertor plasmas have been obtained with enhanced radiation and reduced power load; a new tokamak started operation for studying elongated plasmas-cross section; new diagnostics were developed.

— *Studies on alternative lines in toroidal magnetic confinement:* high densities have been obtained without disruption in a stellarator; the operational range of a reversed-field pinch was extended to higher currents; further diagnostics were developed (e.g., polarimetry).

TRANSPORT

A number of studies were started in continuation of some of the EURET activities under the second Framework Programme. The aim was to bridge the period between the end of the Euret Programme and the start of the Transport Specific Programme of the Fourth Framework Programme, as well as to prepare the ground for the new transport RTD activities. These activities are mainly designed in support of the Common Transport Policy, and in particular are aimed at helping to establish sustainable mobility.

The studies had two major objectives:

— To continue to work further in the field of traffic management for aviation, maritime transport and rail transport in establishing functional and operational specifications. The established cooperation between users and industry was thus continued.

— To prepare new activities of the transport programme under the Framework Programme, notably in the field of strategy, road and urban transport. These studies aim at a qualitative assessment of

the state-of-art in these fields within the EU Member States. They will provide the necessary instruments to guide and steer further activities at a European level and help coordinate national activities.

A call for tender was launched resulting in 29 selected proposals financed at 100 % of the actual costs (Study contracts). Another call for proposals in the air sector was also launched in close coordination between different Commission Services which resulted in two cost shared actions. Most of the studies and cost shared actions took off during the summer of 1994. The first interim results have been delivered according to schedule. The concrete results will be available only between April and September of 1995.

INTERNATIONAL COOPERATION

LIFE SCIENCES AND TECHNOLOGIES FOR DEVELOPING COUNTRIES (STD)

Objectives

The objectives of the programme are the following:

— continuing the strengthening of research capacities both in the developing countries (DC's) and in the Member States in the subject areas identified as priority for third world development (agriculture, health, nutrition and environment in tropics and subtropics) through joint research actions.
— improving coordination at the European level, the development of cooperation between DC's, the consolidation, intensification and expansion of links created in the first phases of the programme between Community partners and those from DC's.
— réalisation of significant progress on mobilising themes linked to development needs, including environmental protection and the rational management of natural resources in order to contribute to the improvement of standards of living and health status of DC populations, particularly the poorest.
— valorisation of the work of certain European teams involved in other Community S&T programmes by offering them the possibility to broaden their field of investigation and to diversify their methodological approaches to tropical environments.
— attainment of added value for the different national initiatives in these areas due to the Community dimension of the programme.

S/T Progress

The last call for proposals of this programme, from which projects were selected in 1994, had a deliberately reduced scope in order to favour sectors which had been insufficiently covered in previous calls for proposals. Thus, the balance between the different thematic components of the programme given in the technical annex was attained. Of the contracts signed in 1994, 25 % concern problems linked to environmental protection by means of better management of natural resources, 14 % cover health systems research and 12 % relate to local processing of food products — all three themes being of major interest for the future of DC populations.

The 79 contracts signed in 1994 enabled the mobilisation of 348 teams (included the participants who received no Community funding) — 205 of which are in Europe and 143 in DC's according to the following split: 9 in Mediterranean, 48 in Latin America, 34 in Asia and 52 in ACP countries. This shows the level of mobilisation in the South and the common interest of the themes covered (the low participation of the Mediterranean countries is explained by the existence of Avicenne which is exclusively targeted to that region).

The objective of strengthening "South-South" cooperation was also achieved since it should be noted that two thirds of the contracts have at least two southern partners and 31 % have more than two. In addition, although the minimum number of European partners is two, 45 % of contracts have a greater number. The activities of networks such as the European Tropical Forest Research Network or the European International Pest Management Working Group created under this programme have also had a significant effect in strengthening Europeancooperation. This programme has also contributed to the basis for a future European strategy in the area of international agricultural research for development.

Results have been summarized in various publications, including a first volume of results obtained in the sub-programme agriculture of STD2 (1987-1990), the catalogue of contracts resulting from the 1st call for proposals, in both agriculture and health, a document on the "Needs and perspectives of teledetection in developing countries", "l'Europe et la coopération scientifique et technique sur l'eau", four publications giving an account of results obtained in the health sector (research on vaccines, health systems research, biology of parasitism and research on schistosomiasis). A data bank on malaria antigens has also been created.

The programme has facilitated the organisation of 16 workshops, colloquia or seminars in 1994, in order to disseminate results, to encourage contacts between scientists from the North and South, and to enable the latter to join the international scientific community. The following examples of meetings may be cited: management of soil and water resources in the Mediterranean region; conference on an inventory of resources and management of tropical forest; international symposium on systems research in agriculture an rural development; workshop on the technical and logistical problems of vaccine preparation; development of appropriate methodologies for the validation of health interaction strategies in DC's; conference on leighmaniasis and its vectors.

INTERNATIONAL SCIENTIFIC COOPERATION (ISC)

Focusing on the development of cooperative links in science and technology between the Community and Asian, Latin American and Mediterranean developing countries, this action supports joint research projects, fellowships and information exchange (including scientific meetings) in subjects of mutual interest.

National science and technology cooperation authorities in the third countries play a key role in the programme by defining, together with Commission services in the framework of Joint Committees, the subjects to be covered by cooperation, promoting the programme among their scientific communities and presenting proposals.

Examples of subjects chosen as priority areas for joint activity include water research with Mexico, biotechnology with China and geological hazards with Andean countries; some other countries preferred to maintain a wide field in the pursuit of excellence. Promotional actions included published calls for proposals, preparatory fellowships and workshops on specific topics. As a result of these actions, 544 joint research project proposals and 321 fellowship candidatures were received from the national authorities: following scientific evaluation with the aid of independent experts and references, 144 research projects and 102 fellows were selected for retention, representing an EC financial contribution of 26.3 million ECUs.

The research projects cover the full range of natural and exact sciences; whilst about twenty projects are in basic subjects, the majority are in applied fields such as industrial materials, fine chemistry, monitoring and control of environmental pollution, earth sciences, biotechnology, agriculture and public health. These projects give European partners the opportunity to interact with a diverse range

of scientists and to have access to new environments, biological material and scientific challenges. The partner countries with the largest number of projects are Argentina, Brazil, China, India, Mexico and Israel which together account for 63 % of the projects. Most projects, especially in the third countries, involve university departments. Results are thus obtained not only in terms of research output but also in wider terms through general invigoration of teaching and other activities.

In general this combination of instruments, including dialogue with partner countries, development of research contacts and project preparation, joint scientific work and project follow-up, which has been built up in the light of experience since the initiative's modest beginning in the mid 1980s, has been appreciated both at a political level and by the various scientific communities. However, the problems associated with having a wide range of research topics eligible for support have been recognized and are being addressed in the Fourth Framework Programme. In line with recommendations from the external evaluation panel, S&T cooperation with Developing Countries has been rationalised by combining certain features of this action with those of the STD programme into a single programme.

AVICENNE

The main objective consist of promoting scientific and technological cooperation between countries bordering the Mediterranean and the EU and is concerned principally with creating synergy for regional impact in the Mediterranean basin on research themes of mutual interest.

Since the AVICENNE initiative has only been in operation since 1992, and the average length of contracts is three years, the first series of final results will not be available until 1996. However, it is important to note that:

— The programme objectives have been accomplished, in so far as strong partnerships have been forged in the whole of the region in the S&T sectors covered; the quality and the quantity of the joint research projects submitted in 1994 is far superior to those of the two previous years. Of the 208 participants involved in the 38 contracts in 1994, 175 are public research institutions and 33 are SME's (= 19 % of participants).

— The competitiveness of all public and private sector EU partners has been reinforced through this activity,as:

- certain major problems in the Mediterranean may be studied more fully given the direct access that is available to the whole of the Mediterranean basin as well as to the appropriate expertise of the third Mediterranean associated partners,
- certain technologies available in the EU,as well as the relevant know-how, can be adapted to specific situations in third Mediterranean countries and, in consequence, be applied there,
- the knowledge and know-how of EU participants on certain S&T problems faced mainly by this region can only be enhanced through such cooperation, (with a consequent impact on competitiveness).

— Public health, treatment of waste water, reduction of pollution in the Mediterranean, utilisation of renewable energies in Mediterranean economies, are some of the themes systematically addressed in this initiative. The results of the research work undertaken aim to improve immediately the living conditions of those societies concerned.

— The AVICENNE Initiative falls within the horizontal activities supporting the Renewed Mediterranean Policy of the Community.

COOPERATION WITH CENTRAL AND EASTERN EUROPEAN COUNTRIES AND THE NEW INDEPENDENT STATES OF THE FORMER SOVIET UNION

COPERNICUS

The aim of these activities was to promote, through an international effort, research and technological development in these countries as an essential element for their social and economic development and for their democratic consolidation, and to further, in the interest of both sides, cooperation between scientists in these countries and in the Union.

A call for proposals COPERNICUS 1994 was announced in January 1994 in cooperation between the three general directorates for research, industry and telecommunications, information market and exploitation of research. The call was open for partners from the Union and from central and eastern Europe (Albania, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia). Partners from the former Soviet Union and from the ten EFTA countries could also participate on certain conditions. The call comprised six fields, namely:

— information technology, including high performance computing, information systems, opto electronics, micro-electronics and electronic data exchange
— communication technologies, telematics and language engineering
— manufacturing, production, processing and materials, including computer-integrated manufacturing, robotics, etc.
— measurement and testing
— agro- and food industries
— biotechnology.

The call got a very positive response from potential partners. About 1 650 proposals for a total sum of about 550 MECU were received, which after evaluation by independent experts resulted in the selection of 220 high quality projects for funding within a budget of about 67 MECU. The greater part of the contracts for these projects were signed before the end of 1994. The majority of the projects — comprising both joint research projects and concerted actions (networks) — will run over three years. With a total of more than one thousand partners from universities, research institutions and industry from the whole of eastern and western Europe, this activity will considerably strengthen the existing framework for scientific cooperation and further the expressed aims of the programme.

INTAS (International Association for the Promotion of Cooperation with Scientists from the Newly Independant States of the Former Soviet Union)

The major events and activities of INTAS during 1994 were:

— the completion of the 51 contracts of the Emergency Action of June 1993 out of the 1019 projects selected by INTAS following the calls for proposals in 1992, 1993 and 1994. Regarding payments, 4,4 MECU were paid by 30.11.94 out of the 46 MECU committed.
— the issuing of an open Call for declarations of intent with deadline 8 April 1994, the evaluation of the 4,074 proposals received, and the selection of 459 projects with a commitment of 21 MECU.
— the prolongation of the pilot phase of INTAS till the end of 1995
— the conduction of an independent evaluation of INTAS activities.

All these developments must be viewed in relation to the multi- national aspects of the activities of the Association and the ever-changing political, economic, legal and social environment within the scientific community of the NIS.

INTERNATIONAL SCIENCE AND TECHNOLOGY CENTRE (ISTC)

In 1994 the Community continued its support for the ISTC created in November 1992 by the European Union, the United States, Japan and Russia in order to encourage military scientists and engineers from the former Soviet Union to retrain for civilian occupations and speed up the desarmament process. The first round of projects sponsored more than 8200 scientists and engineers.

INDUSTRIALIZED THIRD COUNTRIES OUTSIDE EUROPE

The overall objective of cooperation with industrialized third countries outside Europe is the promotion of the interests of the Community by the contribution to a concerted development of science and technology at World level and by facilitating the access of European researchers and engineers to scientific and technological work in these countries.

A cooperation agreement in the field of science and technology between the European Union and **Australia** was signed on 23.2.1994 and entered into force on 25.7.1994. It foresees the reciprocal participation in programmes in six areas, on a project-by-project basis. The first meeting of the Joint Science and Technology Cooperation Committee was held on 11.10.1994.

Following the adoption of a negotiating mandate by the Council in 1993, a scientific and technological cooperation agreement, similar to the one with Australia, has been negotiated with **Canada**. It was signed in June 1995.

On 29.09.1994, the Council authorized the Commission to negotiate a cooperation agreement in science and technology with **Israel** in view of its association to the non-nuclear programmes of the Fourth Framework Programme. The negotiations started immediately and the conclusion of the agreement is foreseen before the end of 1995.

After an exploratory mission to **South Africa** in October 1994, the Commission received in December a South African proposal for negotiating a cooperation agreement in science and technology.

By the end of May, the Commission received an American proposal for the negotiation of a framework agreement of cooperation in science and technology between the European Union and the **United States**. Contacts were established between the Commission and the American authorities immediately after. The 18 and 19 October, the fourth meeting of the Task Force on Research and Biotechnology between the Community and the United States was held.

The scientific an technical cooperation with **Japan** was pursued with the first meeting of the Euro-Japanese Forum for science and Technology in Tokyo on 8 June. At this occasion, the Commission also met the Ministers responsible for universities and RTD and attended the seventh meeting of the Carnegie Group. In December 1994, a high level joint seminar on Human Resources took place in Brussels. In the field of energy and environment, two joint seminars were organized; one on the catalysis and another one on the effects of CO_2. During 1994, the Japan fellowship scheme was reenforced; 71 young European scientists and engineers obtained bursaries of up till two years in a public or private Japanese laboratory. Despite the various sources of funding (Community, joint, Japanese), the selection was ensured by the Commission.

More specifically in the field of information technologies, telecommunications, telematics and electronic data exchange, activities were carried out to promote international science and technology cooperation, where such cooperation was mutually advantageous to the European Union and the third country in question. These activities helped to strenghthen the links between scientific cooperation and industrial cooperation, in support of the Union's approach to encourage the

internationalization of European firms. These activities contributed to the development of a future global information infrastructure and the training of persons capable of using and promoting it, to the development of centres of excellence in developing countries, and to profit from advances in research in indutrialized countries, such as Japan, the United States and Canada.

Following a thorough evaluation procedure conducted by independent experts and based on the scientific excellence and the industrial potential, projects have been launched with the general aim to create and develop research networks between the Community and research centres in the most advanced developing countries. Other means of cooperation included information exchange, such as workshops, seminars and fact-finding missions.

INTERNATIONAL ORGANIZATIONS

The main objective of closer cooperation with European scientific international organizations and initiatives is to enhance the coherence of the overall "European Research Area", and to optimize the use of the often unique expertise built up within such organizations by virtue of their need to create unique environments and infrastructures in support of their main activities.

Thus in 1994, administrative arrangements were signed between the Commission and the European Centre for Nuclear Research (CERN) on the one hand and between the Commission and the European Molecular Biology Laboratory (EMBL) on the other hand. These administrative arrangements effectively create the means for more systematic information exchange and complement the new possibilities for such organizations to participate in the Framework Programme. In both cases, this follows a number of years of successful case by case collaboration, leading for example in the case of CERN to the development and use of a new high powered supercomputer and the wider European use of CERN's particular expertise in the areas of superconductivity and computer based communications networks. It is worth noting that the "World-Wide-Web", essentially a set of extremely effective and user-friendly computer communications services now becoming available throughout the EUROPANET and the INTERNET, originated and was developed at CERN.

The Commission continued to work closely with the relevant OECD committees, in particular the Committee on Science and Technology Policy (CSTP) and the Megascience Forum, which discusses issues such as astronomy, deep drilling, global change and oceanography, as well as the management and organization of large scale international projects in such areas.

The Commission also continued its work with the European Space Agency (ESA), with which it has established well structured modes of work, including six Joint Working Groups in the areas of earth observation, telecommunications, industrial policy, international relations, RTD and education and training. The Commission's role is essentially one of promoter and user of space technology, particularly in the area of earth observation.

The Commission also continued its regular meetings with relevant United Nations agencies, particularly UNESCO, in which the focus of discussions has been on the issue of surface water. The Commission cooperates with the UN-ECE, notably to produce the ECE Inventory of Safety Guidelines in Biotechnology.

COST

The objective of COST is to coordinate, on a European level, nationally funded research in the 25 COST member countries. COST actions usually involve basic or pre-competitive research or activities of public utility. Actions may be proposed by any COST country or by the European Commission, which may also participate in any COST action as a full member. The necessity for

coordination with COST activities is recognized in the texts of several of the specific programmes of the Fourth Framework Programme. The Commission provides the scientific secretariat for COST and thus helps ensure cooperation and coordination with the relevant Community specific RTD programmes in order to optimize information flow and avoid duplication of effort. In addition, the secretariat includes a number of seconded national experts from Member States, contributing also to coordination.

In 1994, 36 new COST Actions entered into force, bringing the total number to 115. An average of 12 countries participate in each Action. In addition, 27 institutes from non-COST countries participate — on an Action by Action basis, in 17 actions. The European Commission has to date signed the Memoranda of Understanding of 6 COST Actions. The total Community COST budget for coordination of national scientific and technical activities amounted to ECU 8 million in 1994. Updated information on COST activities is available on the Community RTD Information System, CORDIS.

1994 has also seen the introduction of a new Technical Committee in the domain of Agriculture and Biotechnology in addition to those already existing in Telecommunications, Transport, Materials, Meteorology, Social Sciences, Chemistry, Urban Civil Engineering and Forestry and Forestry Products. Furthermore, two working groups have been established to investigate the potential for COST Actions in the domains of Neuroscience and Physics.

EUREKA

The objective of EUREKA is to increase European productivity and competitiveness through closer cooperation between firms and research institutes in advanced technologies, developing products, processes and services with a worldwide market potential.

The complementarity of this initiative and the Framework Programme is systematically exploited, while respecting their specific characteristics. The Commission is a member of the Eureka management structures at all levels. All new Eureka project proposals are screened by Commission staff for duplication of research work carried out or under way in a Community context, and for the possibility of participation or for the transfer of results in both directions. The Community participates in a steadily increasing number of Eureka activities and Eureka is explicitly mentioned in the texts of the Fourth Framework Programme and its specific programmes. The Community is further active in the provision of supporting measures, in particular with regard to standard-setting and regulation. A publicly accessible version of the Eureka database is located on the Community database host ECHO.

The Commission participates in a total of 14 ongoing projects and 9 Umbrella initiatives, which correspond most closely to the areas of Community programmes. It has been involved in a further six finished projects, with an overall financial participation of 265.2 MECU out of a total financial volume for all these projects of 5697 MECU.

The Joint Research Centre continued as leader of two major projects, CEFIR in the new materials area and the Mobile Analytical Laboratory, in the area of the environment, bringing both projects towards a successful completion of their initial phases. The latter project has developed an advanced mobile analytical laboratory for the analysis of air, soil and water samples. In addition, the Commission has continued as leader of the EUROCAIRN project, the successor of COSINE, which the Commission also leads, and which set up the first operational "pan-European information highway", EUROPANET, which is being used daily by thousands of researchers across Europe (and which is a descendant of the first international pilot packet — switched networks set up in 1972 by the COST 11 project). The next generation of such networks is being defined in close collaboration with the Commission services within EUROCAIRN.

CENTRALIZED ACTION FOR THE DISSEMINATION AND EXPLOITATION OF KNOWLEDGE RESULTING FROM THE SPECIFIC PROGRAMMES OF RESEARCH AND TECHNOLOGICAL DEVELOPMENT OF THE COMMUNITY (VALUE II)

Objectives

The general aim of the centralized action for the dissemination and exploitation of knowledge resulting from Community research activities, carried out under this action, is to give specific added value to the RTD activities which are the subject of the third Framework Programme for 1990 to 1994. On the one hand, it provides the necessary continuity for some of the measures carried out under the Value programme; on the other, it introduces new topics concerned particularly with the repercussions of research and technological development activities and their results on society as a whole.

S/T Progress

1994 saw the evaluation and selection of proposals resulting from a call for proposals for exploitation projects in 1993 and the subsequent negotiation of contracts for the 45 projects selected. It should be noted that, in spite of the small budget available (3,5 MECU), this call for proposals was met with great interest, 311 proposals having been received.

The time needed for exploiting the results of pre-competitive research, such as those of Community programmes, varies according to the sector of activity: whereas a computer programme may require only two or three years, the process may take up to 10 years for a new pharmaceutical product. Nevertheless, an increasing number of exploitation projects launched in recent years are now starting to produce results — the technical and economical viability of which is being tested — or to encourage the establishment of new activities such as companies starting up around the exploitation of a project. Other exploitation activities have also been continued under EUREKA projects with a more generous budget (e.g. a project for a vaccine against AIDS). In addition to their economic impact, thee projects may have a positive social and environmental impact (e.g. a project for recycling waste plastic materials).

Other activities have been conducted in conjunction with these specific programmes and have made it possible to identify over 150 exploitable or transferable research results, which have been disseminated via the network of relay centres. Specific activities, such as the "Flair flow" project, cofinanced by VALUE II, have also permitted more targeted dissemination in a given sector, such as the agri-food industry.

With the support of the network of relay centres, 150 "VALUE cross road days" (VACRO DAYS) were organized in the Community in 1994 with a view to making local industry aware of the existence of research results which might meet their technological needs (550 research results were presented in this way). This activity was supplemented by other promotional activities such as participation in specialized exhibitions, conferences or European-scale events with a view to increasing awareness of the achievements of Community activities in research and technological development.

In the field of patents, the collaboration embarked upon with the European Patents Office continued, particularly in connection with a project aimed at the development of a multimedia self-training product on optical disk.

The year 1994 has been a time of consolidation for the Relay centres pilot network launched in early 1993 for a two-years period. Following the entering into force of the EEA Agreement after 1.1.1994, the network with its initial 27 centres has widened up to its current 32 relay centres covering also the EFTA countries signatories to the agreement. The network has carried out an important number of actions in 1994, in the field of dissemination of information on the specific programmes, but mainly it has developed a number of very efficient tools for assisting the exploitation of the results; this has allowed it to increasingly become one of the basic pillars of a European infrastructure for the dissemination and transfer of scientific and technological knowledge, which constitutes a basic need expressed by the European industry. Some provisions have been taken to ensure the transition between the Value relay centres activities and the new network under the Fourth Framework Programme, through a supplement of funds (bridge funding) covering the activities of the current network for some months (May-August), as the current contracts expire on the 30.04.1995.

The Community Research and Development Information Service (CORDIS) offered during the year 1994 over 100 000 documents which were structured in nine databases. These are accessible via the main public European networks as well as on CD-Rom. More than 13 000 CORDIS users are registered. In addition to these computer based services, CORDIS offers a variety of printed products for a wider awareness of the Community research an technological development activities.

The specific needs of the more peripheral and least favoured regions (LFR) of the Community have been taken into account notably in both the VALUE II and the SPRINT programme. Promotion of such activities in LFRs followed three major axes.

First, information and dissemination of RTD results was carried out through awareness seminars and VACRO DAYS in LFRs supported by the demonstration of the CORDIS on-line service on RTD programmes, projects and results. Secondly, RTD exploitation and technology transfer was promoted in particular in LFRs through the creation of the network of Relay Centres, of which more than 30 % are located in LFRs; and by VALUE II or SPRINT projects involving at least one beneficiary from the LFRs. In addition 22 studies, of which 10 are in LFRs, on Regional Innovation and Technology Transfer Strategies and Infrastructures were launched.

Finally, pilot activities have been continued or initiated as joint actions between different Commission Services in Less Favoured Regions (LFR): Regional Technology Plans in eight regions and VALOR technology transfer projects in two regions. The former are strategic studies for the definition of regional innovation policy. The latter aim at the definition of a specific industrialisation methodology through the funding of projects for the exploitation of new technologies in favour of industrial SMEs in LFRs. Pilot activities resulted in, for example, 34 exploratory awards and technology transfer projects for the benefit of SMEs. The experience gained from these pilot initiatives will be used when deciding on the activities to be carried out under the third action of the fourth Framework Programme.

STRATEGIC PROGRAMME FOR INNOVATION AND TECHNOLOGY TRANSFER (SPRINT)

SPRINT has the objective to promote innovation and technology transfer to SMEs. SPRINT disseminates new technologies and innovation by integrating national innovation infrastructure into a European network, by supporting projects which are of particular demonstration value for innovative technologies, by coordinating national innovation promotion policies and, in association with this, carrying out innovation monitoring, by means of the European Innovation Monitoring System (EIMS).

The extension of activities and corresponding budget of SPRINT to cover 1994 has allowed further significant results and has demonstrated the continuing success of the programme and the importance of its main lines of action. These are highlighted in the following description of SPRINT initiatives for 1994.

1. Facilitating the diffusion of new technologies to firms:
The activities of some 50 networks of research and technology organisations, involving in total more than 250 centres were actively pursued. A major event resulting from the 21 Specific Projects for technology transfer was the conference on "The role of technology transfer projects in the innovation process" in February 1995. Following the recommendations of an evaluation study, private type networks will continue concentrating on signing technology transfer contracts, whereas the public type networks will be organising "Technology Transfer Campaigns".

2. Strengthening the European innovation and technology transfer infrastructure:
Helping promoters better to design and plan ***science parks*** and other innovation centres was further promoted through the 1993 calls for proposals, including: feasibility studies of science parks, evaluation of existing science parks, and Regional Innovation and technology Transfer Strategies and Infrastructure.

The ***MINT scheme*** (Managing the Integration of New Technology) was launched in 1993 and about half of the 1000 consultancy assignments originally planned have been conducted to date. The scheme has met with total success in some Member States (particularly those where SMEs prevail and the national/regional system of innovation is less developed), whereas in others, it is still progressing through the experimental phase.

Innovation Management techniques were continuously encouraged. The European design Prize was awarded for the fourth time; SPRINT subsidised the fifth European Value Management Conference in October; The book "Quality promotion in Europe"was published.

3. Improving the awareness and understanding of innovation and exchanging experiences on national and Community innovation policy;
In the framework of the European Innovation Monitoring System ***(EIMS)***, five workshops were organised with the aim of systematic exchange of experience and best practice between professionals and policy makers within the Community and the Commission itself.

A number of studies have ended in 1994 with publications including "An integrated approach to European innovation and technology diffusion policy, a Maastricht memorandum", "Investment, innovation an competitiveness: sectorial performance within the triad", and "Survey of the innovation infrastructure in Central an Eastern Europe". The Community Innovation Survey has highlighted a number of important facts in the context of innovation in Europe.

Specific activities for the exploitation of the results of Community research in 1994 ***included studies***, development of training and demonstration tools; measurements and type approvals; technical and economic verification; patenting activities outside VALUE (5 new files opened, 40 patent applications filed regarding 15 new inventions, 134 patents granted for 26 inventions); trade or service mark registration (12 applications filed, 25 pending applications granted); organisation in June of the third PATINNOVA conference in Copenhagen, for the first time in cooperation with the European Patent Office.

HUMAN CAPITAL AND MOBILITY

Objectives

The principal aim of the programme was to contribute to a quantitative and qualitative increase in the human resources devoted to research and technological development. Research projects were selected on a "bottom-up" basis as the proposals were devised essentially by the researchers themselves without the restriction of target areas being established by the programme.

The programme covered all areas of science and technology. Concerning the social and human sciences, fields which contribute to improvements in European competitiveness and the development of a sound economy were also covered. This enabled projects to be accepted in management sciences; the interface between science, technology and society; and the acceptance and comprehension of scientific and technological advances by the public, among others.

The programme contained provision for four training activities: fellowship grants, networks, access to large-scale facilities, and euroconferences.

S/T Progress

The HCM programme has become widely known. It has made a significant impact on European research institutions and among individual researchers themselves. Competition for selection of projects were severe and rejection rates were as high as 60-80 % of proposals submitted. Furthermore, of those projects selected, funds awaded were the subject of steep reductions in budget compared with the levels requested. Thus the apparently high figures for the number of projects supported, fall far short of the expectations raised among the European research community by the HCM programme when it was launched.

In 1994, 1461 new contracts were signed. They can be divided as follows:

— individual grants[7]	781 contracts
— institutional grants	241 contracts
— networks	284 contracts
— large scale installations	23 contracts
— Euroconferences	132 contracts

The HCM programme has been, by definition a training programme at the highest level. The focus of all the activities supported under the programme has been on the development of the careers of young researchers. In this way it has contributed to the evolution of European research, science and technology. The programme has also been an instrument to assist the process of cohesion as it contains specific measures in favour of the Community's less-favoured regions.

A major conference was held in Rostock in July 1994 to bring together research fellows working in Germany, who had come from other countries under the HCM fellowship scheme. This was a pilot project intended to produce effective feedback about the operation of the programme from the research fellows themselves. The results of the conference are due to be published, and the Rostock event will serve as a model for future conferences.

As the first results of the HCM programme began to feed through, a system for making the information available through the Commission's Cordis database was established. The first fruits of this exercise should be available during the start of 1995. During 1994 the Commission organised an extensive information campaign concerning the new programme, which included information days, publications, press releases. Plans were laid to disseminate documentation, including proposal forms, on-line as well as in print.

In September 1994, the finals of the ***EU Contest for Young Scientists*** was held in Luxembourg, hosted by Commissioner René Steichen and under the patronage of Prince Henri, the Heriditary Grand Duke of Luxembourg. The finals, which attracted wide press coverage, marked the ultimate stage for over 10.000 school-aged scientists who had entered their national competitions the previous year.

Throughout the HCM programme, initiatives were launched which, in the long term, should have a positive impact on less-favoured regions. These include return fellowships which enable researchers

[7] N.B.: For individual grants, there is a noticeable difference between the number of signed contracts and committed contracts.

from less-favoured regions to work and contribute to the research effort at home; the inclusion of specific measures for research networks; better dissemination of information; targeted laboratory courses; the first attribution of grants to confirmed researchers acting in the capacity of visiting scientists to institutes in less-favoured regions. The large-scale facilities scheme contributed efficiently to the widespread utilization throughout the Community of important research installations which are rare in Europe, expensive and essential for successful RTD. Since such facilities tend to be located outside the less-favoured areas, a high number of researchers from less-favoured regions benefitted.

JOINT RESEARCH CENTRE

Objectives and S/T Progress

Specific research programmes

The major task of the JRC in 1994 was to contribute to the implementation of the EC's third Framework Programme in its final year. This contribution accounted for 66 % of the JRC budget, and was carried out, in particular, through activities included in the following specific programmes:

The Industrial and Materials Technologies programme encompassed research on advanced materials executed by the Institute for Advanced Materials, and on the working environment, executed by the Institute for Safety Technology, the Institute for Systems Engineering and Informatics and by the Environment Institute.

The Measurement and Testing programme encompassed research projects on measurements and reference materials, carried out by the Institute for Reference Materials and Measurements, and research projects on reference methods for non—nuclear energies (photovoltaic systems) and the assessment of the reliability of structures, executed by the Institute for Systems Engineering and Informatics and by the Institute for Safety Technology.

The Environment Protection programme consisted of research projects executed by the Environment Institute on atmospheric pollution, and on soil, water and waste pollution. It also encompassed applications of remote sensing techniques, executed by the Institute for Remote Sensing Applications, and research activities on industrial hazards executed by the Institute for Safety Technology and by the Institute for Systems Engineering and Informatics.

The Nuclear Fission Safety programme encompassed a number of research activities ranging from reactor safety executed by the Institute for Safety Technology, to research activities on nuclear safeguards and fissile materials management, executed by the Institute for Safety Technology and the Institute for Systems Engineering and Informatics, and to research activities on nuclear fuels and actinides executed by the Institute for Transuranium Elements.

The Fusion Technology and Safety programme is executed by the Institute for Safety Technology, the Institute for Systems Engineering and Informatics, and the Institute for Advanced Materials, responding to requests from the European Fusion Programme.

The Human Capital and Mobility programme of the JRC continued with increased activities in 1994 and covered all Institutes. The Board of Governors of the JRC approved during 1994, 96 individual fellowships at post—doctoral level, 7 networks involving JRC participation, two institutional fellowships in association with universities, and JRC participation in one large scale facility.

S/T Support for Community policies

In addition to the contribution to the Framework Programme, JRC scientific and technical expertise was made available to other Directorate General of the Commission at their request for support in the formulation and implementation of Community policies. In 1994, the support for Environmental policy accounted for 27.8 % of the total support budget. Support for Energy policy accounted for 27.3 % and support for the Common Agricultural Policy for 14.2 %.

In 1994 the JRC published 951 papers and 30 JRC patents were granted. The detailed lists of JRC publications and patents are published each year in the "Publications Bulletin".

The JRC has offered its scientific expertise to external customers since 1988, and has attracted orders worth more than 83 Mioecu over the seven years since this activity was initiated. Industry remains the most important JRC customer, with 57 % of orders. Research organisations account for 21 %.

PART THREE

WORK PROGRAMMES 1995[8]

FIRST ACTIVITY: RTD PROGRAMMES

TELEMATICS APPLICATIONS OF COMMON INTEREST

Objectives

The main objectives of the new Telematics Applications Programme are:

* to improve the competitiveness of all European industry and the efficiency of services of public interest;
* to stimulate job creation through the development of applications of information and/or communications technologies in such areas as telework and teleservices;
* to enhance the quality of life for citizens, in particular by facilitating their access to the emerging information and communications infrastructure;
* to promote research activities necessary for other common policies.

Means

The new focus of RTD in the specific programme on telematics applications is the emerging information and communications infrastructure, which will provide the basis of the information society of the future. The RTD areas proposed are those most vital to the development of the infrastructure, taking into account the need for selectivity and concentration of effort. Information and communication technologies can be used in often complex set-ups to offer all sorts of users, particularly those in public services and private individuals, new ranges of products and services to meet basic economic and social needs. Research an technological development in telematic applications makes it possible to establish a link between progress in ICT and user needs. It also enables telematic systems and services to develop in parallel with technological progress, making them easier to use. The impact of research of this kind is considerable, provided that the telematic solutions developed are well suited to user requirements and that account is taken of the need for European-level interworking.

The key criteria by which proposals will be selected include the following: user involvement at every stage of the project; anticipation, as far as possible, of the needs of disabled and elderly people; cost-effective solutions to real user problems; user- friendliness of the solutions developed.

The new programme will take account of the recommendations made in 1994 by the European Council concerning the emergence of an information society in Europe. The Council emphasized in particular the importance of new applications for investment and employment, in the areas of teleworking and teleservices for education and training, for health care or for transport.

It is noteworthy that the new Telematics for the Integration of Disabled and Elderly people (TIDE) workprogramme is now part of the overall Telematics Workplan. It was developed alongside the

[8] Cfr. Part Four Annex II, table 11 on the calendar for calls for proposals and selection procedures.

other Telematics Applications areas by 65 invited experts, including users and user organisations, and includes all the technological areas covered by the TIDE Pilot and Bridge Phases with some reorganisation, as well as a new activity designed to enhance the effectiveness and efficiency of those providing services to disabled and elderly people by using information and communications technology.

Specific activities foreseen in 1995

A general call for proposals was launched on 15 December 1994; it will be followed by more focused calls on 15 March and 15 September 1995. The RTD work in the Telematics Applications Programme will be strongly linked to policy and project work in the domains of Information Society, G7 follow-up, interconnection of research and universities networks, Trans-European Telecommunications Networks, transport telematics, and education and training (in the latter case through amongst others the Task Force on educational multimedia software).

COMMUNICATIONS TECHNOLOGIES (ACTS)

Objectives

The objective is to develop advanced communication systems and services for economic development and social cohesion in Europe, taking account of the rapid evolution in technologies, the changing regulatory situation and opportunities for development of advanced trans-European networks and services.

The aims are to support European policies for early deployment and effective use of advanced communications in consolidation of the internal market, and to enable European industry to compete effectively in global markets. The work will enable the rebalancing of public and private investments in communications, transport, energy use and environment protection, as well as experimentation in advanced service provision. In conjunction with the work in the specific programme on information technologies, it will provide a common technological basis for applications research and development in the specific programme on telematic systems and will prepare the ground for the development of a European market for information services.

Means

One typical feature of the ACTS programme is that nearly twenty 'National Hosts' which serve as high-technology communication platforms are put at the disposal of the projects. These 'National Hosts' are inter-connected and represent the first top-European infrastructure in telecomunications. It should also be noted that the ACTS programme is open to the cooperation with third countries outside the EEA (European Economic Area) and will, therefore, contribute to the global development of the Information Society.

Specific activities foreseen in 1995

Following the call for proposals of September 15, 1994, the closing date for the submission of project proposals was 15 March 1995. The evaluation of the proposals received will take place immediately after that date. Once the projects are evaluated and selected, work can be started in the course of the second quarter 1995.

INFORMATION TECHNOLOGIES

Objectives

* To help enhance the quality of life and improve the competitiveness of all European industry
* To contribute to the establishment of an information infrastructure in Europe
* To strengthen the scientific and technological base of European industry
* To promote preparatory and validation activities with a view to standardisation.

Means

The IT programme encompasses new orientations both in technical content and in implementation. Turning first to implementation, the programme puts a greater emphasis on networks of excellence, and makes use of supplier-user collaborations. It introduces a number of focused clusters, a new RTD modality which builds on the experience of the Open Microprocessor Systems Initiative (OMI) under ESPRIT III.

A network of excellence brings together industry, users, universities and research centres with a common research objective. It combines the critical mass of centres of excellence with the benefits for training and technology transfer deriving from geographical spread. 13 networks of excellence have already been launched under ESPRIT III, involving more than 500 research teams.

User-supplier-collaborations supplement joint research projects: supplier enterprises and users between them form a consortium to pursue demonstrably new RTD, with the users having a particular interest in taking up and exploiting the results of the collaboration.

Focused clusters represent a major innovative modality in this specific programme. A cluster is a set of activities covering a number of technology areas geared towards a single well-defined goal. As well as collaborative research projects, a cluster may incorporate other kinds of activity, as its specific needs dictate. These may include networks of excellence, association of suppliers and users, co- operation with Eureka, co-ordination with national initiatives, international co-operation, dissemination of results, or training initiatives. Individual activities within a cluster may have a duration shorter than the life span of the whole cluster.

Participation in the programme will be further facilitated for all potential participants by the streamlining of management procedures. The aims are to simplify the call and evaluation process, and reduce the cost of preparing proposals. There will be more frequent calls for proposals, with each call focusing on particular selected topics within the programme. Each year there will be a call on one or more of four fixed dates — 15 March, 15 June, 15 September or 15 December. Specific procedures to help SMEs are being established, including for example covering an exploratory phase of project proposals. Ways of simplifying contracts are being worked out.

The technical content equally reflects the new emphases on infrastructure, access, use and usability, and best practice.

Part of the programme addresses the more basic or underpinning technologies - software technologies (ST), technologies for components and subsystems (TCS), and multimedia technologies (MT). In addition four focused clusters are proposed, in part intersecting with the underpinning technology areas, as well as including activities with more of an application focus: technologies for business processes (TBP), integrations in manufacturing (IIM), high performance computing and networking (HPCN), and the open microprocessor systems initiative (OMI). Finally to complement the more downstream activities part of the programme is dedicated to long term research (LTR).

Specific activities foreseen in 1995

Following the overall call for proposals on 15 December 1994, there will be more focused calls on each of the four fixed dates in 1995.

INDUSTRIAL AND MATERIALS TECHNOLOGIES

Objectives

The Workprogramme is defined according to short, medium and long term industrial objectives rather than according to technological fields. The Workprogramme is equally applicable to all industries, materials, processes and products and it is intended to facilitate the rapid use of results and the active participation of all partners, in particular SMEs.

In the short term, priority will be given to the research making it possible to adapt existing technologies, or to develop new industrial technologies, which produce a competitive leverage, in particular for the competitiveness of sectors having a lower technological level.

In the medium term, research will be concentrated on industries which are already developing innovative technologies and strategies, making it possible to strengthen their competitiveness as well as making better use of human resources.

In the long term, research will concentrate on strategic technologies, more fundamental and high-risk, for the production and design of products likely to allow the creation of new industries or markets in a context of sustainable growth in the future.

Means

The workprogramme includes quantified industrial objectives, related to the proposed research sub-areas. These quantified objectives are guide targets aimed at providing proposers with all indication of challenges that, taking the present state of the art as starting point, industry may achieve within the time ranges proposed.

The short, medium and long term research tasks suggested should have the potential to produce results in consonance with the indicative objectives provided for the given time range. In the context of this programme, short term is considered less than 5 years, medium term to be 4 to 10 years and long term greater than 8 years, though it is recognised that these ranges are likely to be different for different industrial sectors.

The quantified objectives and the classification of research tasks into short, medium and long-term, are general orientations to assist proposers and are not linked to eligibility criteria of proposals, budget allocation or modalities of programme implementation. It will be the task of the proposers on a project by project basis, to identify in detail the expected impacts of the results, as well as the timescale on which these may he industrially implemented.

The expected research output should be composed not only of technologies and methodologies, but also of their validation in experimental technical and economic terms, including where appropriate their demonstration.

Initiatives enabling potential owners and users to have access possible to results as quickly and as widely as possible will be the subject of special attention, taking due account of legitimate intellectual and industrial property rights. This could include attention to the incorporation of the results into standards and codes of practice. These activities although not explicitly mentioned within early research task, represent an important complementary objective of the programme.

In view of the expiry of the ECSC Treaty, research activities linked with steel products and process innovation will gradually be taken over in the context of this programme on the condition that the precompetitive and multisectoral nature is respected.

Specific activities foreseen in 1995

The general call for proposals on 15 December 1994 will lead to the start of proposals by the end of the year.

STANDARDS, MEASUREMENTS & TESTING

Objectives

The objectives of the programme are, for all fields of measurement and testing:

* to improve the competitive position of European industry, in particular SMEs, by the promotion of better measurements and tests in the research and development, better definition and control of the quality of products, more efficient in-process measurements, improved written standards and technical assistance to the mutual recognition of certificates in accordance with the Global Approach to Conformity Assessment;

* to promote research and other technical support necessary for the development and implementation of other Community policies (Single Market, environment, agriculture, health, transport and protection of the Community's external frontiers) and, when appropriate, the European standards necessary for their implementation;

* to support the further development of the European measurement infrastructure by facilitating the coordination of national activities, the development of measurement standards, of advanced methods and systems and the mutual recognition of results and accreditation systems;

* to promote the dissemination and application of good measurement practice throughout Europe, particularly in the less favoured regions.

Means

Time limited calls for proposals will focus efforts on the competitive needs industry and on the development of a harmonised European measurement infrastructure and the provision of the sound scientific and technical base required in support of Community policies. In addition, dedicated calls for proposals restricted to specified topics provide a flexible and rapid response to research which is urgently required in support of Community policy and related European standards. The importance of the coordination of national activities in the improvement of the European measurement and testing infrastructure is recognised by the increased use of thematic networks and training courses.

Specific activities foreseen in 1995

The general call for proposals on 15 December 1994 will be followed by more focused calls on 15 March, 15 June and 15 December 1995.

ENVIRONMENT AND CLIMATE

Objectives

The objectives are to understand processes underlying climatic and environmental change, in order to identify and assess the effects of human activity. Detailed analysis of human and social behaviour and of the patterns of economic development responsible for adverse effects on the environment will be carried out in parallel with the study of natural processes.

* to improve assessment of the consequences of climatic and other environmental change for the natural environment and for society.

* to contribute to the technological development necessary for environmental observation, monitoring and research, including methodologies and technologies for the monitoring, warning and management of natural hazards, impact of products on the environment, from the stage of raw materials incorporated into these products up to their final use and disposal, will also be taken into account.

* to contribute to the development of a comprehensive European earth observation for environmental observation and research.

Means

Research supportive of the science base should aim at specific research communities, networks and international programmes. Research aimed at underpinning the development and implementation of the Union's environment policy should reflect the needs of the Community programme of Policy and Action in relation to the Environment and Sustainable Development and of the European Environment Agency. Potential industrial exploitation of project results should be facilitated by direction to specific industry communities and fora, particularly for those involving SMEs.

Specific activities foreseen in 1995

An overall call for proposals was launched in January 1995 and contract signatures are expected as from October 1995. A call for proposals in two further areas relating to space techniques applied to environmental monitoring and research (theme c) was launched in June 1995.

MARINE SCIENCE AND TECHNOLOGY

Objectives

To understand the functioning of marine systems at basin scales, in order to prepare for sustainable use of the oceans consistent with the preservation of marine environmental quality and to determine their role in global change.

Means

The study of processes in the seas around Europe (physics, chemistry, biology and geology) will be expanded to address extreme marine environments e.g. the deep-sea floor and the Arctic ocean. The concept of large scale "targeted" projects, initially applied in 2 areas (the Mediterranean and the North-East Atlantic), will now be also applied in the Baltic and in a zone extending from the Gibraltar strait to the Canaries and the Azores.

The general area of coastal zone science and engineering is now refocused as "strategic" marine research, in order to make it more applicable in managing the marine environment considered as a

resource and as human living space. In marine technology, more importance will be given to research on bioactive substances, on submarine geotechnics, on instruments and platforms for use in hostile sea conditions (deep sea, under ice,...).

On the implementation side, it is intended to introduce several innovations: more concerted actions, technology stimulation for SMEs, and measures for the dissemination of results of earlier MAST programmes.

Specific activities foreseen in 1995

An overall call for proposals was launched on 15 December 1994 and contract signatures are expected as from October 1995.

BIOTECHNOLOGY

Objectives

It will be the responsibility of the Community to promote under the Biotechnology programme further research work where society would expect the highest returns. This points to privileged areas for the exploitation of new knowledge, all of which experience in common an acute need for cross-linking connected topics and/or integrating large groups of experts on an international scale. Such an integrative approach must also be taken in order to:

* ensure safety when using living cells in the production process,

* give commensurate importance to the European contribution to international genome projects,

* promote reasonable development of agriculture, taking environmental protection into account, and taking appropriate account of animal protection, in so far as, for example, genetic modification of animals and crops or health is involved;

* overcome the purely academic distinctions between specialist areas such as neurobiology, endocrinology or immunology with a view to unravelling cellular and molecular interactions.

Means

This programme has been selective in choosing three approaches, each one with a specific goal and restricted to identified scientific areas.

1. With a view to harvesting the highest potential returns on R&D in the medium term, four scientific areas will benefit from **concentrated means**. Task-oriented projects should aim to have measurable impacts, and significantly change the state of the art. A multidisciplinary integrated approach is recommended.

2. Other four scientific areas will be the focus of **concertation efforts** where coordination and building upon national research programmes will be of primary interest. The aims will be to maintain the high potential for innovative breakthroughs in key areas of research which tend to be developed in relative isolation within Member States, and to increase the value-added effects from the interaction and harmonization of on-going activities across borders.

3. With a view to linking academic institutions, research laboratories and industry (particularly SMEs), thus further enhancing public understanding and clarifying value-laden issues in

relation to applications of biotechnology, four **horizontal activities** will be supported in areas essential to the exploitation of the life sciences. These activities may require special attention in respect of other factors such as socio-economic or ethical issues.

These approaches will be implemented through a wider range of participation modalities that will ensure the balanced involvement of key players and users: shared cost integrated projects, shared cost RTD projects, concerted actions, demonstration activities, preparatory awards for SMEs, preparatory, accompanying and support measures, platforms or "extended audiences" and training fellowships.

Measures intended to encourage the participation of SMEs, in particular technology stimulation measures and links between science parks and biotechnology SMEs taking account of the needs of those from less advanced regions, will be implemented.

Specific activities foreseen in 1995

The first overall call for proposals was launched on 17 January 1995 and contract signatures are expected as from October 1995. It will be followed by a second one on 15 September, with deadline for submission of proposals on 15 December 1995.

BIOMEDICINE AND HEALTH

Objectives

The specific programme of research and technological development, including demonstration, in the field of biomedicine and health (1994- 1998) proposes research that is essential to any strategy to protect the health of the citizens and to fight diseases. Furthermore the programme tends to strengthen the scientific basis of the competitiveness of the European health industry and to promote the transfer of research results into clinical practice. This programme will continue the efforts of the previous programme but with a broader scope and increased emphasis on the needs of patients, health care professionals, health industries and the Union as a whole.

It will cover seven target areas being:
1) Pharmaceuticals Research;
2) Research on Biomedical Technology and Engineering;
3) Brain Research;
4) Research on Diseases with Major Socioeconomic Impact;
5) Human Genome Research;
6) Public Health Research, including Health Services Research;
7) Research on Biomedical Ethics (notably ethical aspects of areas 1 through 6).

Means

Under area 4 (Research on Diseases with Major Socioeconomic Impact) research will provide fundamental answers, by integration of basic and clinical research, to improve prevention, diagnosis and treatment of diseases such as cancer, AIDS and other infectious diseases, cardiovascular diseases, chronic diseases, orphan illnesses, and will also concentrate on occupational and environmental health. A major novelty, made possible by art. 129 of the Treaty of the European Union is the explicit inclusion of Public Health in the programme. Furthermore, Pharmaceuticals research and Brain research have now became separate areas. The programme will also involve horizontal activities such as research into the ethical, legal and social issues (ELSA) and demonstration projects for evaluating the performance of new technologies and approaches.

Within this programme it is intended to go beyond concertation only and to participate in cost sharing research in specific areas (Pharmaceuticals, Biomedical technology and engineering, Brain, Human Genome).

Specific activities foreseen in 1995

In order to implement the programme a first overall call for proposals was launched on 17/1/95 with a deadline of 31/3/95.

AGRICULTURE AND FISHERIES, INCLUDING AGRO-INDUSTRY, FOOD TECHNOLOGIES, FORESTRY, AQUACULTURE AND RURAL DEVELOPMENT

Objectives

The general objectives of the action are to:

* promote cooperation between industries, research centres and universities in the fields covered by the programme,

* harmonize research in the food and non-food primary production sectors of agriculture, horticulture, forestry, fisheries and aquaculture and its links with the input and processing industries,

* contribute to the improvement of the competitiveness of the European agro-industrial and primary production sectors, by developing new technologies,new systems and methods of production which are compatible with sustainable growth and the needs of the consumers,

* improve the quality of agricultural, forestry and fisheries products in general and of foodstuffs in particular,

* support the implementation of the common agriculture and fisheries policies, and other Community policies (internal market and environment), the rural development and the maintenance of employment in rural areas,

* contribute to matching production and use of biological raw materials.

Means

The programme will be implemented through shared-cost projects, concerted actions and accompanying measures. There are three new types of shared-cost activities with respect to the AIR programme. **Cooperative research projects** which will enable groups of agricultural and agro-industrial SMEs with no or inadequate R&D means of their own to engage third parties to carry out research on their behalf to solve common or similar problems. **Exploratory awards** to help all types of SMEs with the preparation of shared-cost projects. **Thematic networks** which will bring together research carried out by manufacturers and processors, primary producers, end-users, universities and research centres on generic technologies, in order to facilitate incorporation and transfer of technology.

Demonstration projects will be implemented. In these projects the resources of interdisciplinary skills of producers of new technologies or of new systems and methods of production will be

combined with those of technology users to show, on a meaningful scale of operations, the techno- and socio- economic advantages offered by state-of-the-art concepts with respect to existing practices.

In accordance with the views of the European Parliament on ethical and social assessment of Life Sciences and Technologies programmes, the ELSA (Ethical, Legal and Social Aspects) activities are also a new concept in the Agriculture and fisheries programme. Its main objectives are to understand and improve the communication process, in particular, to consumers, environmental and animal welfare groups and other social players in the area.

Specific activities foreseen in 1995

The first call for proposals on 15 December 1994 will be followed by two others in June and December 1995.

NON NUCLEAR ENERGY

Objectives

The prime objectives of the non-nuclear energy programme 1994-1998 (JOULE-THERMIE) are to improve energy security in the broadest sense and, recognizing the concern for the protection of the environment, to reduce the impact of the production and use of energy, in particular the emissions of CO_2. Within this frame, the programme also aims to contribute to the achievement of other important policy objectives, such as strengthening the technological basis of industry — with benefits for the economy, employment and export potential —, improving social and economic cohesion and contributing to cooperation with third countries (in particular PECO and developing countries).

Means

The new programme combines continuation with novelty. While RTD actions will mostly be carried along the same technological axes as for the previous programme, i.e. rational use of energy, renewable energies and fossil fuels, many new elements have been added. First, the programme merges within one single instrument both R&D and demonstration actions which had previously been carried out separately within the JOULE and THERMIE programmes. Secondly, it introduces a new activity in support of an overall energy RTD strategy encompassing the whole chain from basic research to dissemination. Thirdly, it boosts the support in favour of renewable energies by doubling their R&D funding level as compared to the previous JOULE programmes.

The scientific and technical objectives of the programme have been finalized on the basis of the results of a seminar on energy research with the direct involvement of Europe's major actors in the energy field. The work programme will be implemented in close coordination between DG XII (for the R&D component) and DG XVII (for the demonstration and dissemination components).

Specific activities foreseen in 1995

The first call for proposals for both R&D and demonstration closed on 24 March 1995 with a view to starting the first projects by autumn 1995. A second call for proposals restricted to demonstration activities is planned for September 1995. Furthermore, the programme has launched an open call for proposals to disseminate the results of the programme and to foster the participation of SMEs, for which 5 % of the programme budget is earmarked.

NUCLEAR FISSION SAFETY

Objectives

The main objective of the Nuclear Fission Safety Programme (1994- 1998) is to achieve a maximum level of safety for all stages of the nuclear fuel cycle and that workers, the population and the environment are protected from all radiological consequences of nuclear energy production. This remit also includes ensuring that regulation maintains pace with the developments in the nuclear industry and also contributing to the acceptance of the industry by the public. The programme has five main activity areas: *Exploring Innovative Approaches; Reactor Safety; Radioactive Waste Management and Disposal and Decommissioning; Radiological Impact on Man and the Environment; and Mastering Events of the Past.*

Means

The new programme has been restructured to take the need for innovation and priority definition into account while preserving continuity. New elements have been added, such as new concepts of reactor design, and the topics previously addressed in the COSU programme on the Consequences of the Chernobyl Accident have been expanded to include other radioactively contaminated areas and taken up in the programme. The implementation of the programme will be made by means of both shared cost and concerted actions. The programme has been finalised following the seminar on energy research which involved the major organisations involved in the energy field.

Specific activities foreseen in 1995

A call for proposals has been issued with a first deadline on 20 March 1995, evaluation in April and May and a planned start of the first projects towards the end of the year. The second deadline for proposals is scheduled on 28 February 1996. The call for proposals for concerted actions remains open until 1 November 1997.

CONTROLLED THERMONUCLEAR FUSION

Objectives

The priority objective of the programme is to establish the engineering design of the Next Step within the framework of the quadripartite cooperation on the ITER-EDA. Possible improvements to concepts in plasma physics and plasma engineering will be investigated, while assessing their technical feasibility, and long- term technology developments required for progressing toward the exploitation of fusion as an energy source will be carried out. The results of such studies will be of benefit both in the operation of ITER and, in the longer term, in the conceptual definition of DEMO, a demonstration reactor capable of producing significant quantities of electricity.

Means and specific activities foreseen in 1995

This programme does **not** proceed by means of calls for proposals and corresponding Workprogrammes.

* *Next Step activities:*
The ITER-EDA will be pursued and includes the design proper by the Joint Central Team (JCT) and by the Home Teams (HT) of the 4 ITER Parties, plus the supporting R&D in physics and technology

by the HTs. The ITER-EDA Interim Report will be issued in 1995. Euratom Next Step activities other than the participation in the JCT are coordinated by the NET Team: supporting plasma physics and plasma engineering R&D will be pursued on JET and on the specialised devices in the Associations. An extension of JET until the end of 1999 for the benefit of ITER is under consideration.

* *Concept improvements:*
Proposals for upgrading devices and for the construction of new ones are being examined or might be submitted in the course of 1995. A proposal for joining the activities of three Associations is under consideration.

* *Long-term technology:*
The activities will be continued and expanded on development of tritium breeding blankets, radiation resistant and low-activation materials (including the conceptual design of a high-energy neutron source) and further analysis of the safety and social acceptability of fusion power.

TRANSPORT

Objectives

The Transport Programme aims through research to contribute to achieving the objectives of the Common Transport Policy, namely efficient and cost-effective transport networks for goods and passengers under the best possible environmental, social and energy consumption conditions.

The main objectives of the proposed programme are:

* to develop a more efficient, safer and more environmentally friendly transport system for passengers and goods;

* to facilitate the interconnection and interoperability of the separate transport networks;

* to increase the efficiency of each individual mode and improve cooperation between them;

* to promote the design and management of infrastructure with a view to reducing the damage the environment and improving the quality/price ratio;

* to provide industry, transport operators and users and authorities with the appropriate decision-making instruments based on better knowledge and understanding of mobility, traffic flows, their interactions and interdependencies.

Means

The means is a European approach that is developed to exploit the synergy between the different Community and national activities, as well as those of other international organizations.The research activities will be developed at two levels:

— a European strategic level,
— a network optimization level(combined transport, rail transport, air transport, urban transport, maritime transport, road transport).

Most of the actions will be carried out through shared cost actions, concerted actions, preparatory, accompanying and support measures, research Studies.

Specific activities foreseen in 1995

The first call for proposals covering all areas of the programme closed on 15 March 1995 and will be followed by a second call in September 1995, closing in December 1995.

TARGETED SOCIO-ECONOMIC RESEARCH

Objectives

The targeted socio-economic research activities aim at elucidating future decision-making by developing a shared knowledge base on the challenges facing Europe, based on research and other work in three inter-related areas:

* *evaluation of science and technology policy options,*
* *research on education and training,*
* *research on social integration and social exclusion in Europe.*

Evaluation of science and technology policy options for Europe will provide a common knowledge base for decision-makers in the fields of science and technology policy at regional, national and European level and for all those responsible for other areas of activity in which science and technology play a role, with the ultimate objective of encouraging greater consistency and closer coordination of RTD efforts and policies in Europe.

The objectives of the Community's research activities on education and training must be to support the efforts made by Member States to strengthen the links between research, education and training and to improve their education and training systems through research and dissemination of good practice and innovation. The objective is to help to promote the development in Europe of a society in which lifelong learning and education permanently play a central role.

Poverty and social exclusion are major problems facing the Member States; Research into social integration and social exclusion is necessary in order to gain a fuller understanding of these problems so that remedies can be found.

Means

This new programme will mainly support on a shared cost-basis RTD projects and thematic networks, and will also implement a number of horizontal measures such as the establishment of the European Technology Assessment Network (ETAN), which should operate in close cooperation with the main bodies actively involved in evaluation of science and technology options in Europe. The intention is to make the best use of the expertise available from various socio-economic circles and to circulate information on the research and other work in progress in the European Union.

The European Science and Technology Observatory of the Institute for Prospective Technological Studies of the JRC will provide an information service on progress in science and technology and ensure surveillance of scientific developments and technological innovation.

Specific activities foreseen in 1995

A first general call for proposals was launched on 15 March 1995, together with a call for expression of interest concerning membership of ETAN.

SECOND ACTIVITY: INTERNATIONAL COOPERATION WITH THIRD COUNTRIES AND INTERNATIONAL ORGANIZATIONS

Objectives

The objectives of the programme are to add value to Community RTD, and to improve coordination with other Community instruments and synergy with Member States' activities in order to avoid duplication and better define the Community's areas of activity on the basis of the subsidiarity principle.

It is the centralized activity for international cooperation and targets four geographic areas: *A.1, other fora for S&T cooperation in Europe; A.2, Central European countries and the independent states of the former Soviet Union; B, industrialized non-European countries and C, developing countries.*

Means

The instruments, tuned to the needs and opportunities of RTD cooperations with partners in these four geographic areas, include concertation, dialogue, concerted and cost-shared action, accompanying measures as well as, in certain cases, financial support for the participation of third country participants in other specific programmes of the Fourth Framework Programme (areas A.2 and C).

In appropriate cases, interfaces with other specific programmes will be developed to enhance synergy and added value, for example with Environment and Climate, Marine Science and Technology and Non-nuclear energy programmes.

It is intended to further reinforce the network of Community programme managers and EUREKA project coordinators, to organize joint conventions, promotional and brokerage events, and to reinforce links with other research fora, while enhancing the use of counselling and information distribution networks (VALUE, OPETs etc.) at Community, EUREKA and member state levels, by researchers and industry.

Specific activities foreseen in 1995

Three calls are foreseen in 1995. The first one concerns fellowships in Japan and Korea *(area B).* The second one concerns *area C*; activities will be targeted on three principal interrelated sectors of general importance: sustainable management of renewable natural resources, sustainable improvement of agricultural and agro-industrial production and health as well as on other areas of mutual interest: information and communication technologies. The third call concerns *area A.2*; activities will seek to help safeguarding the RTD potential, to help solving RTD problems of social, economic and ecological importance and to intensify cooperation in the areas of RTD where these countries are at a world class level.

Concerning international organizations, it is planned to put into effect the closer collaboration aimed at in the administrative arrangements with CERN and the EMBL, to arrive at closer ties with other European international organizations, and to maintain the close relationship with ESA, ESF, OECD and UNESCO. Approximately 25 new COST Actions will be launched in addition to preparatory work on physics and neuroscience. An evaluation of COST is envisaged, covering structures, mechanisms and results.

An agreement with Canada is signed, negotiations for agreements with Switzerland and Israel are expected to be completed, and negotiations for agreements with the USA and South Africa are expected to start.

THIRD ACTIVITY: DISSEMINATION AND EXPLOITATION OF THE RESULTS OF ACTIVITIES IN THE FIELD OF RTD

Objectives

The **Third Activity** under the **Fourth Framework Programme** for the dissemination and exploitation of results combines in a single programme both the continuation of existing projects in this field and, more generally, activities relating to innovation and technology transfer.

This approach, based on the complementary nature of research and innovation, takes account of both the non-linear and the complex and interactive nature of the innovation process. The work programme for the implementation of the specific programme for dissemination and exploitation therefore centres round the following three objectives:

* *making the business environment more favourable to innovation and the absorption of technologies*
* *promoting the dissemination of knowledge and technology within the European Union (Single Market effect)*
* *making research results and technologies which are likely to meet the needs of businesses available throughout the Union.*

Because of the nature of its activities, the Third Activity under the Fourth Framework Programme is central to the problems of competitiveness as defined by the White Paper and also directly contributes towards the objectives of the Framework Programme as set out in Article 130f of the Treaty.

Means

The Third Activity shall focus, in particular, on

— pilot and experimental actions, observatory and studies for assisting in promoting innovation in objective 1 regions (EIMS);
— networks for promoting technology transfer and innovation;
— support activities for technology transfer and validation projects;
— dissemination and information service (CORDIS).

The CORDIS information service will offer a wide range of on-line and off-line services, the quality of the information will be further improved and gateways will be established providing access to national information systems also aimed at disseminating scientific and technological information.

Specific activities foreseen in 1995

Following the advance announcement of 15.12.1994, a call for proposals has been published on the 17.1.1995. An initial call for proposals was published on 15 December 1994 with the aim of establishing a network of about 45 relay centres to provide a basis for a European infrastructure for disseminating technologies and promoting them on the basis of the needs of industry, including the promotion of the Community RTD programmes and their results.

A second call for proposals was published on 15 March 1995 with a view to supporting technology validation and transfer projects and thus contributing to the implementation, at European level, of an efficient tool for facilitating validation, transfer and integrations of new technologies int the economic and social fabric, and promoting an innovation culture.

Other calls for proposals in 1995 concern the following areas: EIMS (European Innovation Monitoring System), financial environment, regional action and support for science parks, innovation management techniques, experimental networks and services. The common aim is to contribute to an improvement in the innovation environment in the European Union.

FOURTH ACTIVITY: TRAINING AND MOBILITY OF RESEARCHERS

Objectives

The aim of the programme is to promote, through the stimulation of training and mobility of researchers, a quantitative and qualitative increase of human resources within the Community and associated States. Its general objectives are the following:

* to stimulate training through research and, by means of cooperation, to foster better utilization of high-level researchers in the Community,

* to improve the mobility of European researchers throughout the Community, encouraging mobility both between universities, research institutes and industry and between disciplines, thus better exploiting the research potential in the different disciplines,

* to promote, for instance through networks, transnational cooperation on research activities proposed essentially by the scientists themselves and not eligible for support under the first activity,

* to facilitate the access of all European researchers to existing large-scale facilities that are essential for high-quality research,

* to improve the scientific and technological cohesion of the Community and contribute to the attainment of a general level of scientific excellence by offering research opportunities to scientific institutions and researchers from all regions of the Community. As was the case under the "Human Capital and Mobility" programme (1992- to 1994), the return to their region of origin of researchers originating from the less-favoured regions will be encouraged and financed.

This activity will cover the exact, natural, economic and management sciences, as well as those social and human sciences that contribute to the Community's objectives in research, technological development and demonstration.

Means

A number of significant developments, with respect to the former programme, have been initiated in each of the four main activities and are summarized below.

Research training grants

A more flexible 'research training grant' scheme, common to all research programmes offering grants, will be established. This will enable researchers and their prospective host institute better to tailor the research project exactly to the applicant's career and the host institute's research needs.

Networks
Funding under the TMR networks activity will show a substantial increase compared with funding under the previous programme. Each partner in a network should receive, on average, about ECU 70 000 per year, per laboratory. This amount, several times larger than the sum allocated under HCM, should lead, on the basis of 5 to 10 laboratories per network, to contracts falling in the range of ECU 1 to 2 million. In this way the Commission is seeking to support real advanced training, and not only researcher mobility.

Access to large-scale facilities
In addition to continuing to promote access for researchers to large-scale facilities, financing will be awarded to support improvements to facilities, with the aim of promoting a more efficient use of the installations.

Accompanying measures
The Euroconference activity is brought under the accompanying measures, which also will provide support for more direct training actions, such as summer schools and practical training courses. These latter are intended to draw on the needs and potential of industry in relation to advanced research training. Also under this heading, the Commission intends to undertake a series of studies relating to the more effective equal opportunities and higher participation in the programme of researchers from industry and those working in less- favoured regions.

Specific activities foreseen in 1995

The new programme, Training and Mobility of Researchers (TMR), was officially launched on 17 January 1995, with the publication of the call for proposals. First contracts for the research training grants, access to large-scale facilities and accompanying measures should be issued before the end of the year. In the case of the substantially more complex networks contracts, signatures are not foreseen until 1996. In 1995, the Commission intends to contract with an independent expert consultancy to investigate the participation of women in the programme and examine the possibilities for improving equal opportunities. In addition, work on the provision of advanced training for researchers through modern telematics may be the subject of a study in 1995, in cooperation with other services of the Commission working in this area.

Concerning the results of the HCM fellowship scheme and the development of its successor under TMR, the research training grants scheme, the Commission plans to hold a second 'fellowship seminar' this time in France, bringing together a large number of fellows who are undertaking research in one country.

The European Union Contest for Young Scientists, which is the EÙs annual showcase of scientific talent will, in 1995, take place in Newcastle-upon-Tyne in the UK. Contestants from over 20 countries will take part.

JOINT RESEARCH CENTRE AND COMPETITIVE SUPPORT ACTIVITIES

JOINT RESEARCH CENTRE

Objectives

The Joint Research Centre (JRC) will conduct strategic and applied research. It will therefore be an integral part of European science and technology. The JRC will also contribute to the establishment of the scientific and technical bases needed for the formulation and implementation of various Community policies. The specific programme concerning the work for the EC will be carried out on

the one hand by means of direct action and on the other by means of activities suited to a competitive approach and intended for scientific and technical support to Community policies. The specific programme concerning the work for the EAEC will be carried out by means of direct action.

Means

The JRC research contributions to the various lines of the Framework Programme are planned in such a way that they are complementary to the corresponding work of the Specific Programmes (shared cost action programmes). This is particularly significant with the Centre for Earth Observation action on the Environment and Climate line as well as for the research on the same line on global change.

Specific activities foreseen in 1995

The implementation of the above programmes is planned in 1995 in some 30 workschedules that define the single projects and make up the JRC Workprogramme, as approved by the JRC Board of Governors. Amongst the new features in these programmes are the emphasis on environmental technologies throughout the programmes on environment and climate, industrial technologies and materials technologies and non—nuclear energy as well as the new strategic studies under socio—economic research.

COMPETITIVE SUPPORT ACTIVITIES

Objectives and means

This new action of competitive support activities is carried out by means of work suited to a competitive approach in the context of a customer-contractor relationship. It is intended for scientific and technical support to Community policies. The implementation of this research will be assigned to research bodies and centres, including the JRC, universities or undertakings.

The Commission has entrusted the implementation of this action to its Secretariat General, together with the Directorates General responsible for the various Community policies.

Specific activities foreseen in 1995

For 1995 the resources available have been allocated to 72 projects, falling within the areas of Information and Communication Technologies, Industrial Technologies, Environment, Life Sciences and Technologies, Energy, Socio-Economic Research and Dissemination and Exploitation of Research Results. This contributes to Union policies, notably on industry, agriculture, environment, energy, consumer protection, transport and exploitation of research results. The Directorates General concerned will manage the resources for the projects according to the Financial Regulations as applicable to the Research Budget.

PART FOUR

ANNEXES

Annex I

Tables 1-10 summarize Community RTD activities in **1994** in a quantitative form (number and nature of projects, participants, transnational links, level of funding etc.). The figures relate to Third Framework Programme activities and to major APAS'es (Actions de Préparation, d'Accompagnement et de Suivi); they include participation from Member States as well as from countries of the European Economic Area and of EFTA.

Consequently and in order to ensure consistency, figures relating to earlier Framework Programmes are not included, nor are data on amendments to contracts. Only in a relatively few cases, for example the non-nuclear energy programme, would such activities have represented a relatively high proportion of the overall activities in 1994.

The abbreviation "n/a" used in these tables means "not applicable" or "not available".

Tables 5-10 concern only shared-cost actions.

Annex II

Table 11 gives an overall view of the **1995** calendar for project selection procedures in each of the specific programmes, as well as the total budget appropriations (commitments) for each of them in 1995 according to the revised budget for 1995.

Annex III

This annex provides two tables on the amounts and indicative breakdown of the Third and Fourth Framework Programmes, respectively, and a graph showing the evolution in annual Framework Programme commitments.

Annex IV

Two tables present the major steps in the adoption of the Third and Fourth Framework Programme decisions (main dates and document references, length of adoption procedure).

Annex V

This annex gives a list of the major Community research programme evaluation and impact studies completed or published in 1994

Annex VI

List of main abbreviations or acronyms used

Table 1

Annex I

RDT activities in 1994: All programmes (FP3)/APAS - New projects and all projects by type of activity

	New projects (RTD contracts signed in 1994)						All projects	
	Total EC contribution MECU(1)	Number of projects	Number of participants	Average number of participants per project	Average number of Member States per project	Average EC contribution per project MECU	Number of projects under way at 31.12.94(2)	Payments 1994 Total MECU
Shared-cost actions	1.378,40	2.970	11.903	4,0	2,4	0,464	6.786	1.689,36
Preparatory, monitoring and support measures	203,87	2.615	2.906	1,1	n/a	0,078	775	58,20
Concerted actions	63,57	365	3.267	9,0	n/a	0,174	3.205	44,94
Fusion (including JET and administration/support) (3) (4)	209,00	151	185	n/a	n/a	n/a	210	143,45
TOTAL	1.854,84	6.101	18.261	-	-	-	10.976	1.935,95

1) Sum total EC contribution for each new project, as stipulated in the contract (i.e. for entire project duration)

2) Projects under way at 31.12.1994 = signed contracts with a completion date for research work after 31.12.1994

3) Only the controlled thermonuclear fusion programme

4) Only 2 projects with several participants, all the others with only one

Direct actions - Joint Research Centre (5)	296,02	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TOTAL	2.150,86	6.101	18.261	-	-	-	-	-

5) For direct actions, only commitments 1994 are given

Table 2

RDT activities in 1994: Specific programmes (FP3)/APAS - New projects (contracts signed in 1994)

	Total new projects (contracts signed in 1994)						Shared-cost actions	Preparatory, monitoring and support measures	Concerted Actions
	Total EC contribution(1) MECU	Number of projects	Number of participants	Average number of participants per project	Average number of MS (2) per project	Average EC contribution per project	Total EC contribution(1) MECU	Total EC contribution(1) MECU	Total EC contribution(1) MECU
Names of specific programmes (FP3)									
Information Technologies	249,20	178	983	5,5	3,1	1,400	249,20		
Communication Technologies	46,00	25	223	8,9	5,1	1,840	46,00		
Telematics Systems	35,60	102	496	4,9	1,5	0,349	18,30	15,90	1,40
Industrial and Materials Technologies (3)	261,05	706	1.836	2,6	2,0	0,370	254,74	5,94	0,38
Measurement and Testing (4)	26,57	87	273	3,1	2,8	0,305	26,06	0,51	
Environment	104,25	264	1.175	4,5	3,7	0,395	102,15	2,09	
Marine Sciences and Technologies	16,36	34	120	3,5	3,9	0,481	13,99	2,37	
Biotechnology	39,30	132	316	2,4	2,8	0,298	33,46	5,45	0,39
Agriculture, Agro-Industrial Research and Fisheries	159,97	414	1.954	4,7	3,8	0,386	136,90	7,27	15,80
Biomedical and Health Research	43,20	233	1.858	8,0	2,0	0,185	2,48	3,87	36,85
Life Sciences and Technologies for Developing Countries	29,43	79	306	3,9	2,1	0,373	29,43		
Non-nuclear Energies	36,07	178	473	2,7	3,6	0,203	34,15	1,92	
Nuclear Fission Safety	0,86	43	43	1,0	1,0	0,020	0,02	0,84	
Controlled Thermonuclear Fusion (including JET and administration/suppo	209,00	151	185	n/a	n/a	n/a	209,00		
Human Capital and Mobility	197,64	1.461	3.436	2,4	4,8	0,135	99,91	97,73	
Centralized Action	17,16	213	269	1,3	2,9	0,081	4,90	12,26	
Names of APAS									
COPERNICUS: Coop. with Central and Eastern European Countries and th	39,46	216	810	3,8	1,5	0,183	39,40	0,05	
International Scientific Cooperation	29,30	327	547	1,7	1,3	0,090	23,84	5,45	
PECO: Participation of Central and Eastern Countries and the NIS in FP3	24,02	289	838	2,9	1,0	0,083	20,13		3,89
Renewable Energies	19,21	53	235	4,4	3,2	0,362	19,21		
SPRINT: Technology Transfer	24,40	269	663	2,5	2,1	0,091	24,40		
Thermie: Non-nuclear Energies	176,00	293	457	1,6	n/a	0,601	148,00	28,00	
TIDE: Telematics for the Integration of Disabled and Elderly People	18,60	31	31	1,0	n/a	0,600	17,50	1,11	
Others	52,19	323	734	n/a	n/a	n/a	34,23	13,11	4,86
TOTAL	1.854,84	6.101	18.261	-	-	-	1.587,40	203,87	63,57

1) Sum total EC contribution for each new project, as stipulated in the contract (i.e. for the entire project duration)

2) MS : Member States

3) In addition to those signing the contracts, there are a further 466 laboratories actively participating in projects

4) In addition to those signing the contracts, there are a further 559 laboratories actively participating in projects

5) Includes 72 MECU for JET and 22 MECU for administration/support

6) Only 2 projects with several participants, all the others with only one

Table 3

RDT activities in 1994: Specific programmes (FP3)/APAS - Total projects (1) in 1994 and overall

	Number of projects under way at 31.12.1994(2)	Overall number of projects(3)	1994 payments total MECU	Overall EC contribution MECU (4)
Names of specific programmes (FP3)				
Information Technologies	630	719	407,52	1.478,43
Communication Technologies	120	n/a	118,74	n/a
Telematics Systems	246	n/a	73,53	n/a
Industrial and Materials Technologies	898	1.577	224,15	748,92
Measurement and Testing	166	184	11,65	55,77
Environment	513	603	104,89	303,43
Marine Sciences and Technologies	107	112	30,28	100,60
Biotechnology	276	302	50,84	165,68
Agriculture, Agro-Industrial Research and Fisheries	289	289	70,47	177,10
Biomedical and Health Research	500	522	40,60	161,58
Life Sciences and Technologies for Developing Countries	260	286	24,34	104,52
Non-nuclear Energies	350	431	65,29	239,46
Nuclear Fission Safety	86	96	17,84	45,12
Controlled Thermonuclear Fusion (including JET and administration/support)	210	396	143,45	551,42
Human Capital and Mobility	2.944	3.413	132,07	544,22
Centralized Action	234	n/a	14,63	n/a
Names of APAS				
COPERNICUS: Coop. with Central and Eastern European Countries and the NIS	474	1.543	39,68	70,36
International Scientific Cooperation	478	1.212	34,27	125,76
PECO: Participation of Central and Eastern Countries and the NIS in FP3	321	370	10,69	31,61
Renewable Energies	53	53	5,88	19,21
SPRINT: Technology Transfer	478	n/a	18,82	n/a
Thermie: Non-nuclear Energies	1.010	n/a	122,96	n/a
TIDE: Telematics for the Integration of Disabled and Elderly People	57	n/a	16,22	n/a
Others	276	1.148	157,14	80,83
TOTAL	10.976	-	1.935,95	-

1) Projects = signed contracts

2) Projects under way at 31.12.1994 = signed contracts with a completion date for research work after 31.12.1994

3) Overall number of projects = total number of projects since the beginning of the specific programme or APAS

4) Overall EC contribution = total Community contribution (cf. footnote page 1 of Table 1)

Table 4

RDT activities in 1994: Specific programmes (FP3)/APAS - Selection procedures

Specific Programme(s) (FP3)/ Areas of work programme	OJ refs. and dates of calls for proposals	Number of proposals (1) received	Projects selected		
			Number	% of total number	EC contribution MECU
INFORMATION TECHNOLOGIES	C198 (27/07/91) C67 (10/03/93)				
- Micro-electronics		285	99	35%	466
- Information Processing Systems and Software		669	244	37%	374
- Advanced Business and Home Systems ; Peripherals		367	101	28%	264
- Computer Integrated Manufacturing		522	126	24%	265
- Basic Research		693	155	22%	125
COMMUNICATIONS TECHNOLOGIES	C149 (29/5/93)	200	25	13%	46
TELEMATICS (STIG)					
- Telematics Engineering	C78 (15/03/94)	27	6	22%	1.5
- Libraries	C310 (16/11/93)	124	35	28%	11
INDUSTRIAL AND MATERIALS TECHNOLOGIES					
1. Materials - raw materials / 2. Design and manufacture / 3. Aeronautics research					
Areas 1, 2 and 3 : Cooperative Research (CRAFT Step II) - OPEN CALL	C33 (24/12/91)	n/a	n/a	n/a	n/a
- proposals received 9/93 - 12/93 (Collaborative RTD)		32	20	63%	7.7
- proposals received 1/94 - 3/94 (Collaborative RTD)		56	23	41%	8,9
- proposals received 3/94 - 7/94 (Collaborative RTD)		196	62	32%	23
MEASUREMENT AND TESTING					
1. Support to Directives / 2. Support to standardization / 3. Common means of calibration / 4. Methods and measurement					
- Areas 1, 2 and 3 :	C178 (15/07/92) closed 11/09/92	103	18	18%	5,4
- Area 4	C178 (15/07/92) closed 30/09/92	57	14	24%	9,8
- Areas 2 and 3	C338(15/12/93) closed 15/04/94	59	49	83%	13
ENVIRONMENT					
- 1. Participation in global changes programmes	C139 (18/05/93)	1401	258	18%	113
- 2. Technologies and engineering for the environment					
- 3. Research on economic and social aspects of environmental issues					
- 4. Technological and natural risks					

Table 4

RDT activities in 1994: Specific programmes (FP3)/APAS - Selection procedures

Specific Programme(s) (FP3)/ Areas of work programme	OJ refs. and dates of calls for proposals	Number of proposals (1) received	Projects selected		
			Number	% of total number	EC contribution MECU
MARINE SCIENCES AND TECHNOLOGIES					
- Concerted actions	C163 (15/6/94)	6	3	50%	0,7
- Risk assessment	C203 (27/7/93)	19	2	11%	0,9
	C78 (15/3/94)	9	3	33%	1,4
BIOTECHNOLOGY					
- Information Infrastructure	C78 (15/03/94)	4	3	75%	2,2
- Scientific Studies	C78 (15/03/94)	98	26	25%	1,5
AGRICULTURAL AND AGRO-INDUSTRIAL RESEARCH					
- 1. Primary production in agriculture, forestry, aquaculture and fisheries - 2. Inputs to agriculture, forestry, aquaculture and fisheries - 3. Processing of biological raw materials from agriculture, forestry, aquaculture and fisheries - 4. End uses and products	C251 (15/09/93)	684	123	18%	56
BIOMEDICAL AND HEALTH RESEARCH					
- 1. Development of coordinated research on prevention, care and health systems - 2. Major health problems and diseases of great socio-economic impact - 4. Research on biomedical ethics	C324 (10.12.92)	-	140*	-	37
- 3. Human genome analysis	C324 (10.12.92)	115	1	1%	1,2
TRAINING (research scholarships)	L267 (24.09.91)	435	45	10%	3
* These projects arise from the remaining part of 303 proposals declared eligible for community contribution in July 1993					
LIFE SCIENCES AND TECHNOLOGIES FOR DEVELOPING COUNTRIES					
- 2nd call for proposals * These projects arise from a remainder of proposals from 1993 and a financial complement available in 1994.	C198 (05/08/92)	-	38*	-	14
- 3rd call for proposals	C163 (15/06/93)	499	49	17%	19
NON NUCLEAR ENERGY	no calls				
NUCLEAR FISSION SAFETY	no calls				

Table 4

RDT activities in 1994: Specific programmes (FP3)/APAS - Selection procedures

Specific Programme(s) (FP3)/ Areas of work programme	OJ refs. and dates of calls for proposals	Number of proposals (1) received	Projects selected		
			Number	% of total number	EC contribution MECU
HUMAN CAPITAL AND MOBILITY		(*)			
- Institutional grants	C163 (15/6/94) C 258 (15/9/94) C 357 (15/12/94)	866	241	28%	33
- Individual grants	Permanent calls	3838	850	22%	64
- Networks	for proposals	974	279	29%	83
- Large scale installations		0	0		18
- Euroconferences		225	134	60%	6
(*)Part of these proposals were received in 1993					
CENTRALIZED ACTION (VALUE) : Dissemination and optimization of results	C252 (16/9/93)	289	45	16%	3.5
S/T Cooperation with the countries of Eastern and Central Europe (COPERNICUS)	C30 (01/02/94)	2216	318	14%	92
International scientific Cooperation (ISC)	-	253	77	30%	8.7
Participation in the Third Framework Programme of the countries from Eastern and Central Europe and from the new independant states of the former Soviet Union (PECO)	-	460	241	52%	10
Renewable energies	C78 (15/03/94)	340	80	24%	24
SPRINT (Science parks)	94/EE/07	80	41	51%	2.4
THERMIE	C189 (13/07/93)	559	196	35%	148
TIDE	C111 21/04/93	293	55	19%	42
Other preparatory, accompanying and support measures	Different calls	1855	196	10%	37

1) Number of proposals = number of proposals eligible for the selection procedure

Table 5

RDT activities in 1994: Specific programmes (FP3)/APAS - New projects - Shared-cost actions (SCA)

Total new projects (contracts signed in 1994) classified by number of participants per project

Number of participants	1	2	3	4	5	6	7	8	9	10+	TOTAL
	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects
Names of specific programmes (FP3)											
Information Technologies	53	4	7	16	18	25	14	9	8	24	178
Communication Technologies				3	2	2	6	3	2	7	25
Telematics Systems			4	5	10	4	2	1			26
Industrial and Materials Technologies (1)	271	82	9	27	29	38	28	19	10	22	535
Measurement and Testing (2)	25	7	13	10	9	1	3	6	1	1	76
Environment		15	53	59	38	30	10	7	10	12	234
Marine Sciences and Technologies	1		2	2	4	4	3			2	18
Biotechnology	31		1	2	9	4	3	3		4	57
Agriculture, Agro-Industrial Research and Fisheries		3	15	28	29	31	14	6	4	12	142
Biomedical and Health Research	0	2	0	0	0	0	0	0	0	0	2
Life Sciences and Technologies for Developing Countries	6	5	20	23	18	5		1		1	79
Non-nuclear Energies	2	6	14	15	9	6	7	3	2	5	69
Nuclear Fission Safety	1	0	0	0	0	0	0	0	0	0	1
Controlled Thermonuclear Fusion	149									2	151
Human Capital and Mobility	21	0	0	10	61	61	46	35	28	43	305
Centralized Action	8	10	12	3	3	1	1				38
Names of APAS											
COPERNICUS: Coop. with Central and Eastern European Countries and the NIS	6	56	41	52	19	21	3	5	2	4	209
International Scientific Cooperation	7	89	29	14	3		1			1	144
PECO: Participation of Central and Eastern Countries and the NIS in FP3	12	114	50	19	14	7	2	1			219
Renewable Energies	2	5	14	9	11	5	1	3	2	1	53
SPRINT: Technology Transfer	192	9	7	13	11	6	8	6	7	10	269
Thermie: Non-nuclear Energies	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	196
TIDE: Telematics for the Integration of Disabled and Elderly People	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	31
Others	0	3	6	13	17	15	3	2	0	5	64
TOTAL	787	410	297	323	314	266	155	110	76	156	3121

1) Cfr footnote 3) in table 2

2) Cfr footnote 4) in table 2

Table 6

RDT activities in 1994: Specific programmes (FP3)/APAS - New projects - Shared-cost actions (SCA)

Total new projects (contracts signed in 1994) classified by the number of countries (EC/EEA/EFTA) participating in each project

Number of participating countries (EC/EFTA)	1	2	3	4	5	6	7	8	9	10+	TOTAL		
	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Total number of projects	Projects involving third countries (1) Number	Projects involving int. orgs. Number
Names of specific programmes (FP3)													
Information Technologies	55	15	42	30	18	6	5	2	1	4	178	14	3
Communication Technologies			3	9	5	2	4	1		1	25		1
Telematics Systems		5	13	7	0		1				26		
Industrial and Materials Technologies	334	36	66	65	25	6	1	0	1	1	535		
Measurement and Testing	25	13	18	8	5	2	3	2			76		
Environment	1	36	92	53	29	14	6	1	1	1	234	2	9
Marine Sciences and Technologies	1	2	7	2	4	1				1	18		
Biotechnology	31		7	7	5	2	2		1	2	57		2
Agriculture, Agro-Industrial Research and Fisheries		18	50	35	22	15	1	1			142		
Biomedical and Health Research	0	2	0	0	0	0	0	0	0	0	2		
Life Sciences and Technologies for Developing Countries	11	50	16	2							79	71	
Non-nuclear Energies	2	22	22	7	7	3	1	1		4	69		
Nuclear Fission Safety	1	0	0	0	0	0	0	0	0	0	1		1
Controlled Thermonuclear Fusion	149									2	151	n/a	n/a
Human Capital and Mobility	20	3	29	78	89	47	18	12	3	6	305	1	17
Centralized Action	8	7	13	4	4	1	1				38		
Names of APAS													
COPERNICUS: Coop. with Central and Eastern European Countries and the NIS	124	65	16	3	1	0	0	0	0	0	209	205	
International Scientific Cooperation	105	33	6								144	129	
PECO: Participation of Central and Eastern Countries and the NIS in FP3	218	1									219	207	3
Renewable Energies	2	18	18	6	3	6					53	1	1
SPRINT: Technology Transfer	198	5	10	17	12	7	6	7	2	5	269		
Thermie: Non-nuclear Energies	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	196	n/a	n/a
TIDE: Telematics for the Integration of Disabled and Elderly People	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	31		
Others	2	8	20	18	10	4	1	1	0	0	64	10	2
TOTAL	1287	339	448	351	239	116	50	28	9	27	3121	640	39

1) Third countries other than EEA/EFTA members

Table 7

RDT activities in 1994: Specific programmes (FP3)/APAS - New projects - Shared-cost actions

Total new projects (contracts signed in 1994) classified by contract value of project

EC contribution to projects (MECU)	0<0,1(1)	0,1<0,25	0,25<0,5	0,5<1	1.0<1,5	1,5<2	2,0<5	5,0<10	10<20	>20	TOTAL
	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects	Number of projects
Names of specific programmes (FP3)											
Information Technologies	8	18	48	26	21	24	29	2	2		178
Communication Technologies			2	5	5	3	10				25
Telematics Systems		14	9	2	1						26
Industrial and Materials Technologies	270	23	86	49	44	50	13	0	0	0	535
Measurement and Testing	9	26	24	16	1						76
Environment	6	40	121	61	6						234
Marine Sciences and Technologies	1	2	2	8	5						18
Biotechnology	27	1	4	19	3		3				57
Agriculture, Agro-Industrial Research and Fisheries			22	67	40	5	8				142
Biomedical and Health Research	0	0	0	0	2	0	0	0	0	0	2
Life Sciences and Technologies for Developing Countries	2	14	49	14							79
Non-nuclear Energies	1	14	35	14	4		1				69
Nuclear Fission Safety	1	0	0	0	0	0	0	0	0	0	1
Controlled Thermonuclear Fusion	96	13	10	8	3	4	10	3	3	1	151
Human Capital and Mobility	22	134	108	39	0	2	0	0	0	0	305
Centralized Action	17	21									38
Names of APAS											
COPERNICUS: Coop. with Central and Eastern European Countries and the NIS	54	114	39	2	0	0	0	0	0	0	209
International Scientific Cooperation	20	119	4		1						144
PECO: Participation of Central and Eastern Countries and the NIS in FP3	162	47	8	2							219
Renewable Energies	3	25	15	7	3						53
SPRINT: Technology Transfer	187	81			1						269
Thermie: Non-nuclear Energies	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	196
TIDE: Telematics for the Integration of Disabled and Elderly People	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	31
Others	23	3	27	9	1	0	0	1	0	0	64
TOTAL	909	709	613	348	141	88	74	6	5	1	3121

1) The total contribution to a project is MECU 0.1 or less

Table 8

RDT activities in 1994: Specific programmes (FP3)/APAS - New projects (contracts signed in 1994) - Shared-cost actions

Distribution of total Community contribution (in MECU) and of participation (numbers) by type of participant

Type of participant	LE(1)		SME(2)		RB (3)		HEI(4)		INT. ORGS. (5)		OTHER		TOTAL SCA (8)	
	EC contrib. MECU	Particip. Number	EC contrib. MECU	Particip. Number	EC contrib. MECU	Particip. Number	EC contrib. MECU	Particip. Number	EC contrib. MECU	Particip. Number	EC contrib. MECU	Particip. Number	EC contrib. MECU	Particip. Number
Names of specific programmes (FP3)														
Information Technologies	82,11	236	83,63	333	47,68	146	34,91	265	0,87	3			249,20	983
Communication Technologies	17,00	44	8,50	41	6,40	32	6,80	41		1	7,30	64	46,00	223
Telematics Systems			n/a	23	n/a	13	n/a		n/a		n/a	78	18,30	114
Industrial and Materials Technologies	82,41	372	69,24	744	54,15	278	47,78	259	0,00	0	1,16	12	254,73	1665
Measurement and Testing	1,76	17	2,18	32	13,89	152	8,07	54			0,16	7	26,06	262
Environment	2,78	36	3,61	34	42,26	495	51,40	553	0,91	9	1,19	18	102,15	1145
Marine Sciences and Technologies	0,50	3	0,96	7	7,84	53	4,37	37			0,31	4	13,99	104
Biotechnology	0,62	6	0,73	9	10,69	85	18,83	132	1,64	2	0,96	7	33,46	241
Agriculture, Agro-Industrial Research and Fisheries (6)	1,86	18	4,08	42	23,53	145	19,96	118	0,00	0	0,35	4	136,90	829
Biomedical and Health Research	0,00	0	0,00	0	1,24	2	1,24	2	0,00	0	0,00	0	2,48	4
Life Sciences and Technologies for Developing Countries			0,05	1	13,29	138	15,07	156			1,02	11	29,43	306
Non-nuclear Energies	6,38	39	5,95	66	11,80	139	8,37	112			1,66	8	34,15	364
Nuclear Fission Safety	0,00	0	0,00	0	0,02	1	0,00	0	0,00	0	0,00	0	0,02	1
Controlled Thermonuclear Fusion	n/a	20	n/a	18	n/a	111	n/a	25	n/a	6	n/a	5	209,00	185
Human Capital and Mobility	0,51	11	0,50	17	32,56	569	62,07	1446	1,92	20	2,34	50	99,91	2113
Centralized Action	n/a	17	n/a	42	n/a	14	n/a	14			n/a	23	4,90	110
Names of APAS														
COPERNICUS: Coop. with Central and Eastern European Countries and the NIS	0,34	9	2,36	69	15,91	311	19,43	385	0,00	0	1,37	31	39,40	805
International Scientific Cooperation		1	0,07	1	7,59	111	15,84	247			0,35	4	23,84	364
PECO: Participation of Central and Eastern Countries and the NIS in FP3	0,29	14	0,44	18	11,89	325	7,04	225	0,09	3	0,38	14	20,13	599
Renewable Energies	1,08	14	5,96	69	4,41	79	4,06	48	0,05	1	3,65	24	19,21	235
SPRINT: Technology Transfer	3,00	100	6,40	140	3,40	102	2,00	77	1,80	69	7,80	175	24,40	663
Thermie: Non-nuclear Energies	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	148,00	360
TIDE: Telematics for the Integration of Disabled and Elderly People	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	17,50	n/a
Others (7)	2,16	25	5,10	8	6,01	79	3,58	40	0,03	3	1,15	8	34,24	413
TOTAL Distributed (8)	202,82	982	199,74	1714	314,55	3380	330,80	4236	7,31	117	31,14	547	1.587,40	12088

(1) LE: Large enterprises

(2) SME: Small and medium-sized enterprises

(3) RB: Research bodies

(4) HEI: Higher education institutes

(5) Int. org.: international organizations

(6) Does not include figures from DG VI. The breakdown by type of participant is done for only 49,78 MECU and 327 participations.

(7) The breakdown by type of participant is done for only 18,83 MECU and 163 participations.

(8) Of the SCA (1587,40 MECU and 12088 participations) the breakdown by type of participant is done for only 1086,36 MECU and 10976 participations.

Table 9

RDT activities in 1994: Specific programmes (FP3)/APAS - New projects (contracts signed in 1994) - Shared-cost actions

Objective 1 regions

	Number of projects		Participation (Number)		Overall EC contribution (MECU)	
	Total	Objective 1	Total	Objective 1	Total	Objective 1
Names of specific programmes (FP3)						
Information Technologies	178	64	983	119	249,20	118,10
Communication Technologies	25	n/a	223	n/a	46,00	n/a
Telematics Systems	26	8	114	16	18,30	n/a
Industrial and Materials Technologies	535	167	1665	283	254,74	35,83
Measurement and Testing	76	14	262	16	26,06	1,77
Environment	234	103	1145	158	102,15	13,77
Marine Sciences and Technologies	18	5	104	8	13,99	1,65
Biotechnology	57	15	241	20	33,46	2,76
Agriculture, Agro-Industrial Research and Fisheries (1)	142	33	829	61	136,90	7,16
Biomedical and Health Research	2	0	4	0	2,48	0,00
Life Sciences and Technologies for Developing Countries	79	26	306	32	29,43	2,66
Non-nuclear Energies	69	35	364	75	34,15	5,18
Nuclear Fission Safety	1	0	1	0	0,02	0,00
Controlled Thermonuclear Fusion	151	n/a	185	n/a	209,00	n/a
Human Capital and Mobility	305	203	2113	327	99,91	14,76
Centralized Action	38	7	110	9	4,90	0,15
Names of APAS						
COPERNICUS: Coop. with Central and Eastern European Countries and the NIS	209	42	805	49	39,40	2,67
International Scientific Cooperation	144	16	364	16	23,84	1,17
PECO: Participation of Central and Eastern Countries and the NIS in FP3	219	28	599	28	20,13	0,68
Renewable Energies	53	33	235	65	19,21	4,62
SPRINT: Technology Transfer	269	45	663	55	24,40	6,70
Thermie: Non-nuclear Energies	196	n/a	360	n/a	148,00	n/a
TIDE: Telematics for the Integration of Disabled and Elderly People	31	n/a	n/a	n/a	17,50	n/a
Others	64	10	413	12	34,24	0,31
TOTAL (1)	3121	854	12088	1349	1.587,40	219,93

(1) Does not include figures from DG VI

Table 10

RDT activities in 1994: Specific programmes (FP3)/APAS - New projects (contracts signed in 1994) - Shared-cost actions

Total collaborative links (1) within and between countries (EC + EEA)

	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxemb.	Netherlands	Portugal	U. K.	Austria	Iceland	Norway	Sweden	Finland
Belgium	304	69	391	103	132	381	32	141	4	179	90	264	20	0	31	71	17
Denmark	69	76	215	55	69	165	31	96	1	114	40	173	18	0	48	60	27
Germany	391	215	1520	271	455	1072	113	684	6	503	191	1046	64	0	90	179	74
Greece	103	55	271	0	128	285	23	254	1	86	69	224					
Spain	132	69	455	128	470	555	44	360	1	185	151	435	25	0	30	54	26
France	381	165	1072	285	555	1468	95	863	5	411	209	894	45	0	81	130	60
Ireland	32	31	113	23	44	95	27	76	1	44	30	118	2	0	8	14	7
Italy	141	96	684	254	360	863	76	872	4	245	134	605	33	0	41	74	44
Luxembourg	4	1	6	1	1	5	1	4	0	1	1	4	0	0	0	0	0
Netherlands	179	114	503	86	185	411	44	245	1	268	96	469	36	0	51	84	38
Portugal	90	40	191	69	151	209	30	134	1	96	120	206	8	0	16	21	11
United Kingdom	264	173	1046	224	435	894	118	605	4	469	206	859	50	0	103	151	67
Austria	20	18	64	0	25	45	2	33	0	36	8	50					
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	0				
Norway	31	48	90	0	30	81	8	41	0	51	16	103	0	0			
Sweden	71	60	179	0	54	130	14	74	0	84	21	151	0	0	0		
Finland	17	27	74	0	26	60	7	44	0	38	11	67	0	0	0	0	
TOTAL	2229	1257	6874	1499	3120	6719	665	4526	29	2810	1393	5668	301	0	499	838	371

(1) The sum of collaborative links in each project

RDT activities in 1995: 1995 work programme - Specific programmes (FP4) - Timetable of calls for proposals and selection procedure. Budget.

Specific programme (FP4) and Areas of the Workprogramme	Dates and OJ ref. of calls for Proposals (or Expressions of interest)	Tech. stim. (SME measures)	Deadlines for reception of proposals /Dates: Projects	Deadlines for reception of proposals /Dates: Techn. Stim. (SME measures)	Selection procedure (period)*	Contracts negotiation procedure (period)*	Anticipated date of initial contract signature *	Total 1995 Budget (Mecu)
TELEMATICS								294
A. Telematics for services of public interest	C357 p11 (15/12/94)		15/03/95		27/03 - 7/4/95	/05/95	/09/95	
1. Administrations								
2. Transport								
B. Telematics for knowledge								
3. Telematics for research								
4. Education and training								
C. Telematics for improving employment and quality of life								
6. Urban and rural areas								
7. Health care								
9. Telematics for the environment (exploratory action)								
D. Horizontal RTD Activities								
12. Language engineering								
E. Support actions								
Specific measures in favour of SMEs		C357 p11 (15/12/94)						
	C64 p4 (15/03/95)		15/06/95		/06/95	/09/95	/01/96	
B.5. Libraries								
D.11. Telematics engineering								
D.12. Language engineering								
D.13. Information engineering								
C.8. Elderly and disabled people	15/09/95		15/12/95		/01/96	/02/96	/06/96	
A.2. Transport	15/09/95		15/12/95		/01/96	/ 02/96	/06/96	
Specific measures in favour of SMEs		15/06/95						
COMMUNICATION TECHNOLOGIES (ACTS) (all areas:)	1/8/94 (Exp. Int.) first announcement C 258 p5 (15/9/94) final announcement C357 p5 (15/12/94)		01/10/94 (Exp. Int.) 15/03/95		16/03 - 04/05/95	05/05 - 26/06/95	/07/95	210,7
1. Interactive digital multimedia services								
2. Photonic technologies								
3. High-speed networking								
4. Mobility and personal communications networks								
5. Intelligence in networks and service engineering								
6. Quality, security and safety of comm. services and systems								
7. Horizontal actions								
INFORMATION TECHNOLOGIES (all areas:)	C357 p9 (15/12/94)	C357 p9 (15/12/94)	15/03/95	open up to 15/02/96	15/03 - 01/06/95	01/06 - 01/10/95	09/95	457,5
1. Software technologies								
2. Technologies for components and subsystems								
3. Multimedia systems								
4. Long-term research			15/02/95 (first step)					
5. Open microprocessor systems initiative			15/03/95		15/03 - 01/06/95	01/06 - 01/10/95	/09/95	
6. High performance computing and networking			15/02/95 (first step)					
7. Technologies for business processes			15/03/95		15/03 - 01/06/95	01/06 - 01/10/95	/09/95	
8. Integration in manufacturing			15/03/95		15/03 - 01/06/95	01/06 - 01/10/95	/09/95	

Table 11

RDT activities in 1995: 1995 work programme - Specific programmes (FP4) - Timetable of calls for proposals and selection procedure. Budget.

Specific programme (FP4) and Areas of the Workprogramme	Dates and OJ ref. of calls for Proposals (or Expressions of interest)		Deadlines for reception of proposals /Dates		Selection procedure (period)*	Contracts negotiation procedure (period)*	Anticipated date of initial contract signature *	Total 1995 Budget (Mecu)
		Tech. stim. (SME measures)	Projects	Techn. Stim. (SME measures)				
1. Software technologies	C64 p15 (15/03/95)		15/06/95		15/06 - 15/09/95	15/09 - 15/12/95	11/95	
2. Technologies for components and subsystems								
4. Long-term research			20/04/95 (first step)					
6. High performance computing and networking			20/04/95 (first step)					
7. Technologies for business processes			15/06/95		15/06 - 15/09/95	15/09 - 15/12/95	11/95	
Focused call (subareas of areas 1, 2, 3, 4, 5, 7, 8.)	C148 p 39 (15/06/95)		15/09/95		15/09 - 01/12/95	/12/95		
Focused calls	15/09/95 15/12/95		15/12/95		15/12/95			
INDUSTRIAL & MATERIALS TECHNOLOGIES (all areas:)	C 357 p3 (15/12/94)	C357 p3 (15/12/94)	15/03/95	open up to 12/06/1996(awards/RTD projects) 11/06/97(awards/coop. projects) 17/12/97 (coop. projects)	19/4 - 25/5/95	from 17/7/95	/11/95	285,5
1. Production technologies								
2. Materials and Technologies for product innovation								
3. Technologies for transport means								
Thematic networks	C 357 p3 (15/12/94)		open up to 17/12/97					
Establishment of expert list (industrial and materials techn./ standards, measurement and testing / ECSC steel research)	C 148 p 15 (15/06/95) (Exp. int.)							
STANDARDS, MEASUREMENTS & TESTING								38,2
1. Measurements for quality European products	C357 p7 (15/12/94)	15/12/94	19/04/95	open up to 12/06/96 (awards/RTD projects) 11/06/97 (awards/coop. projects) 17/12/97 (coop. projects)	/07/95	/10-11/95	/11-12/1995	
Thematic networks :	C357 p7 (15/12/94)		open up to 17/12/97		/07/95	/08-/09/95	/10-/11/95	
I. Measurements for quality European products								
II. Research related to written standards and technical support to trade					/07/95	/11-12/95	01/96	
III. Measurements related to the needs of society					/12/95	/01-02/96	03/96	
Themes II and III (shared cost actions)	C 148 p6 (15/06/95)		15/11/95		/01/96	/02-/03/96	/04-/05/96	
Themes I, II, III (accompanying measures)	C 148 p6 (15/06/95)		open up to 30/07/98					
Standardization activities of CEN and of ETSI	C 148 p7 (15/06/95)		25/10/95					
Focused call	15/12/95							
ENVIRONMENT AND CLIMATE	C357 p45 (15/12/94) Advance notice C12 p 5 (17/01/95)	C357 p45 (15/12/94) Advance notice C12 p 5 (17/01/95)	27/04/95	open up to 12/06/96 (awards) 27/03/97 (coop. projects)	/05 - /07/95	from 07/95	/10/95	166,5
A. Natural environment, environmental quality and global change								
B. Environmental technologies								
C. Space techniques applied to environmental monitoring and research (only concerted actions under C.1.1. Methodological research)								
D. Human dimensions of environmental change								

RDT activities in 1995: 1995 work programme - Specific programmes (FP4) - Timetable of calls for proposals and selection procedure. Budget.

Specific programme (FP4) and Areas of the Workprogramme	Dates and OJ ref. of calls for Proposals (or Expressions of interest)	Tech. stim. (SME measures)	Deadlines for reception of proposals /Dates: Projects	Deadlines for reception of proposals /Dates: Techn. Stim. (SME measures)	Selection procedure (period)*	Contracts negotiation procedure (period)*	Anticipated date of initial contract signature *	Total 1995 Budget (Mecu)
C. Space techniques (C1.1. and C.1.2.)	C148 p11 (15/06/95)	C148 p11 (15/8/95)	15/09/95	12/06/96 (awards) 27/03/97 (coop. projects)	Autumn '95	end '95	1996	
C. Space techniques (accompanying measures)	C148 p10 (15/06/95)		15/09/95					
Establishment of expert list (environment and climate / marine science and technology)	C148 p17 (15/06/95) Exp. int.							
MARINE SCIENCE AND TECHNOLOGY	C357 p42 (15/12/94)	C357 p42 (15/12/94)		open up to 11/06/97 (awards) 17/12/97 (coop. projects)				74,3
A. Marine science								
1. Marine systems research			15/3/95		/06/95	07-10/95	/11/95	
2. Extreme marine environments			15/3/95		/06/95	07-10/95	/11/95	
3. Regional seas research			15/6/95		/10/95	11-12/95	/01/96	
B. Strategic marine research								
1. Coastal and shelf sea research								
a. Coastal physical processes and morphodynamics			15/3/95		/06/95	07-10/95	/11/95	
b. Structure and dynamics of shelf and coastal sea ecosystems			15/6/95		/10/95	11-12/95	/01/96	
c. Methods for monitoring, forecasting and management of shelf seas and coastal zones			15/3/95		/06/95	07-10/95	/11/95	
2. Coastal engineering and natural defences			15/3/95		/06/95	07-10/95	/11/95	
C. Marine technology								
1. Generic technologies			15/3/95		/06/95	07-10/95	/11/95	
2. Advanced systems			15/3/95		/06/95	07-10/95	/11/95	
BIOTECHNOLOGY	C357 p44 (15/12/94) advance notice C12 p13 (17/01/95)	C357 p44 (15/12/94) advance notice C12 p13 (17/01/95)	24/03/95	24/03/95	18/4 - 17/7/95	17/7 - 10/11/95	16/10/95	66,9
1. Cell factories								
2. Genome analysis (incl. SME awards)								
3. Plant and animal biotechnology (incl. SME awards)								
4. Cell communication in neurosciences (only SME awards)								
5. Immunology, transdisease vaccinology (incl. SME awards)								
6. Structural biology (only SME awards)								
7. Prenormative research, biodiversity, social acceptance (only SME awards)								
8. Infrastructure (incl. SME awards)								
Horizontal activities								
Establishment of expert list	C148 p19 (15/06/95) (Exp. int.)							
All areas	15/09/95		15/01/96 (?)					
BIOMEDICINE AND HEALTH (all areas:)	C357 p17 (15/12/94) advance notice C12 p7 (17/01/95)		31/03/95		/05-07/95	/09-10/95	/11/95	38,2
1. Pharmaceuticals research								
2. Research on biomedical technology and engineering								
3. Brain research								
4. Research on diseases with major socio-economic impact: from basic research into clinical practice								
5. Human genome research								
6. Public-health research, inleuding health services research								

Table 11

RDT activities in 1995: 1995 work programme - Specific programmes (FP4) - Timetable of calls for proposals and selection procedure. Budget.

Specific programme (FP4) and Areas of the Workprogramme	Dates and OJ ref. of calls for Proposals (or Expressions of interest)	Deadlines for reception of proposals /Dates		Selection procedure (period)*	Contracts negotiation procedure (period)*	Anticipated date of initial contract signature *	Total 1995 Budget (Mecu)
		Tech. stim. (SME measures)	Projects	Techn. Stim. (SME measures)			
7. Research on biomedical ethics							
8. Horizontal activities : ethical, legal and social aspects and demonstrations							
Fellowships	C357 p 17 (15/12/94) advance notice C12 p7 (17/01/95)						
Areas 1, 2,3 and 5			31/03/96				
Areas 4, 6, 7 and 8			31/12/96				
All areas			31/12/97				
Establishment of expert list	**C148 p21 (15/06/95)** (Exp. int.)						
AGRICULTURE AND FISHERIES							122,1
1. Integrated production and processing	**C357 p19 (15/12/94)**		**15/03/95**		**/04- 07/95**	**/07 - 11/95**	**/09/95**
3.1 Consumer nutrition and well-being							
3.2 New and optimized food materials							
4. Agriculture, forestry and rural development							
5. Fisheries and aquaculture							
6. Objectives addressed by concertation							
Shared cost and concerted actions	**C148 p41(15/06/95)**	**C148 p41(15/06/95)**	**15/09/95**		**/11-12/95**	**/01- 04/96**	**/02/96**
2. Scaling up and processing methodology							
3.3 Advanced and optimized technologies and processes							
3.4 Generic food science							
Demonstration projects areas 1,2 and 3							
Establishment of expert list	**C148 p25 (15/06/95)** (Exp. int.)						
1. Integrated production and processing chains	**/12/95**		**/03/96**		**/05 - 06/96**	**/07 - 11/96**	**/09/96**
4. Agriculture, forestry and rural development							
5. Fisheries & aquaculture							
6. Objectives addressed by concentration							
All areas of the work programmes		**C357 p19 (15/12/94)**		**open up to** 12/06/96 (awards/RTD projects) 11/06/97 (awards coop. projects) 17/12/97 (coop. projects)	**from /03 - 04/95**	**from /05 - 06/95**	**from /06/95**
NON-NUCLEAR ENERGY (Joule-Thermie)							320,1
	C357 p21 (15/12/94)	**C357 p21 (15/12/94)**	**24/03/95**	**open up to** 15/09/95 (awards/RTD projects) 13/09/96 (awards/Demo projects) 11/06/97 (awards/coop. projects) 17/12/97 (coop. projects)	**/04 - 07/95**	**/09- 10/95**	**/11 - 12/95**
1. Rational use of energy							
2. Renewable energies							
3. Fossil fuels							
4. Energy research, development, demonstration and dissemination strategy	C357 p21 (15/12/94)	C357 p21 (15/12/94	open up to 17/12/95 (24/05/95 for area 4 (Joule))				
5. Dissemination of energy technologies							
Establishment of expert list	**C148 p25 (15/06/95)** (Exp. Int.)						

RDT activities in 1995: 1995 work programme - Specific programmes (FP4) - Timetable of calls for proposals and selection procedure. Budget.

Specific programme (FP4) and Areas of the Workprogramme	Dates and O.J ref. of calls for Proposals (or Expressions of interest)	Deadlines for reception of proposals /Dates		Selection procedure (period)*	Contracts negotiation procedure (period)*	Anticipated date of initial contract signature *	Total 1995 Budget (Mecu)
		Tech. stim. (SME measures)	Projects	Techn. Stim. (SME measures)			
Thermie	/09/95						
NUCLEAR FISSION SAFETY (all areas)							**72,1**
	C357 p36 (31/12/94)		20/03/95		/04 - 07/95	/09- 10/95	/11 - 12/95
A. Exploring innovative approaches	advance notice		28/02/96		spring '96		
B. Reactor safety	C12 p3 (17/01/95)						
C. Radioactive waste management and disposal and decommissioning							
D.Radiological impact on man and the environment							
E. Mastering events of the past							
Concerted actions and thematic networks (all areas)			open up to 01/11/97				
Establishment of expert list	C148 p26 (15/06/95) (Exp. Int.)						
CONTROLLED THERMONUCLEAR FUSION							**271,7**
Establishment of expert list	C148 p28 (15/06/95) (Exp. int.)						
TRANSPORT (all areas:)							**39,3**
	C357 p23 (15/12/94)		15/03/95		/ 06 - 07/95	/10 -11/95	
1. Strategic research	advance notice						
2. Network optimization	C12 p8 (17/01/95)						
2.1. Rail transport							
2.2. Integrated transport chains							
2.3. Air transport							
2.4. Urban transport							
2.5. Water-borne transport							
2.6. Road transport							
	15/09/95		15/12/95				
TARGET SOCIO-ECONOMIC RESEARCH							**14,8**
	C357 p 24 (15/12/94)		08/06/95		/07-09/95	/10 - 11/95	/12/95
	advance notice						
	C25 p4 (01/02/95)						
	notice						
(all areas except horizontal measures:)	C64 p 17 (15/03/95)						
1. Evaluation of science and technology policy options							
2. Research on education and training							
3. Research into social integration and social exclusion in Europe							
Membership in ETAN (European Technology Assessment Network)	C67 p 7 (15/03/95)		05/05/95				
Establishment of expert list	C148 p30 (15/06/95) (Exp. Int.)						
INTERNATIONAL COOPERATION							**59,9**
A.2. Central and Eastern Europe and the NIS	/09/95						

Table 11

Annex II

RDT activities in 1995: 1995 work programme - Specific programmes (FP4) - Timetable of calls for proposals and selection procedure. Budget.

Specific programme (FP4) and Areas of the Workprogramme	Dates and OJ ref. of calls for Proposals (or Expressions of interest)	Tech. stim. (SME measures)	Deadlines for reception of proposals /Dates: Projects	Deadlines for reception of proposals /Dates: Techn. Stim. (SME measures)	Selection procedure (period)*	Contracts negotiation procedure (period)*	Anticipated date of initial contract signature *	Total 1995 Budget (Mecu)
B. Cooperation with non-European industrialized third countries	**C38 p 10 (15/02/95)**		**open**		**10/07 - 29/09/95**	**01/10 - 27/11/95**	**27/11/95**	
Fellowships (Japan and Korea)			01/06/95 (Japan)		(first selection)			
			31/03/95 (Korea)					
C. Cooperation with the developing countries	**C357 p 36 (15/012/94)**		**15/06/95 (Human vaccine/**		**/06 -09/95**	**/09 - 12/95**	**15/12/95**	
	advance notice		lifestock health research)					
	C38 p 9 (15/02/95)		06/09/95 (All other topics)		/09/95 - 01/96	/01 - 05/96	15/06/96	
	notice							
	C64 p 8 (15/03/95)							
Studies and accompanying measures	**C64 p 5 (15/03/95)**							
	(Exp. Int.)							
DISSEMINATION AND OPTIMIZATION OF RESULTS								**73,2**
A. Dissemination and exploitation	**C357 p 5 (15/12/94)**		15/03/95		**/05/95**	**/06/95**	**/07/95**	
VALUE Relay Centers	advance notice							
	C12 p 9 (17/01/95)							
Technology validation and transfer projects	**C64 p 14 (15/03/95)**		**15/06/95**		**/07/95**	**/10/95**	**/11/95**	
B. Dissemination of technology to enterprises (regional actions/science parks)	**C148 p36 (15/06/95)**		**15/09/95**		**/10/95**	**/11/95**	**/12/95**	
TRAINING AND MOBILITY OF RESEARCHERS								**121,6**
	C357 p 38 (15/12/94)							
	advance notice							
	C12 p 11 (17/01/95)							
1. Research networks			15/06/95		/11/95	late'95/start '96	1996	
2. Access to large scale-facilities			18/04/95		/05 - 09/95	/09/95	Autumn '95	
3. Training through research			15/05,(15/09,15/12/95)		/05 - 09/95	/09/95	Autumn '95	
4. Accompanying measures			18/04,(30/09/95)		/04 - 08/95	/08/95	Autumn '95	
	C148 p37 (15/06/95)							
3. Training through research			15/09/95					
4. Accompanying measures			2/10/95					
Establishment of expert list	**C148 p13 (15/06/95)**							
	(Exp. Int.)							
HORIZONTAL ACTIVITIES								
Establishment of expert list (RTD Programmes)	**C148 p34 (15/06/95)**							
	(Exp. Int.)							
Accompanying measures in favour of SMEs	**C148 p32 (15/06/95)**							
(Establishment of expert list)	(Exp. Int.)							
Task Force Multimedia educational software (p.m)	**C148 p43 (15/06/95)**		25/07/95					
(Establishment of expert list)	(Exp. Int.)							

* for the RTD projects

Annex III

RECAPITULATION OF FIGURES[1]

FOURTH EC RTD FRAMEWORK PROGRAMME AND EAEC FRAMEWORK PROGRAMME (1994-1998)

Amounts foreseen and indicative breakdown

	FOURTH EC FRAMEWORK PROGRAMME (MECU)			EAEC FRAMEWORK PROGRAMME (MECU)		TOTAL (MECU)
	Shared cost actions	JRC (*)	Support to other DG's	Shared cost actions	JRC (*)	
FIRST AREA OF ACTIVITY						
Information and communications technologies	**3384**	**11**	**10**	–	–	**3405**
1. Telematics	843	–	–	–	–	843
2. Communication technologies	630	–	–	–	–	630
3. Information technologies	1911	11	10	–	–	1932
Industrial Technologies	**1790**	**195**	**10**	–	–	**1995**
4. Industrial and materials technologies	1617	90	–	–	–	1707
5. Measurements and testing	173	105	10	–	–	288
Environment	**760**	**294**	**26**	–	–	**1080**
6. Environment and climate	532	294	26	–	–	852
7. Marine sciences and technologies	228	–	–	–	–	228
life sciences and technologies	**1495**	**47**	**30**	–	–	**1572**
8. Biotechnology	552	–	–	–	–	552
9. Biomedicine and health	336	–	–	–	–	336
10. Agriculture and fisheries	607	47	30	–	–	684
Energy	**967**	**20**	**15**	**954**	**300**	**2256**
11. Non-nuclear energy	967	20	15	–	–	1002
12. Nuclear fission safety	–	–	–	160	254	414
13. Controlled thermonuclear fusion	–	–	–	794	46	840
Transport	**240**	–	–	–	–	**240**
14. Transport						
Targeted socio-economic research	**105**	**33**	–	–	–	**138**
15. Targeted socio-economic research						
SECOND AREA OF ACTIVITY						
16. Cooperation with third countries and international organizations	**540**	–	–	–	–	**540**
THIRD AREA OF ACTIVITY						
17. Dissemination and optimization of results	**293**	–	**37**	–	–	**330**
FOURTH AREA OF ACTIVITY						
18. Training and mobility of researchers	**744**	–	–	–	–	**744**
TOTAL	**10318**	**600**	**128**	**954**	**300**	
	11046			1254		**12300**([1])

* 19 et 20: JRC SPECIFIC PROGRAMMES

[1] These figures correspond to those indicated in the Framework Programmes Decisions; they do not take account of the recent proposals from the Commission concerning a 7 % increase of the total amounts of the Framework Programmes following the enlargement of the Union.

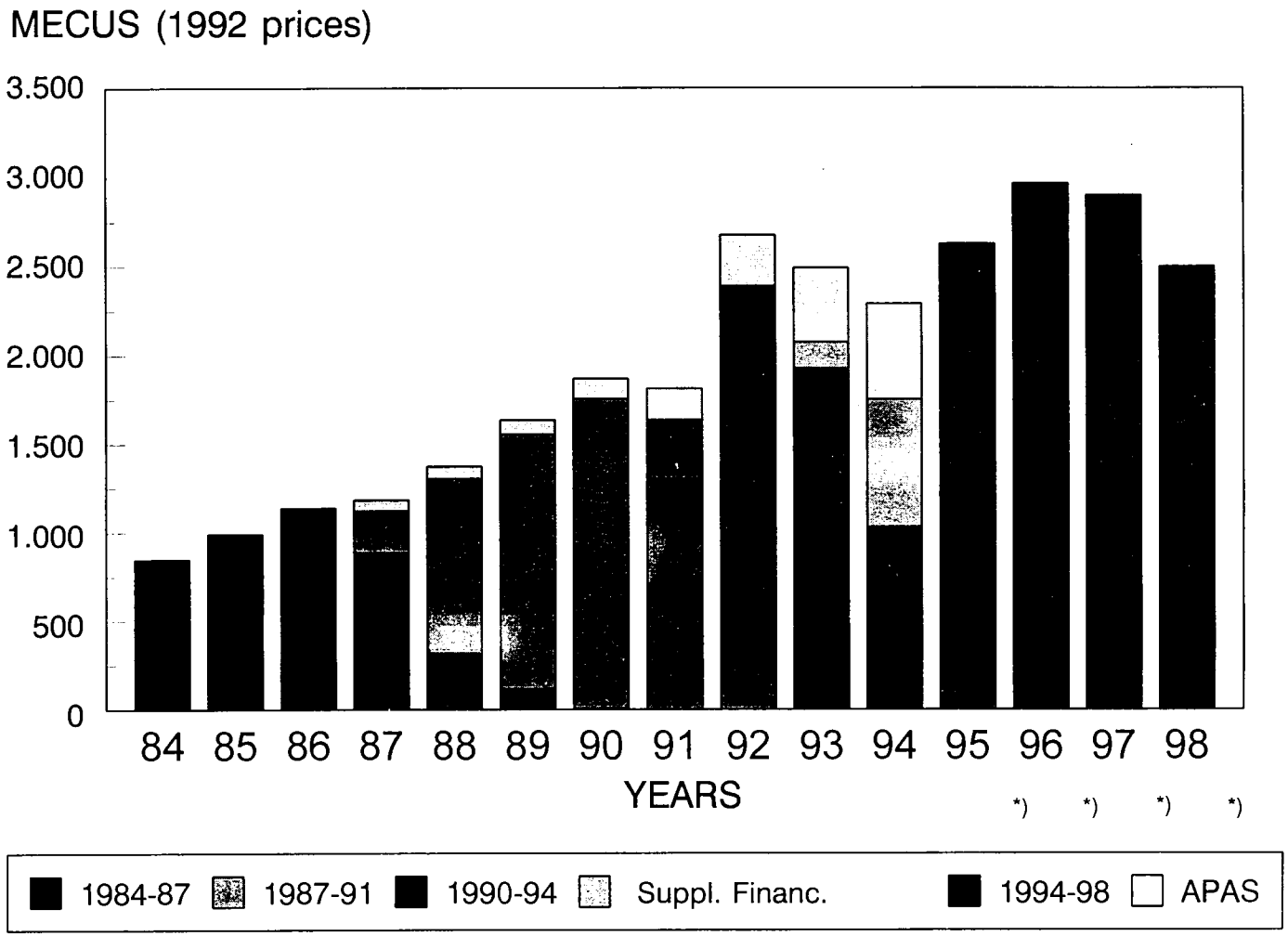
Annex III

RECAPITULATION OF FIGURES
THIRD COMMUNITY RTD FRAMEWORK PROGRAMME AND SUPPLEMENT (1990-1994)

	THIRD FRAMEWORK PROGRAMME (MECU)		SUPPLEMENT TO THE THIRD FRAMEWORK PROGRAMME (MECU)		TOTAL (MECU)
	Shared cost actions	JRC (*)	Shared cost actions	JRC (*)	
I. ENABLING TECHNOLOGIES					
1. Information and communication technologies					**2490,84**
— Information technologies	1338,48	–	178,20	–	1516,68
— Communication technologies	484,11	–	64,35	–	548,46
— Development of telematics systems of general	376,20	–	49,50		425,70
— interest					
2. Industrial and materials technologies					**996,93**
— Industrial and materials technologies	663,30	77,22	99,00		839,52
— Measurement and testing	47,52	91,08	18,81		157,41
II. MANAGEMENT OF NATURAL RESOURCES					
3. Environment					**581,17**
— Environment	261,40	148,50	54,45		464,35
— Marine sciences and technologies	102,96	–	13,86		116,82
4. Life sciences and technologies					**831,60**
— Biotechnology	162,36	–	21,78		184,14
— Agricultural and agro-industrial research	329,67	–	43,56		373,23
— Biomedical and health research	131,67	–	17,82		149,49
— Life sciences and technologies for developing countries	109,89	–	14,85		124,74
5. Energy					**1052,37**
— Non-nuclear energies	155,43	–	103,95		259,38
— Nuclear fission safety	35,64	161,37	33,66		230,67
— Controlled nuclear fusion	411,84	41,58	108,90		562,32
III. MANAGEMENT OF INTELLECTUAL RESOURCES					
6. Human capital and mobility					**581,13**
— Human capital and mobility	488,07	24,75	68,31		
Centralized action for dissemination and optimization of results	57,00		9,00		**66,00**
TOTAL	**5155,54**	**544,5**	**900**		
	5700		**900**		**6600**

* JRC PROGRAMME

COMMUNITY RESEARCH - COMMITMENTS



*) These figures correspond to those indicated in the Framework Programme Decisions; the will be updated in accordance with future decision on funding.

Annex IV

DECISION PROCESS - FOURTH FRAMEWORK PROGRAMME AND SPECIFIC PROGRAMMES (1994-1998)

PROGRAMME NAME	COMMISSION PROPOSAL REF.	COMMISSION PROPOSAL DATE	COMMISSION PROPOSAL O.J. REF.	E.P. OPINION DATE	DECISION DATE	DECISION O.J. REF.	DECISION O.J. DATE	WEEKS FOR DECISION
FRAMEWORK PROGRAMME 1994-98 - EC	COM (93) 276 FINAL	16/06/93	C230/93/4	18/11/93(1) 09/02/94(2) 20/04/94(3)	26/04/94	L126/94/1	18/05/94	44,9
FRAMEWORK PROGRAMME 1994-98 - EAEC	COM (93) 276 FINAL	16/06/93	C230/93/35	18/11/93	26/04/94	L115/94/31	6/05/94	44,9
Telematics	COM (94) 68 FINAL	30/03/94	C228/94/1	05/05/94	23/11/94	L334/94/1	22/12/94	34
Communication technologies	COM (94) 68 FINAL	30/03/94	C228/94/22	05/05/94	27/07/94	L222/94/35	26/08/94	17
Information technologies	COM (94) 68 FINAL	30/03/94	C228/94/34	05/05/94	23/11/94	L334/94/24	22/12/94	34
Industrial and materials technologies	COM (94) 68 FINAL	30/03/94	C228/94/52	05/05/94	27/07/94	L222/94/16	26/08/94	17
Measurements and testing	COM (94) 68 FINAL	30/03/94	C228/94/68	05/05/94	23/11/94	L334/94/47	22/12/94	34
Environment and climate	COM (94) 68 FINAL	30/03/94	C228/94/78	17/11/94	15/12/94	L361/94/1	31/12/94	37,1
Marine sciences and technologies	COM (94) 68 FINAL	30/03/94	C228/94/96	05/05/94	23/11/94	L334/94/59	22/12/94	34
Biotechnology	COM (94) 68 FINAL	30/03/94	C228/94/107	18/11/94	15/12/94	L361/94/25	31/12/94	37,1
Biomedicine and health	COM (94) 68 FINAL	30/03/94	C228/94/119	17/11/94	15/12/94	L361/94/40	31/12/94	37,1
Agriculture and fisheries	COM (94) 68 FINAL	30/03/94	C228/94/131	05/05/94	23/11/94	L334/94/73	22/12/94	34
Non-nuclear energy	COM (94) 68 FINAL	30/03/94	C228/94/143	05/05/94	23/11/94	L334/94/87	22/12/94	34
Nuclear fission safety	COM (94) 70 FINAL	30/03/94	C113/94/4	18/11/94	15/12/94	L361/94/143	31/12/94	37,1
Controlled thermonuclear fusion	COM (94) 70 FINAL	30/03/94	C113/94/15	17/11/94	8/12/94	L331/94/22	21/12/94	36,1
Transport	COM (94) 68 FINAL	30/03/94	C228/94/164	18/11/94	15/12/94	L361/94/56	31/12/94	37,1
Targeted socio-economic research	COM (94) 68 FINAL	30/03/94	C228/94/177	05/05/94	15/12/94	L361/94/77	31/12/94	37,1
Cooperation with third countries and int. organizations	COM (94) 68 FINAL	30/03/94	C228/94/188	05/05/94	23/11/94	L334/94/109	22/12/94	34
Dissemination and optimization of results	COM (94) 68 FINAL	30/03/94	C228/94/198	18/11/94	15/12/94	L361/94/101	31/12/94	37,1
Training and mobility of researchers	COM (94) 68 FINAL	30/03/94	C228/94/209	05/05/94	15/12/94	L361/94/90	31/12/94	37,1
JRC (EC) + competitive S/T support	COM (94) 68 FINAL	30/03/94	C228/94/219	05/05/94	15/12/94	L361/94/114	31/12/94	37,1
JRC (EAEC)	COM (94) 70 FINAL	30/03/94	C113/94/24	17/11/94	15/12/94	L361/94/132	31/12/94	37,1
								Average
							(spec. progr. :)	34

Annex IV

DECISION THIRD - FOURTH FRAMEWORK PROGRAMME AND SPECIFIC PROGRAMMES (1990-1994)

PROGRAMME NAME	COMMISSION PROPOSAL REF.	COMMISSION PROPOSAL DATE	COMMISSION PROPOSAL O.J. REF.	E.P. OPINION DATE	COUNCIL DECISION DATE	COUNCIL DECISION O.J. REF.	COUNCIL DECISION O.J. DATE	WEEKS FOR DECISION
FRAMEWORK PROGRAMME OF COMMUNITY RTD FOR 1990-1994	COM (89) 397 FINAL	28/08/89	C243/89/4	14/12/89	23/04/90	L117/90/28	08/05/90	34
SUPPLEMENTARY FUNDING OF THE FP 90-94	COM (92) 309 FINAL	15/07/92	C225/92/9	18/11/92	15/03/93	L69/93/43	20/03/93	34,7
INFORMATION TECHNOLOGIES	COM (90) 153 FINAL	23/05/90	C174/90/1	12/12/90(1) 12/06/91(2)	08/07/91	L218/91/22	06/08/91	58,7
COMMUNICATION TECHNOLOGIES	COM (90) 154 FINAL	23/05/90	C174/90/9	12/12/90(1) 15/05/91(2)	07/06/91	L192/91/8	16/07/91	54,3
TELEMATIC SYSTEMS IN AREAS OF GENERAL INTEREST	COM (90) 155 FINAL	23/05/90	C174/90/19	22/11/90(1) 15/05/91(2)	07/06/91	L192/91/18	16/07/91	54,3
INDUSTRIAL AND MATERIALS TECHNOLOGIES	COM (90) 156 FINAL	28/05/90	C174/90/28	12/12/90(1) 10/07/91(2)	09/09/91	L269/91/30	25/09/91	67
MEASUREMENTS AND TESTING	COM (90) 157 FINAL	28/05/90	C174/90/35	20/11/91(1) 11/03/92(2)	29/04/92	L126/92/12	12/05/92	100,3
ENVIRONMENT	COM (90) 158 FINAL	28/05/90	C174/90/40	22/11/90(1) 15/05/91(2)	07/06/91	L192/91/29	16/07/91	53,6
MARINE SCIENCE AND TECHNOLOGIE	COM (90) 159 FINAL	28/05/90	C174/90/48	22/11/90(1) 15/05/91(2)	07/06/91	L192/91/1	16/07/91	53,6
BIOTECHNOLOGY	COM (90) 160 FINAL	28/05/90	C174/90/53	09/10/91(1) 12/02/92(2)	26/03/92	L107/92/11	24/04/92	95,4
AGRICULTURE AND AGO-INDUSTRY	COM (90) 161 FINAL	28/05/90	C174/90/60	24/01/91(1) 10/07/91(2)	09/09/91	L265/91/33	21/09/91	67
BIOMEDICINE AND HEALTH	COM (90) 162 FINAL	28/05/90	C174/90/65	12/12/90(1) 10/07/91(2)	09/09/91	L267/91/25	24/09/91	67
LIFE SCIENCES AND TECHNOLOGIES FOR DEVELOPING COUNTRIES	COM (90) 163 FINAL	28/05/90	C174/90/72	12/12/90(1) 15/05/91(2)	07/06/91	L196/91/31	19/07/91	53,6
NON-NUCLEAR ENERGIES	COM (90) 164 FINAL	28/05/90	C174/90/77	24/01/91(1) 10/07/91(2)	09/09/91	L257/91/37	14/09/91	67
HUMAN CAPITAL AND MOBILITY	COM (90) 165 FINAL	28/05/90	C174/90/85	15/05/91(1) 15/01/92(2)	16/03/92	L107/92/1	24/04/92	94
NUCLEAR FISSION SAFETY	COM (90) 343 FINAL	14/09/90	C247/90/2	12/07/91	28/11/91	L336/91/42	07/12/91	62,9
CONTROLLED THERMONUCLEAR FUSION	COM (90) 441 FINAL	25/09/90	C261/90/8	10/12/91	19/12/91	L375/91/11	31/12/91	64,3
CENTRALIZED ACTION ON DISSEMINATION AND EXPLOITATION OF KNOWLEDGE	COM (90) 611 FINAL	25/01/91	C53/91/39	11/12/91(1) 08/04/92(2)	29/04/92	L141/92/1	23/05/92	65,7
								Average : 67,4

Annex V

REPORTS ON EVALUATIONS OF THE RTD PROGRAMMES PUBLISHED IN 1994

— "Evaluation of the Fisheries and Aquaculture Research Programme (FAR)" (1988-1992)	EUR 15279
— "Evaluation of the DOSES Programme" (1989-1993)	EUR 15328
— "Evaluation of the Community's Research Programme on Decommissioning of Nuclear Installations" (1989-1993)	EUR 15329
— "Evaluation of the Programme Human Genome Analysis" (1990-1991)	EUR 15706
— "Evaluation of the JOULE Programme (1989-1992)"	EUR 15759
— "Evaluation of the MONITOR Programme (1989-1993)"	EUR 15782
— "Mid-term evaluation of the Human Capital and Mobility Programme"	EUR 15783
— "Evaluation of the MAST-I Programme"	EUR 15867
— "Evaluation of the Radiation Protection" Research Action" (1990-1991 & 1992-1993)	EUR 15878
— "Mid-term evaluation of the TELEMAN Programme"	EUR 15868

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Annex VI
MAIN ABBREVIATIONS AND ACRONYMES USED

ACP countries	African, Caribean, and Pacific countries
ACTS	Advanced Communication Technologies and Services (Specific RTD programme)
AIR	Agriculture and Agro-industry, including fisheries (Specific RTD programme)
ALTENER	Alternative Energy programme
APAS	Actions de Préparation, d'Accompagnement et de Suivi
AVICENNE	Scientific and technological cooperation with Maghreb countries and other countries within the Mediterranean Sea
BCR	Bureau Communautaire de Référence
BIOMED	Biomedicine and Health (specific RTD programme)
BRIDGE	Biotechnology Research for Innovation, Development and Growth in Europe (specific RTD programme under FP3)
BRITE-EURAM	Basic Research in Industrial Technologies for Europe - EUropean Research in Advanced Materials (Specific RTD programme)
CAP	Common Agricultural Policy
CCFP	Consultative Committee for the Fusion Programme
CEN/Cenelec	Comité Européen de Normalisation /Comité Européen de Normalisation Electrotechnique
CERN	Centre Européen pour la Recherche Nucléaire
CIS	Commonwealth of Independent States of the former Soviet Union
COPERNICUS	Cooperation in Science and Technology with Central and Eastern Europe
CORDIS	Community Research and Development Information Service
COST	European Cooperation in the field of scientific and technical research
COSU	Cooperation with the Soviet Union in the Field of Nuclear Fission Safety
CRAFT	Cooperative Research Action for Technology
CREST	Scientifical and Technical Research Committee (advices the European Commission and the Conseil)
CSTP	Committee for Scientific and Technological Policy (OECD)
DC	Developing Countries
EAEC	European Atomic Energy Community
EC	European Community
ECE	Economic Commission for Europe (UN)

ECHO	European Commission Host Organisation
ECSC	European Coal and Steel Community
EEA	European Economic Area
EFTA	European Free Trade Association
EMBL	European Molecular Biology Laboratory
ENRICH	European Network for Research on Global Change
ESA	European Space Agency
ESF	European Science Foundation
ESPRIT	European Strategic Programme for Research and development in Information Technologies (specific RTD programme)
ESTA	European Science and Technology Assembly
ETAN	European Technology Assessment Network
ETSI	European Telecommunications Standards Institute
EU	European Union
EUREKA	European Research Coordination Agency
EURET	European REsearch for Transport (specific RTD programme under FP2)
FP	Framework Programme
HCM	Human Capital and Mobility (Specific RTD programme under FP3)
HFSP	Human Frontier Science Programme
IMS	Intelligent Manufacturing Systems
INTAS	International Association for the Promotion of Cooperation with Scientists from the New Independent States of the former Soviet Union (INTAS)
IRDAC	Industrial Research and Development Advisory Committee of the European Commission
ISC	International Scientific Cooperation
ISTC	International Science and Technology Centre (Moscow)
IT	Information Technologies
ITER	International Thermonuclear Experimental Reactor
ITER-EDA	ITER- Engineering Design Activities
JET	Joint European Torus
JOULE	Joint Opportunities for Unconventional or long-term Energy supply (specific RTD programme)
JRC	Joint Research Centre

MAST	Marine Science and Technology (specific RTD programme)
NIS	New Independent States of the former Soviet Union
OECD	Organization for Economic Cooperation and Development
OJ	Official Journal
OPET	Organisations for the Promotion of Energy Technology
PECO	Pays de l'Europe Centrale et Orientale
PHARE	Pologne-Hongrie : Actions pour la Reconversion Economique
RACE	Research and development programme in Advanced Communications technologies for Europe (Specific RTD programme)
RTD	Research and Technological Development including Demonstration projects
SAVE	Special Actions programme for Vigorous Energy efficiency
SMEs	Small and Medium sized Enterprises
SPRINT	Strategic PRogramme for INnovation and Technology Transfer
STD	Science and Technology for Development (specific RTD programme)
TACIS	Technical Assistance to the Commonwealth of Independent States (CIS) and Georgia
TELEMAN	TELEMANipulation dans des environnements nucléaires dangereux et perturbés
TIDE	Telematics for the Integration of Disabled and Elderly people
TMR	Training and Mobility of Researchers (specific RTD programmes under FP4)
TSER	Targeted Socio-Economic Research (specific RTD programme)
VALUE	VALorisation et utilisation des résultats de la recherche pour l'Europe

European Commission

Research and technological development activities of the European Union
Annual report 1995

Luxembourg: Office for Official Publications of the European Communities

1996 — VI, 106 pp. — 21.0 x 29.7 cm

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