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**RESEARCH AND TECHNOLOGICAL
DEVELOPMENT ACTIVITIES
OF THE EUROPEAN UNION**

1997 ANNUAL REPORT

(Presented by the Commission)

SUMMARY

This Annual Report by the Commission on research activities in the year 1996 is the third in the series. It fulfils the requirement of Article 130P of the EC Treaty and of the Framework Programme decisions (EC and Euratom) for the Commission to send a report each year to the European Parliament and the Council. It is written, however, with a broader audience in mind. By providing a synopsis of policy developments and an analysis of research activities undertaken and results achieved, it will be of interest to researchers and research organisations, industrial enterprises, research policy planners and politicians, whether they are already involved in Community research or new to the field.

This year's report builds on the experience of previous reports and the comments received on them. It is distinct notably from the 5-year assessments reports and the annual monitoring reports prepared by independent experts on both the framework programmes and the specific programmes. The intention is, however, that it should complement these reports which therefore together provide a wealth of information, from different perspectives, on the European Union's research activities. The report itself gives an overview of the major developments during the year, (in this case extending into the first months of 1997 to cover the development of the Commission's proposals for the Fifth Framework Programme). Annex I gives more detailed information for each specific programme on the research activities carried out in 1996, examples of achievements of projects commenced in earlier years which have come to fruition in 1996, and projects for 1997. Annex II gives statistical tables on signed contracts in 1996, projects and funding.

In 1996 and in addition to continued processing of calls for proposals and the establishment of project contracts under the Fourth Framework Programme, a major effort was made to prepare future research activities. The Commission initiated a large scale debate on the Fifth Framework Programme, leading up to formal proposals early in 1997. Negotiations were pursued on a proposal for supplementary funding for the Fourth Framework Programme. The Green Paper on Innovation was followed up with an Innovation Action Plan.

Work on the implementation of the Fourth Framework Programme was particularly intensive in 1996, with nearly 24,000 proposals received as a result of different calls for proposals. More than 6,000 contracts were signed for new projects, involving more than 25,000 research partners and more than 70,000 links between research teams in Europe and the rest of the world. As of 31 December 1996, more than 9,000 research projects were running under the 2nd, 3rd and 4th Framework Programmes. Significant results were obtained in numerous research fields from projects terminating during the year. Particularly notable was the much-publicised sequencing of the yeast genome. In all, more than 3,000 publications and patents from Community research were recorded in 1996.

The Fourth Framework Programme has been particularly successful in involving small and medium sized enterprises (SMEs). During 1995 and 1996 the overall rate of participation was 20% and 3,800 SMEs were involved in collaborative research projects, as many as for the full four years of the Third Framework Programme. 1,200 SMEs moreover benefited from exploratory awards and CRAFT projects during this period. The first 5-year independent assessment of Community research was carried out in 1996, and covered all of the specific programmes as well as the framework programme.

The overall assessment, conducted by a Panel chaired by Viscount Davignon acknowledged the importance and quality of Community research. Looking to the future, the Panel concluded that a more strategic and flexible approach is needed if the full potential of the framework programme is to be realised¹.

The main focus for policy developments in 1996 was the preparation of the Fifth Framework Programme. The Commission initiated an intensive debate and adopted in July a Communication² setting out first guidelines under the title "Inventing Tomorrow". This signalled a major change in approach, to simplify the structure of the framework programme and to achieve significant improvements in the concentration of research effort, flexibility and efficiency.

Member States, representatives of industry, the research community and other interested parties all contributed to the debate, and approximately 200 external position papers were submitted to the Commission. The European Parliament adopted a Resolution on the future of science and technology policy, based on an own-initiative report. A large scale public seminar was organised by the Commission in February 1997.

"Inventing Tomorrow" was followed up with two working papers, describing respectively the modalities and research content proposed by the Commission³ and in April 1997 the Commission adopted formal proposals for the Fifth Framework Programme⁴.

The Commission presented in January 1996 its proposal for a financial supplement for the Fourth Framework Programme, amounting to a total of ECU 700 million focused on a limited number of priority areas. Following lengthy negotiations, a final decision on a reduced level of funding is due to be made by the European Parliament and Council.

The first Action Plan for European Innovation was adopted by the Commission in November⁵, following an invitation from the European Council. Directed towards helping to overcome European weaknesses in turning research into innovation, and taking account of the wide-ranging debate initiated by the Commission's Green Paper on Innovation published in 1995⁶, the Action Plan identifies a number of priority areas for the Community.

¹ COM(97) 151 final, 15.04.1997

² COM(96) 332 final, 10.07.1996

³ COM(96) 595 final, 20.11.1996; and COM(97) 47 final, 12.02.1997

⁴ COM(97) 142 final, 30.04.1997

⁵ COM(96) 589 final, 20.11.1996

⁶ COM(95) 688 final, 20.12.1995

Efforts to improve research coordination at European level by regular exchange of information on national activities, and to improve the coordination and interface between research and structural policies, were further developed in 1996. A Communication was adopted in July on promoting cooperation with emerging economies ⁷, and negotiations on scientific and technological cooperation with the United States were begun. The Commission continued to work on improvements to management efficiency, holding a seminar in June with representatives of industry and the research community.

The Fifth Framework Programme will remain the central focus for Community research policy development in 1997, together with the detailed preparation of the specific programmes, the objective being to ensure that funding for the new programme can come on stream early in 1999, thus ensuring the continuity of Community research activities.

⁷ COM(96) 344 final, 19.07.1996

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THE COMMUNITY'S RTD POLICY IN 1996 - 1997

The European Union's research and technological development (EU RTD) policy aims to strengthen Europe's scientific and technological base and thus to contribute to the development of the competitiveness of European industry and to promote the quality of life of Europe's citizens. EU RTD policy complements Member States' national research efforts and supports other Union policies such as on agriculture, cohesion, transport, environment, health, education, energy, etc.

The European Union's RTD policy is implemented by means of research programmes which associate companies - including SMEs - universities and research centres from various European countries in joint research projects. The research themes covered by EU RTD are defined in multiannual Framework Programmes. The current Framework Programme (1994-1998) has a total budget of ECU 13 100 million, respectively ECU 11 764 million for the Fourth EC Framework Programme and ECU 1 336 million for the Euratom Framework Programme. This figure may be increased by between ECU 100 and 200 million, depending on the outcome of a decision on a financial supplement currently being debated between the European Parliament and Council.

The Joint Research Centre (JRC) with its seven institutes is the Community's own research centre, which carries out research directly, contributes to the implementation of the Framework Programmes and provides scientific support for other Union policies. A separate annual report of the JRC for 1996 is available⁸ (brief summary is included in Annex I).

1. Preparation of future research policy guidelines

1.1 From "Inventing Tomorrow" to the formal 5th Framework Programme proposal

With the approach of the new millenium, the Commission has decided to make the 5th Framework Programme the instrument of a new Community research strategy. European citizens now expect scientific and technological advances to meet their concerns with regard to health and quality of life and their aspirations in terms of social welfare and economic prosperity.

In this context, at the beginning of 1996 the Commission began to consider what form the 5th Framework Programme should take, consulting all the parties involved in the future of European research.

On the basis of the suggestions received and its own experience of the four previous framework programmes, the Commission set out preliminary guidelines for the 5th Framework Programme⁹, in July 1996, in its communication "Inventing Tomorrow"¹⁰.

Based, as ever, on the principle of scientific excellence, Community research in 2000 and beyond will be geared towards objectives that are more relevant to the Union, and action at Community level will have to represent even more clearly an "added value" compared with national initiatives.

⁸ COM(97) 137 final, 03.04.1997

⁹ Like its predecessor, the 5th Framework Programme is in fact made up of two separate legal instruments which cover non-nuclear et nuclear research activities; respectively, and are therefore adopted on the basis of the EC Treaty and the Euratom Treaty, respectively.

¹⁰ COM (96) 332 final, 10.07.1996

“Inventing Tomorrow” emphasises the socio-economic needs of the Union which Community research must address. On the basis of strict selection criteria, six priority themes were identified for research, technological development and demonstration activities:

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

- confirming the international role of European research,
- innovation and participation of SMEs,
- improving human potential.

This communication sparked off a wide-ranging exchange of ideas. Many reactions were received and it was generally welcomed by government bodies, academia and industry, and various trade associations.

The Commission gradually fleshed out the ideas for the 5th Framework Programme outlined in “Inventing Tomorrow”; first of all, concerning its structure (six programmes), in a first working paper¹¹ adopted in November 1996; and then, concerning the scientific and technical content, in a second working paper¹² adopted in February 1997.

On this basis, on 30 April 1997, the Commission adopted its two formal proposals¹³ for the 5th Framework Programme (the first pursuant to the EC Treaty, the second pursuant to the Euratom Treaty).

Characterised by a simplified structure, with six programmes, the 5th Framework Programme breaks new ground compared with earlier framework programmes. This desire for simplification will lead both to greater consistency in action by the Community as a result of wider-ranging programmes, each addressing priority socio-economic needs of the Union and greater flexibility and efficiency of management, thanks in particular to the decompartmentalisation of activities within programmes where various scientific and technological disciplines interact.

The six programmes corresponding to the six priority themes identified in “Inventing Tomorrow” reflect the Community activities provided for in Article 130 G of the EC Treaty. The first three “thematic” programmes are designed to implement Article 130 G a)¹⁴ while the other three more “horizontal” programmes are designed to implement Articles 130 G b), c) et d).

The “horizontal” programmes will conduct activities specific to them but their objectives (international cooperation, innovation and participation of SMEs, and training) will also be pursued to a large extent within the thematic programmes as well.

Another innovation concerns the three thematic programmes which will comprise three types of closely related activities: key actions, activities for research and development of generic technologies, and activities in support of infrastructures.

¹¹ COM (96) 595 final, 20.11.1996

¹² COM (97) 47 final, 12.02.1997

¹³ COM (97) 142 final., 30.04.1997

¹⁴ By extension, the nuclear research activities provided for in Article 4 of the Euratom Treaty are also covered.

The key actions are the expression of a genuine research strategy; they reflect a proactive approach aimed at the joint resolution of clearly defined RTD problems standing in the way of important socio-economic objectives for the Union.

The activities for research and development of generic technologies are essential adjuncts of that strategy. Focusing on priority research issues for the Union, they are intended to encourage creativity and help to forge future knowledge and enrich the Union's scientific and technological base.

The activities in support of research infrastructures supplement the panoply of instruments made available to the thematic programmes, by encouraging access to and optimum utilisation of the Union's major research facilities.

1.2. The contributions to the preparation of the 5th Framework Programme

- THE EUROPEAN PARLIAMENT RESOLUTION ON "SCIENCE AND TECHNOLOGY POLICY IN THE 21ST CENTURY"

The "Desama" Report and the subsequent European Parliament Resolution¹⁵ provide a general analysis of the Community's research and technological development policy.

The "Desama" Report takes stock of the European Union's research and innovation system at the half-way point of the implementation of the 4th Framework Programme (1994-1998) and analyses its main features. On this basis, a series of possible avenues is proposed for the future.

In its diagnosis, the report analyses the changes that have occurred with regard to the basic concepts: it concludes that the linear model linking research and innovation is now obsolete, and goes on to identify the characteristics of a new mode of knowledge production operating in a context of transdisciplinary application and according to heterogeneous and transitory non-hierarchical forms. The needs of today, which call for the deployment of new practices, favour interaction and a multidisciplinary approach. A new "European research and innovation system" is therefore needed in order to improve coordination and reduce the many examples of compartmentalization.

The problems identified as having priority are connected both with the needs of the European research and innovation system and with issues relating to R&D policy. Where the first aspect is concerned, the relationships between research and innovation should be addressed while, where the second aspect is concerned, a new structure for the framework programme, new programme management arrangements, new techniques for funding Community research, new tasks for the Joint Research Centre, and reinforced international cooperation activities should be envisaged.

- OUTSIDE CONTRIBUTIONS TO THE 5TH FRAMEWORK PROGRAMME PROPOSAL

During the preparations for the 5th Framework Programme for Research and Technological Development, the Member States of the European Union and of the European Economic Area drew up memoranda on the future direction of Community research policy. Close on 200 public and private, European and national bodies and associations gave the Commission the benefit of their points of view.

¹⁵ Science and technology policy in the 21st century, Report by Mr Desama (PE : A4-0283/96) and EP Resolution A4-0376/96.

Their opinions and comments concerned in particular the structure of the framework programme, the procedures for identifying and selecting objectives, and ways of improving coordination and flexibility of management. Among the issues most often brought up, mention can be made of the following:

1. Research needs public support since knowledge production is a lengthy process. This activity cannot depend on market forces alone. In order to be able to address major complex issues, research needs investment over the medium or long term. It is essentially an activity involving risks.
2. The broad lines of the framework programme should reflect the expectations of society. The need to identify social requirements before defining research priorities was widely endorsed. Needs relating to health care, quality of life, mobility and the requirement to increase competitiveness of industry, and in particular of SMEs, and maintain or create jobs were often mentioned.
3. A consensus emerged about relying on the experience acquired and focusing resources on problems common to the Union as a whole where there is an identifiable Community "added value".
4. Greater flexibility was often called for in the Community programming arrangements to allow for the possibility of addressing unforeseen issues during the implementation of the programmes. In this connection, the general feeling was that further simplification and streamlining of management would be desirable.

The Government bodies, economic interests, user and consumer groups were particularly insistent that the priorities identified for the 5th Framework Programme should serve to help the most innovative businesses to regain economic growth; more generally, Community research should encourage job creation throughout the Union.

- FIVE-YEAR ASSESSMENT OF THE FRAMEWORK PROGRAMMES

The five-year evaluation of the framework programmes and the specific programmes was carried out by panels of independent outside experts and covered Community RTD activities conducted over the last five years.

The operation was mainly conducted in 1996, culminating in an overall report in February 1997, and involved the setting up of 18 panels, one for each specific programme, seven panels for the seven JRC institutes (an independent expert compiled a summary report) and a panel for the overall evaluation of the framework programmes chaired by Viscount Etienne Davignon. This exercise involved a total of around 170 internationally recognised experts.

The Davignon panel comprised eight very high level experts, and its recommendations are based on a thorough knowledge of European research and on the evaluation of the results of the framework programme. In particular, the panel said that it was satisfied with the research carried out in the programmes. However, it would like the framework programme to reflect a genuine Community strategy, the priorities of which coincide better with those of the Union and are not simply an amalgam of national wishes. In addition, the report stresses the difficulty of deciding on rapid readjustments to take account of new research needs, and recommends a structure geared to the formulation of autonomous Community strategies.

In its conclusions, the panel stresses the need for a quantum leap with the 5th Framework Programme based on the two pillars of scientific excellence and economic and social validity which must go hand in hand with European added value. The panel therefore considers that to be useful

the framework programme needs to be the fruit of a strategic approach. To this end, the panel recommends in particular changes to the legal framework (in particular adoption of the Council decisions by qualified majority), and improvements in the implementation process and methods, in particular more active promotion of the diffusion of technology and commercial exploitation, greater assistance to SMEs to give them access to RTD, a more systemic approach, the creation of virtual institutes, and Union participation in national projects.

In its 5th Framework Programme proposal the Commission took the utmost account of the panel's recommendations that are compatible with the existing legal framework.

The report on the evaluation of the framework programmes and the summaries of the conclusions and recommendations of the panels for the evaluation of the specific programmes were published together with the Commission's reply ¹⁶.

2. Other main aspects of Community research policy in 1996 - 1997

2.1 Financial supplement

In January 1996, the Commission made a proposal¹⁷ to increase the overall budget of the Fourth EC Framework Programme (1994-1998) and the Euratom Framework Programme (1994-1998) by a total of ECU 700 million, as provided for in Article 1 (3) of the relevant decisions.¹⁸ The objective of the proposal was selectively to refinance certain priority research areas associated with the research-industry Task Forces : aeronautics, educational software and multimedia, transport intermodality, the car of tomorrow and the environment, including water.

In November the Commission adjusted the proposed figure to ECU 100 million, while emphasising that this took account of the fact that the financial perspective 1995-1999 remained unchanged and that the budgetary procedure for 1997 had not then been concluded. At the same time, the research themes were amended, both to take into account the suggestion of the European Parliament for research on landmine detection and to respond to the concerns raised by the appearance of a new form of Creutzfeldt-Jakob disease which could be linked to BSE in cattle. As regards the latter, a set of research activities involving the three life sciences programmes amounting to a total of 35 Mecu was included, following directly from the Action Plan on Transmissible Spongiform Encephalopathies (TSE) proposed by the Commission on the basis of the report of a high level expert committee.

Furthermore the Commission ensured that the preliminary draft budget for 1998 included a sufficient margin to allow for the possibility of a financial supplement of more than ECU 100 million. Thus the Commission has made every endeavour to facilitate an early agreement by co-decision between the European Parliament and the Council and to ensure that their decision can be quickly implemented.

¹⁶ These publications and the summary report for the JRC bear the reference numbers COM(97)151 final, 15.04.1997; COM(97)149 final, 16.04.1997; COM(97) 164 final, 22.04.1997, respectively.

¹⁷ COM(96) 12 final, 31.01.1996

¹⁸ Decision No 110/94/EC, 26 April 1994; OJ L 126/1, 18.05.94
Decision No 94/268/Euratom, 26 April 1994; OJ L 115/31, 06.05.94

2.2 Action Plan for Innovation in Europe

The Green Paper on Innovation published by the European Commission in 1995 emphasised Europe's shortcomings in this area¹⁹. The public debate that ensued showed that there was broad agreement about the need for an overall approach to this issue, covering the technological aspects, training, the development of venture capital, and the legal and administrative environment.

At the June 1996 Florence Summit, the European Council called upon the Commission to draw up an action plan for innovation.

Action for innovation is first of all the responsibility of individual citizens, firms and national, regional and local authorities. In compliance with the principle of subsidiarity, action at Community level is called for in order to establish and enforce the ground rules, and organize the exchange and diffusion of best practices. Last but not least, the Community should set an example by mobilizing its own instruments, and in particular the RTD Framework Programme and the Structural Funds.

In the interests of efficiency, the First Action Plan for Innovation in Europe, adopted by the Commission on 20 November 1996²⁰, sets out a number of priority measures to be launched rapidly at Community level and incorporates the measures in progress or announced since the launching of the Green Paper on Innovation. These measures can be grouped together according to the following three objectives:

- fostering a genuine innovation culture;
- establishing a legal, regulatory and financial framework conducive to innovation;
- gearing research more towards innovation.

In the field of education and training, the plan advocates measures aimed at promoting initial training ("Learning in the information society" and Erasmus apprenticeship initiatives...), encouraging the mobility of researchers and engineers (placement in firms...), and helping to develop an innovation culture in firms (stepping up training schemes in management for innovation...).

Adjustments are also required in the regulatory and legal field, in particular as regards the protection of industrial and intellectual property (e.g. launching of a Green Paper on the Community patent and the European patent system, and setting up of an intellectual property help desk for Community research - IPR Help Desk).

Where funding is concerned, the Commission will encourage venture capital companies to invest more in the early phases of innovative projects (launching of the I-TEC pilot project with the European Investment Fund), and create conditions to encourage the development of new European capital markets for rapidly growing firms. Last but not least, the action plan proposes the stepping up of technology watch activities at European level, and measures to encourage the formation of technology-based companies (campus companies, clustering).

This Action Plan is a first step, and others will be needed. It provides a common reference framework which can be applied to specific sectors and adapted to the particular circumstances of individual Member States. The Commission intends to examine their priorities with them. The

¹⁹ The Green Paper on Innovation specifies the concept of innovation and proposes areas for action. COM(95) 688 final, 20.12.1995

²⁰ COM(96) 589 final, 29.11.1996

intention is to set in motion a joint economic and social dynamic process that will generate growth and create jobs.

2.3 CREST and coordination between Community policies and national policies

In the course of 1996, to carry out its mandate, as renewed by the Council Resolution of 28.9.95, CREST (the Scientific and Technical Research Committee) held discussions concerning the coordination of RTD policies as a whole and the identification of strategic priorities for Community RTD. These discussions resulted in the adoption by the Committee of reports and opinions: a contribution on the 5th Framework Programme; opinions on the research-industry Task Forces, the Commission communication on the prospects for international RTD cooperation²¹, and the process of evaluating and monitoring RTD activities under the 4th Framework Programme, and a report on SMEs in the context of the Framework Programme.

With regard to activities more specifically concerned with coordination between European policy and national policies, in particular in connection with Article 130H of the EC Treaty, the Committee started to discuss, on the basis of a study launched by the Commission, a theme of common interest liable to be the subject of coordination activities, namely indirect RTD support measures in industry. A seminar aimed at identifying best practices in this area will be organized in 1997. In addition, on the Commission's initiative, in 1997 CREST will discuss other themes of common interest where possible, bearing in mind that the Committee's deliberations will be strongly influenced by the preparation of the 5th Framework Programme.

With regard to the establishment of a system for the exchange of information in national RTD activities, on the Commission's initiative and in accordance with the Council conclusions of 9.6.95, the *ad hoc* advisory committees produced their first annual reports on the various programmes. The main features of the *ad hoc* committees' 1996 annual reports concern the choice of priority areas where increased coordination might be profitable. Examples of areas which are or will be the subject of coordination activities are given below.

In the case of materials, the *ad hoc* committee recommended three themes: "clean material processing", "raw and traditional materials", and "high added value materials", the latter having priority.

Turning to research into information technologies, software, multimedia, and new industrial paradigms ("Integration in Manufacturing" (IiM) and "Technologies for Business Processes" (TBP) are the areas most frequently mentioned as candidates for possible coordination.

Where biotechnology is concerned, structural biology was the theme recommended for a pilot coordination action in 1996.

As regards non-nuclear energy, the areas "clean coal technologies" and "photovoltaic" were chosen for 1996, and "Biomass" and "waste and energy in transport" were chosen for 1997.

In the transport sector, the *ad hoc* committee gave top priority to "intermodality" and in particular the freight aspects: coordination of strategic research and the institutional aspects and their implications were also judged to be important.

²¹ COM(95) 489 final, 18.10.1995

With regard to the dissemination and exploitation of results, technology take-up by firms and, in particular, SMEs, and the taking into account of innovation in RTD policy were judged to be the most relevant for the exchange of information in 1996.

Turning to training through research, the areas judged to be priority candidates for coordination are "skills and competences of European researchers in the future" and "industry-academia relationship in training through research": large-scale facilities were also regarded as an area of growing importance where the possibilities for coordination should be explored.

This first annual exercise of exchanging information on national RTD activities is judged to have been positive overall, and a dynamic process has been set in motion. In most cases, it ensured a better flow of information regarding RTD activities between Member States and the Commission. It also showed that the problem lies with organization and dissemination of information between the parties concerned rather than with the information itself. In the first half of 1997, CREST will make a detailed examination of the first annual reports and, on the basis of an analysis by the Commission Services, will adopt conclusions for the future work of the *ad hoc* committees. During 1997 these committees will continue their activities by carrying out more detailed work in the priority areas already selected and identifying other areas.

2.4 Advisory Committees

- IRDAC

The major themes addressed by IRDAC (Industrial Research and Development Advisory Committee which now comprises 18 high level industrialists on a personal basis and 5 representatives of European associations) in 1996 were innovation and the 5th Framework Programme. IRDAC gave its opinion on the Green Paper on Innovation in July 1996 and, at the Commissioner E. CRESSON's request, is continuing to examine this matter by analysing the Action Plan for Innovation. Its opinion on the 5th Framework Programme was drawn up in the course of two round tables and presented in June 1996.

The Committee also gave its opinions on: intellectual property rights, services, information and communications technologies, manufacturing technologies (industrial and materials technologies), the satellite industry (priority actions in the field of satellite communications and navigation), education and training (Commission White Paper "Teaching and Learning: Towards the Learning Society"), life sciences and SMEs. Round tables are scheduled to be held in autumn 1997 on the specific programmes under the 5th Framework Programme.

Round tables will also be held concerning the standard contract for the 5th Framework Programme, venture capital, industrial efficiency, training and exchanges with industry and obstacles to transnational mobility. The IRDAC summer seminar will focus on the value added by Community RTD policy for European industry and will form the basis for the publication of a study on industry's opinion of European RTD policies.

In 1996 the IRDAC Plenum met Commissioners E. CRESSON, M. BANGEMANN and E. KINNOCK.

- ESTA

The ESTA (European Science and Technology Assembly, which brings together 96 eminent academics and industrialists) held two plenary meetings in April and October 1996.

At the April meeting, the reports of the working parties were finalised on: the evaluation of research proposals and the monitoring of contracts; inertial confinement options for controlled

nuclear fusion; the role of basic research in Union RTD activities; Europe's competitive position in science, technology and industry. ESTA's contribution towards the preparation of the new Framework Programme continued via the establishment of workshops on the three priority themes proposed in "Inventing Tomorrow" following each of which reports were submitted in December.

ESTA also showed particular interest in cooperation between industry and universities with regard to research and international S&T cooperation (in particular the Engelberg Forum, and the examination of the INCO programme). Several ESTA members also took part as observers in the evaluations of the research project proposals. ESTA was also closely involved in the launching of an evaluation of the strengths and weaknesses of European science conducted under the auspices of the main national research councils.

The October 1996 meeting provided an opportunity for an exchange of views in the presence of the Commissioner E. CRESSON, on the guidelines proposed by the Commission for the 5th Framework Programme. On this occasion, the Assembly was also invited to pronounce on various matters, including the coordination of national research and the Community Action Plan for Innovation.

The membership of the Assembly will be partially renewed in 1997.

2.5 RTD policy and economic and social cohesion

In 1996 the coordination and interface between RTD Policy and Structural Policies developed further, helping to improve the conditions for enhanced economic and social cohesion in the European Union. The objective of this policy liaison is to continue to provide support to measures aimed at narrowing the development gap in less favoured regions in order to make full use of RTD for the generation of economic growth.

For both the 4th Framework Programme and the Structural Funds, the Commission's indicators are still at an experimental stage and only give orders of magnitude. Table 6 (Annex II, p. 87) gives, for most of the programmes, the number of projects with at least one participant based in an "Objective 1" region,²² the number of corresponding participations as well as to the total Community contributions to these projects.

In 1996 for the specific programmes under the first activity (cf Annex II, Table 9 p. 94) of the 4th Framework Programme (excepting the Transport programme) on average 40% of projects involved at least one participant from Objective 1 regions, 12% of total participations were based on Objective 1 regions, and 49% of the total Community contribution went to projects with at least one participant in an Objective 1 region. Although it has not been possible to complete an exhaustive analysis of these relationships, it is illustrative to compare them with the proportion of Europe's population based in Objective 1 regions (26%) and the share²³ of research professionals in those regions in the European Union total (approximately 7%). Calculations made elsewhere for 1995 indicate that objective 1 projects on average involve more participations than others.

In the third area of activity of the Framework Programme ("dissemination and optimization of results" - INNOVATION programme) issued, at the end of 1995, call for proposals for the implementation of

²² Objective 1, one of the five priority objectives set for the Structural Funds, is the development and structural adjustment of regions lagging behind in their development (26.6% of the Community population in 1996); Objective 2 is the conversion of regions or parts of regions seriously affected by industrial decline (maximum of 15% of the Community population).

²³ "Research and Development: Annual Statistics 1996", Eurostat CA-3A-96-316-3A-C.

regional innovation and technology transfer strategies and infrastructures (RITTS), regional innovation strategies (RIS), and regional technology transfer (RTT) projects. The call resulted in the selection of 50 proposals involving approximately 60 regions out of 250 regions or 1 almost out of 4 regions in Europe.

With regard to the Structural Funds, the allocation for RTD related activities in Objective 1 regions amounts to about ECU 4500 million, which equals 5% of the total objective 1 Community allocation for 1994-99. In Objective 2 regions, RTD has been established as one of the priorities in the current programming period. The Community allocation for RTD related activities in Objective 2 areas for the period 1997-99 has increased to ECU 1500 million (from ECU 870 million for 1994-96) and represents now a ratio²⁴ of 18,5% (12,5% for 1994-96). Operational measures focus inter alia on the provision of training and advisory services, the stimulation of interaction between the scientific and productive sector and the support for SMEs to access and to finance RTD.

In order to raise awareness, several accompanying seminars²⁵ have been conducted and publications²⁶ produced in 1996 to familiarise those involved at national, regional and local level with the potential of RTD to reduce regional disparities. In addition, a major conference on "Global Comparison of Regional RTD & Innovation Strategies for Development and Cohesion (RESTPOR 96)" was held in Brussels (19-21.09.96), bringing 270 participants from 37 countries together to discuss trends and issues of RTD support in regional development.

Furthermore, an impact study on the enlargement of the EU towards the 10 associated Central and Eastern European Countries has been launched to analyse the potential for RTD related Community support, facilitating economic development in the countries concerned. In relation to the impact study on enlargement, it is envisaged that 10 local seminars will be organised along with a concluding workshop in Vienna to exchange experiences and to diffuse results in 1997.

The preparation of the Fifth Framework Programme and the prospective re-orientation of Structural Funds beyond 1999 offer good opportunities to explore further synergies between RTD and Cohesion. A planned Commission Communication on "Cohesion, RTD and Competitiveness" will provide strategic guidelines to address relevant structural disparities.

Two conferences have so far taken place in 1997, the first on "New approaches to support RTD within the European Union" in Bergamo (6-7.02.1997) and the second, the 6th European STRIDE Conference on "Inter-regional Co-operation and RTD" in Bremen (3-4.03.1997).

Besides the mid-term review of RTD-related Objective 1 operational programmes and Objective 2 negotiations, activities for 1997 will include the continuation of mobilisation seminars in Objective 2 areas (in Denmark, France, Netherlands and United Kingdom), the launch of a study reviewing 10 years of Community actions to reduce the technology gap in the cohesion countries, and a publication on "Regional RTD profiles for Objective 1 regions".

²⁴ The 8th Annual Report will provide the consolidated and official figures for Structural Fund expenditure for RTD.

²⁵ Mobilisation Seminars :
Structural Funds and the stimulation of RTD actions in LFRs - 22.03.1996 Albacete (ES)
RTD support for regional policy and development - 30.05.1996 Jyväskylä (FI)
&T in rural areas - 30.09.1996 Monschau (DE)
RTD support for regional policy and development - 09.12.1996 Lulea (SW)

²⁶ "Research and Rural Regions, the contribution made by Research and Technological Development in the rural and island regions", OPOCE 1996 - "Managing Science & Technology in the Regions, proceedings of the 5th STRIDE Conference", OPOCE 1996
"RTD Potential in the Mezzogiorno of Italy: the role of Science Parks in a European perspective", OPOCE 1996

2.6 International cooperation

In view of what is at stake for the European Union with regard to international cooperation on S&T the Commission took a number of initiatives in line with its communication on the prospects for international cooperation on RTD²⁷.

Parliament adopted a resolution in response to the communication, and the Commission organized a symposium (19.11.1996) with experts from the Union and all other regions of the world. It was an opportunity to highlight the possible impact for the EU of S&T cooperation: greater awareness throughout the world of European knowhow in relation to science and technology - in particular by comparison with the USA and Japan - , encouragement for other parts of the world to take into account European practices and standards, to buy European, to train in Europe, to invest there and to establish links with European industry.

With the prospect of the Union's enlargement towards the East, efforts have been made to strengthen RTD cooperation with the countries in question through the activity "Cooperation with the Central and Eastern European countries and the New Independent States arising from the former Soviet Union" and the other specific programmes under the Framework Programme, partly with the support of the 2nd activity "International cooperation"

In the wake of the Transatlantic Action Plan signed on 5.12.1995, the discussions initiated between the EU and the USA on an S&T cooperation agreement continued.

The communication on promoting cooperation with the world's emerging economies (e.g. China, India and Brazil),²⁸ stresses the need to develop RTD cooperation with those countries, which are both the Union's partners and its competitors; it recommends the adoption of differentiated approaches based on the conclusion of sectoral agreements.

Where the developing countries are concerned, a conference on partnership for research (Leiden, 11-13 March 1997) brought together 200 participants (Research and Cooperation Ministers, European Mps, researchers, etc.) from 49 countries. The communication²⁹ on scientific and technological research: a strategic part of EU cooperation with the developing countries provided the basis for several of the discussions in Leiden.

Last but not least, the Commission is considering the possibility of negotiating an S&T Cooperation Agreement with Russia in areas of mutual interest. The aim would be to consolidate and expand the present collaboration between the two sides, which presupposes the resolution of various related issues (taxation applicable in Russia, intellectual property, etc.).

3. Research activities in 1996 and implementation of the framework programmes

European research has become a reference point, and plays a role in all Community activities.³⁰ It mobilises a growing number of Union researchers, and it supports or encourages European networks of undisputed quality. The latter involve firms, universities and research centres on a transnational

²⁷ COM(95) 489 final, 18.10.1995

²⁸ COM(96) 344 final, 19.07.1996

²⁹ COM(97) 174 final, 25.04.1997

³⁰ Nearly ECU 3 000 million and approximately 4% of the Community budget (see Tables 10 and 11).

basis: for the first two years of the 4th Framework Programme the respective share of firms, universities and research centres was 40%, 24% and 29% of total European participation in shared-cost actions³¹ for the first activity of the 4th Framework Programme.

3.1 Scientific and technical results

In the course of 1996 Community RTD projects produced numerous significant results and genuine breakthroughs in the most varied areas of science and technology. For example, it was a Community project involving over 100 European laboratories which in 1996, as a world first, unravelled the complete sequence of the genome of a complex living organism, namely wheat, a result that is liable to have considerable medical and industrial implications. In 1996 a project was launched to determine the feasibility of satellite surveillance of forest fires in Europe. It was also a Community project which in October studied the consequences for the environment and climate of the eruption of the Icelandic volcano Vatnajökull under the biggest glacier in Europe. Last but not least, a project developed an underwater robot with several unique features which is capable of diving to a depth of 6 000 metres.

Progress was also made in other sectors, ranging from the understanding of global change to the study of oceans, the search for new information and communication services and technologies, the development of biomedical technologies, the improvement of manufacturing processes, and the development of clean energy technologies, etc. The various projects which received support from the Union in 1996 contribute, in their own particular fields, in one way or another, to an improvement in the quality of life in Europe. Examples of the results are given in Annex I to this report.

Apart from the scientific results and technical advances, giving rise to over 3 000 publications and patents in 1996, mention should also be made of the number and the importance of examples of cooperation developed as a result of to the Union and which cement the European scientific community. The partnerships established in the context of Community RTD projects bring together resources and skills, encourage exchanges and stimulate the innovation process. Links are established, dialogue is ensured, and expertise is brought together. The transnational dimension of Community RTD projects makes it possible both to generate a critical mass of intellectual and physical resources and to exploit Europe's wealth and diversity. These results help to establish a solid basis on which to develop the Union's scientific and technological excellence, its industry's competitiveness and its quality of life.

3.2 Monitoring of the framework programmes

The 1996 annual external monitoring exercise was the second of its kind. The experience gained through the previous year's monitoring was taken into account³². The exercise involved 19 panels of independent experts from the Member States. For the Specific Programmes, the 18 panels reported in March 1997, and for the Framework Programme in May 1997.

The Framework Programme level overall assessment was prepared by a Panel of eight senior experts under the chairmanship of Prof. U. Colombo, former Italian Minister of Universities, Science and Technology. The Panel's report highlighted progress achieved in 1996 and provided recommendations for further improvement in Programme implementation. The Panel underlined

³¹ For 1995 and 1996 the data are those given in Table 5 of the 1996 and 1997 Article 130P reports for European Union participants: the "Others" category amounts to 7%.

³² A workshop was held on 02.07.1996 with participation of monitoring experts and users of monitoring reports.

that, "there is no parallel to the Framework Programme endeavour among other collaborative RTD programmes, anywhere in the World. The Commission Services have shown a remarkable ability in handling such a complex and diversified RTD programme involving many thousands of projects and researchers".

The Panel concluded that overall the Framework Programme is "developing in a positive way". Substantial results have been achieved in specific fields. However more attention should be paid to project results and commercial exploitation, as well as to the effective contribution to Community policies and distinctive European added value. Improvements were also noted in processing of proposals, supply of information to applicants, reduction of over-subscription, management flexibility, co-ordination and co-operation between programmes.

3.3 Contracts signed and payments made in 1996 : annual basis and framework programmes

The statistical and budgetary data (Annex II, Tables 1-8) cover 1996 and are in accordance with the Commission's revenue and expenditure accounts. In addition, the efforts made by the Commission³³ since the first "Article 130P" reports³⁴ to develop a common basis for statistical analysis based on contracts signed were continued in 1996. These data relate to the Community and Euratom framework programmes, the financing structures of which are indicated in Tables 9-11.

For the annual data (Tables 1-8) the analysis concerns indirect actions that were new or were in progress in 1996: almost 24 000 proposals were received by the Commission in response to the various calls for proposals, and over 6 000 contracts were signed, corresponding to nearly ECU 3 000 million³⁵ and over 25 000 participations. On 31 December 1996 over 9 000 projects were in progress under the 2nd, 3rd and 4th EC Framework Programmes and Euratom Framework Programmes.

The statistical analysis (number of projects, participations³⁶, Member States, type of participants, location, collaboration links between Member States per specific programme and for the Framework Programmes as a whole, etc.) concerns the contracts signed in 1996 under the 4th Framework Programme³⁷ (Tables 1, 2, 5, 6 and 7).

In the case of shared-cost actions alone, nearly 4 000 new contracts involving over 18 000 participations and a total Community contribution of ECU 2 635 million were signed.

In 1996, the economic significance of the accompanying measures increased: while in 1995 they accounted for 5% of the Community contribution to contracts signed, in 1996 they represented 9.5% (11% and 16% of participations in 1995 and 1996 respectively).

³³ In 1996 in view of their nature (support to the Commission Services) the competitive scientific and technical support activities were not the subject of an analysis by contracts signed. Qualitative and quantitative information concerning them is to be found in Annex I to this report (p.72).

³⁴ COM(95)443 final, 28.09.1995 - COM (96) 437 final, 09.09.1996

³⁵ The commitments for 1996 for appropriations for operations amount to ECU 2 835 million, a figure which is less than the contracts signed in 1996. Generally speaking, the difference between commitments and contracts signed is attributable to contracts committed one year and signed by all the contractors the next year.

³⁶ One participation is counted every time a team participates in a project

³⁷ As with the 5th Framework Programme, references to the 4th Framework Programme mean the European Community and Euratom Framework Programme.

All the payments for Community research are set out in Table 1, with nearly ECU 2 300 million of payments made, of which ECU 534 million was for the 3rd Framework Programme (Table 3A) and ECU 1 710 million for the 4th Framework Programme (Table 3B).

For the multiannual data (Tables 9-11), Table 9 gives for the 4th Framework Programme the breakdown of funding between the various specific programmes for indirect actions and for JRC direct actions. Tables 10 and 11 set out the commitments (1984-1998) for the Community research Framework Programmes³⁸ in current prices and 1992 prices³⁹.

3.4 Implementation of the framework programmes and objectives of European research policy

3.4.1 Industrial participation in the framework programme

The Commission attaches great importance to the industrial benefits of the Framework Programme.

Aggregated data for 1995/96 show that in Activity 1, industrial research groups constitute 40% of participations (19% for big enterprises and 21% for SMEs) in shared-cost actions and account for 43% of funds dispensed.⁴⁰ For the major "industrial" programmes, IMT and IT, the levels of industrial participation are 68% and 62% respectively.

In the context of the 4th Framework Programme a more diversified policy with regard to firms was established through various research incentive measures (cf. 3.4.2), and also support measures aimed either at better technology take-up by firms under the "Information Technologies" programme or as support for the establishment of innovation assistance networks and infrastructures.

In 1996, the Commission published a study⁴¹ on the RTD strategies of 500 of the biggest industrial companies and their participation in the European Framework Programmes and in Eureka. It would appear that the importance of European research for the latter is seen more in terms of participation in top quality European research networks than in financial terms.

3.4.2 Technology stimulation measures for SME access to RTD

SMEs are regarded as one of the engines of growth in Europe;⁴² they represent 99.8% of firms, 66% of jobs and 65% of private sector turnover⁴³. SMEs are the main source of innovation in the rapid growth high technology sectors (such as biotechnology, medical technologies, environmental technologies, software, and multimedia). In Europe in the period 1988-95 companies with fewer than 100 employees provided the majority of new jobs, offsetting the job losses in the major groups in the process of reorganization. Last but not least, SMEs play a crucial role in local economies, and in some regions they are the only industrial operators.

The single market and the globalization of economies is compelling many SMEs to adapt their strategies, with the arrival of foreign competitors on their markets. The increase in the

³⁸ Every year the Commission publishes a budgetary vademecum ("The Community Budget: The Facts in Figures") which indicates the research payments every year since 1958: 1996 Edition SEC (96) 1200.

³⁹ The current financial perspective was decided upon in 1992 at the Edinburgh Summit for the period 1992-1999.

⁴⁰ Aggregated data for 1995/1996 are taken from Table 5 of the reports concerning those years for the EU.

⁴¹ Report EUR 17244

⁴² Green Paper on Innovation, and Commission report to the Madrid European Council (December 1995) on the role of SMEs as a dynamic source of employment, growth and competitiveness in the European Union, CSE 2087..

⁴³ "Enterprises in Europe", 4th annual Eurostat/enterprise policy report - ISBN 92.827.7296.9

technological content of products and processes is therefore a marked trend which compels most industrial companies to innovate. Participating in Community RTD programmes is a response to this need, by making it possible to share the costs and the risks, while developing new transnational collaboration networks.

In order to promote and facilitate SME participation in the Community RTD programmes, the 4th Framework Programme includes a series of technology stimulation measures implemented through nine specific programmes. Aimed both at SMEs which have little or no autonomous research capacities and at high technology SMEs, these measures are of two kinds:

1. Exploratory awards with a two stage submission procedure and a continuously open call for proposals in preparation for research projects;
2. Cooperative research: this type of project (CRAFT: Cooperative Research Action for Technology) enables SMEs that have little or no autonomous research capacities to have some or all of their RTD work carried out by one or more research organizations.

The network of focal points (CRAFT network) has been reinforced in order to make available to SMEs information and assistance with the preparation of dossiers, at national, regional and local levels. It operates in conjunction with other less specialised networks which nevertheless are designed to promote SME access to Community activities, the network of Innovation Relay Centres and the network of Euro-Info Centres.

The experience built up during the pilot phase of CRAFT under the 3rd Framework Programme showed that in the case of SMEs such networks and accompanying measures are essential to enable them to obtain information and participate in Community RTD programmes:

- In 1996, nearly 50 information and assistance schemes were organised.
- In October 1996 the first SME Technology Days brought together nearly 850 economic actors and representatives of the research world, 35% of which were from SMEs.
- All in all, nearly 100 000 SMEs were contacted⁴⁴ in 1995 and 1996 in the context of these accompanying measures.

SMEs now represent 20% of all participations in the specific programmes as a whole, and their percentage participation in all the specific programmes increased between 1995 and 1996. The most significant result in terms of SME participation⁴⁵ undoubtedly concerns the increase in SMEs with research facilities and participating in collaborative research projects. Nearly 3 800 SMEs were funded in a project of this type in 1995 or 1996: as many as during the four years of the previous Framework Programme.⁴⁶

The technology stimulation measures for SMEs (TSME) thus enabled, in 1995 and 1996, 1 200 SMEs to benefit from one of the 500 exploratory awards financed and more than 500 other SMEs to participate in one of the 80 CRAFT projects in progress⁴⁷.

⁴⁴ Depending on the programmes, between 20 and 40% of the proposals received in 1996 in the context of the technology stimulation measures for SMEs (TSME) were directly related to these measures.

⁴⁵ The 5 000 SME participations indicated in Table 5 for 1995 and 1996 break down into 3 800 SMEs collaborating with other types of participants (large enterprises, research centres, universities) in research contracts and 1 200 SMEs benefiting from technology stimulation measures.

⁴⁶ "Activities in favour of SMEs and the craft industry", COM(95) 362 final, September 1995.

⁴⁷ The 5 000 SMEs indicated in Table 5 for the two years 1995 and 1996 as a whole only represent organizations which have signed a contract with the Commission. Associated contractors such as, for example, the 500 SMEs that are co-beneficiaries

An analysis of SME participation indicates that:

- The TSME seem to be particularly suited to small firms with fewer than 50 employees, since they represent the majority of beneficiaries (75% in the case of awards, 50% in the case of CRAFT projects).
- The CRAFT projects seem to meet the needs of firms from sectors or regions where the level of technology is less advanced: 40% of SMEs participating in them are in relatively traditional industrial sectors (food, wood, textiles, construction, mining) and 18% of them are from one of the four Cohesion-Fund countries⁴⁸.
- The TSME have made it possible to extend support to a new category of SMEs, nearly 75% of which have never previously participated in a Community project.

With an average of 6-7 SMEs per CRAFT project, it is to be expected that SME participation in the FP will increase still further in percentage terms in 1997 following the submission of projects prepared thanks to the 500 exploratory awards underway or stimulated by the abovementioned accompanying measures.

3.4.3 Research collaboration links in the European Union

In 1996 nearly 62 000 collaboration links were recorded between teams in the Europe of 15⁴⁹. The collaboration links are characterized first of all by the internal links within Member States. For the two years 1995 and 1996 as a whole, the ratio of internal links to total links is 17%. The links established are to a very large extent transnational, but their internal component is far from insignificant.

When analysing the links it is also necessary to take account of the role of Member States whose national research is more developed. Classifying the Member States according to domestic research expenditure and population, the ranking is similar to the standing of the individual Member States in European research links, and the same applies to the ratio of internal links to total links.

Lastly, the role of collaboration links with third countries is significant, nearly 8 000 links having been identified between the Europe of 15 and the rest of the world.

4. Management of research

In 1996, the Commission continued to work on streamlining and simplifying management procedures and harmonising them between the research programmes. In order to take stock of the situation and to allow its "clients" to express their views on the management of projects and programmes, the Commission organised a seminar in June 1996 to which representatives of industry (including small firms), academia and research organisations were invited.

For the seminar, the Commission prepared a background paper ("Equity, efficiency and transparency in the management of EU research programmes : the next steps"), setting out the overall situation and context within which EU research programmes operate and the measures being introduced, planned or under discussion to improve their management. As part of the preparation of this background paper, two informal workshops were organised. The first involved research

of an exploratory award do not appear. Similarly, very many SMEs benefit from the Community RTD programmes as subcontractors, without the Commission being able to quantify their participation, or funding received by them.

⁴⁸ Greece, Ireland, Portugal and Spain.

⁴⁹ Cf. Annex II - Table 7 - p. 88; this table concerns shared-cost actions.

programme administrators from the Member States and was aimed at comparing management practices between the Commission and national research programmes. The second involved representatives of contractors and organisations that advise researchers on EU research programmes and was concerned with "customer feedback" on administrative issues of managing research projects. Following the seminar, the background paper was made publicly available on the Commission's World Wide Web server, with an invitation to readers to put forward comments or suggestions.

The seminar was divided into three main sessions, dealing with reducing levels of oversubscription, the efficiency and transparency of the proposal evaluation and project selection process, and improvements to contract negotiation, payments and contractual issues.

On the question of oversubscription, the principal recommendation of the seminar was that although there were a number of short term options for obtaining small reductions in oversubscription, the only way to improve success rates significantly was to focus the research programmes much more strongly. The Commission has taken forward this recommendation in its proposal for the Fifth Framework Programme. On the proposal evaluation process, the seminar noted the need for improved harmonisation and transparency of the process and endorsed the Commission's intention of preparing a general manual of evaluation procedures, supplemented by detailed programme-specific manuals. The session on contractual issues also pointed out the need for improved harmonisation between the different services of the Commission. As a result, a vade-mecum on the use of the Commission's model contract is currently under preparation.

The seminar also noted the need to improve response times to proposers from small companies. Through improvements to internal procedures, the time between proposal receipt and a Commission evaluation decision has been reduced from around 6 months to 3 months in the case of SME-specific measures.

In order to adapt its management methods to the changed circumstances which will come about in the fifth Framework Programme, an inter-service working group on management has been put in place to examine all the steps in the implementation of programmes. This group will continue its work during 1997 and, where necessary, will recommend improvements to management methods currently in use.

Where staff are concerned, 99 new posts were created in the course of the 1996 budgetary procedure, increasing the research staff complement to 1453 posts authorised as at 1 January 1996. The costs of managing the specific programmes are published every year as forecasts in the European Union budget,⁵⁰ and as outturn in the revenue and expenditure account. For 1996 the revenue and expenditure account indicates staff and administration costs lower than the multiannual limits authorized in the specific programmes.

⁵⁰ OJ L 22, 29 January 1996: see Annex I "Research and Technological Development": Table of Equivalence.

ANNEX I

RTD ACTIVITIES AND WORK PROGRAMMES FOR 1997

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1ST ACTIVITY

OF THE 4TH EC FRAMEWORK PROGRAMME AND

THE 1ST EC FRAMEWORK PROGRAMME

INFORMATION AND COMMUNICATIONS TECHNOLOGIES

1. TELEMATICS

ACTIVITIES IN 1996

At the end of 1996 the Telematics Applications Programme was running a total of some 400 projects, including over 300 shared-cost projects. In the course of 1996 contracts were signed following the third call for proposals which generated 67 new projects, including 46 shared-cost projects (30 of which for the sector "Telematics for the elderly and disabled").

The rolling call for programme support activities (technology watch, concertation between projects, awareness and dissemination of results, international cooperation, training, special measures for SMEs) resulted in the selection of three new projects covering applications of transport technologies in China, the structuring of Community projects relating to regional health-care networks, and the training of the elderly and disabled in the use of new technologies.

A conference bringing together all the projects (over 800 participants) ensured broad cross-sector concertation on horizontal themes (e.g. applications and generic technologies, electronic commerce, usability, special user groups) and the technological solutions envisaged.

For the first annual examination of projects, 212 independent external experts got together to carry out a technical audit of 278 projects, 21 of which were examined in detail, resulting in the conclusion of three contracts.

The Task Force for educational software and multimedia, the report of which was published in July 1996 (SEC(96)1426), has given rise to inter-programme coordination going beyond the research context.

The five-year evaluation and annual monitoring reports both stressed the favourable contribution of the programme to the structuring of communities of users at European level. This aspect is particularly encouraging for a programme which places the emphasis on activities for the technical validation, in real-life situations, of demonstrators developed by the projects. The development of demonstrators involves the future users of telematic systems and services (hospitals, schools and other educational establishments, administrations, libraries, local and regional authorities ...) whose participation in the projects is both necessary and a guarantee of success but whose experience of

EXAMPLES OF RESULTS

Details of the projects under the 3rd Framework Programme were given in 1996 for all the areas concerned: administrations, education and training, health care, rural areas, transport, libraries, language research and engineering.

The computer-assisted mail project has made it possible to improve procedures affecting delivery times for international mail in 50 000 post offices in the European Union.

collaborative research and technological development work is mostly limited.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

The programme covers the whole gamut of RTD activities from applied research to real-site demonstration. By developing systems components and specific services, and integrating them in generic platforms, it helps to satisfy society's needs in areas of general interest, contributes to the competitiveness of the industries and services concerned, and helps to implement other relevant European Union policies.

Contribution to Strengthening Industry's S&T Bases and Developing International Competitiveness:

The results of the projects take the form of systems prototypes incorporating various equipment, algorithms and software engineering tools, as well as the associated telematic services, in order to provide potential users with technical solutions meeting their needs and expectations. In so doing, the programme helps to reinforce the technological bases of European industry while preparing for the take-up of new technologies by users.

Industry's participation in the projects (35 % of the number of participants) reflects business interest in collaborative projects enabling them to accentuate their vertical integration operations and thus increase their competitiveness on the emerging applications and multimedia services markets.

The good level of participation of small and medium-sized enterprises should be noted, representing 19% of the total number of participants (a figure which is almost doubled if one also includes non-industrial organizations with fewer than 500 employees). The programme supports several international cooperation activities aiming in particular at deploying European technology on third-country markets (Latin America, China, etc.).

Contribution to other Community Policies

The validation/demonstration of new telematics applications, involving many users, now represents some 60% of the total cost of the projects, illustrating the contribution that the programme makes to the establishment of the Information Society in Europe, in particular by satisfying society's needs in terms of general interest services.

It is still too early to take stock of the projects under the 4th Framework Programme, work on which is progressing satisfactorily. Nevertheless, the major contribution that these projects are likely to make to the development of the Information Society in Europe in various areas should be stressed: exchange of multimedia information between police forces at European Union frontiers, multimedia information network for tourism, interconnection of national high-speed research networks.

A "virtual classrooms" project incorporating interactive televisions, computers and video-conferencing, has enabled some 1 400 employees in 60 companies on 80 sites to benefit from the most sophisticated vocational training tools.

The integrated microscope project has transformed the conventional microscope into a veritable telepathology work station connected to a local network to incorporate all hospital clinical information. The work stations, which put two European companies (Carl Zeiss and Alcatel) at the forefront of this new market, make it possible in particular to improve the reliability of cancer diagnosis.

remote monitoring of isolated patients suffering from renal insufficiency, social and occupational integration of the disabled, tools to aid staff in charge of the monitoring and control of environmental hazards, multimedia distance-teaching services for the children of itinerant workers.

WORK PROGRAMME FOR 1997

The fourth call for proposals published in the Official Journal on 17 December 1996 covers all programme sectors except Telematics Engineering. The Community contribution towards the financing of future projects should amount to some ECU 150 million.

A fifth call for proposals, also published on 17 December 1996, concerns a new activity, the validation and demonstration of integrated applications on digital sites (cities or regions). A budget of ECU 50 million is earmarked.

The programme is also involved in two joint calls, one concerning educational multimedia (with five other Community programmes), the other concerning research networks (with the Information Technologies Programme). The Telematics Applications Programme contributes to these calls to the extent of ECU 12 million and ECU 5 million respectively.

In 1997, the programme will also be involved in related research activities: deployment of telematics, contribution to the G7 pilot projects (in particular health-care applications), involvement in certain projects administered by the ISPO and the 2nd activity of the 4th Framework Programme (International Cooperation).

A major conference concerning the Telematics Applications Programme, scheduled to be held in Barcelona in January 1998, will be actively prepared in 1997 with the support of the Spanish authorities.

A multimodal travellers information system project has made it possible to develop the first portable pan-European terminal using a whole range of advanced tools such as RDS-TMC (motorist guidance system) and GSM.



2. COMMUNICATION TECHNOLOGIES

ACTIVITIES

"The ACTS Programme" is now fully operational. 114 projects resulted from the 1st Call in 1995 and a 2nd Call in 1995/1996 enabled 42 new projects to be added and 52 reinforcements of current projects to be authorised, from a total of 172 eligible proposals. Over 1000 organizations now participate in the 158 projects that constitute the programme.

All 6 project domains (Interactive Digital Multimedia; Photonic Technologies; High Speed Networking; Mobility and Personal Communications; Service Engineering, Security and Communications Management) as well as horizontal Actions are now well covered, and have proven to be valuable frameworks for focusing progress and developing consensus.

In addition, value-chains of technology development link RTD projects to end-use services and ensure network and service interpretability, as well as development of a wide consensus on the functional requirements for digital multi-media services, electronic commerce and new working methods.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

Strengthening of Science and Technology Base: the programme involves all the major industrial interests in the 15 Member States of the Union: all the major telecommunications network operators, the leading broadcasters and cable TV operators involved with digital television and new interactive services, all the key European equipment manufacturers and a large number of businesses that see benefits for their own competitiveness and employment strategies in being at the forefront of world developments. Research in the 3rd Framework programme generated over 860 contributions to standards, both on European and world level, and the requirements for standardization will grow as the transition to a competitive environment is completed in 1998.

Development of European Competitiveness: Over 500 participants under the 3rd Framework Programme confirmed interest in commercial plans to develop components, subsystems, methodologies and systems. 234 participants confirmed intentions to exploit Advanced Services for improved competitiveness. There is positive confirmation of significant impacts on the competitiveness in more than 750 separate cases.

Stimulation of Growth and Employment: The total set of projects under the 3rd Framework Programme reported over 800 new jobs from their participation in the programme, but a much larger impact will result from widespread deployment of the advanced services in development - over 5 million new jobs could be generated by rapid deployment of new services by 2010.

EXAMPLES OF RESULTS

The development of UMTS (Universal Mobile Telecomm. System) as platform for future mobile communications will allow users to communicate wherever they are, by voice and video.

The introduction of MPEG4 (standards resulting from the Moving Picture Expert Group) image data compression and digital video broadcasting standards will allow a wider range of high quality services to be provided over cable and telecom infrastructures.

Contribution to a more Sustainable Society: 16 projects work together in a Sustainable Development Concertation Chain, to clarify ways in which advanced communications can contribute to the development of society in a manner which is ecologically, economically and socially sustainable. Their work resulted in 3 specific guidelines in 1996.

Infrastructure: The high-speed "host" infrastructures provided by the public and private sectors at national level as the basis for service trials represent the first Trans-European Information Infrastructure - a web of high-capacity optical fibre cables, radio and satellite links that is a foretaste of the infrastructure that will change everyone's life and work within 20 years. The first interconnected set of national hosts will allow over 10.000 businesses and over a million Europeans to participate in trials of new services over the next three years.

Support to other Objectives of Community Policy: The ACTS project concertation "chains", will contribute to guidelines on network and service interoperability; multi-media access to cultural heritage; electronic commerce and teleworking.

Trials testing new technologies and services in applications like electronic commerce, telework, access to cultural heritage, teleshopping and telelearning, involving over 10.000 businesses and over 1 million people around Europe will improve our understanding of the Global Information Society.

WORK PROGRAMME IN 1997

The Programme will be completed in 1997 by a 3rd (and last) Call for proposals focusing on trial integration, broadening participation, particularly from SMEs and organizations in Central and Eastern European Countries; on consolidation of guidelines and on selected "visionary" research topics which can serve as a bridge into the 5th Framework Programme.

Recent studies indicating that, in the world of communications at large, homogeneous views of network evolution built around single technologies such as ATM are being superseded by the realization that networks will be heterogeneous at all levels. There is also a growing commonality of interest towards building such a stronger visionary research approach into the 5th Framework Programme.



3. INFORMATION TECHNOLOGIES - ESPRIT

ACTIVITIES IN 1996

The main features of the implementation of the ESPRIT Programme in 1996 were three calls for proposals based on a work programme updated in response to technological and industrial changes and the first extension of the two-stage submission procedure following the experts' recommendations in connection with the 1995 monitoring exercise. 27% of the 2881 eligible proposals evaluated were selected.

323 new RTD project contracts were signed, involving funding totalling ECU 444 million. 555 contracts were signed for preparatory, accompanying and support measures, involving funding totalling ECU 139.8 million; the increase compared with 1995 reflects the programme strategy of promoting take-up activities - integrated with RTD - to increase the economic impact throughout the industry.

The take-up activities, which are open to all, are of special interest to SMEs, which receive some 40% of the total amount of funding. They cover thematic skills networks, technology transfer and, especially, the dissemination of best technological practice (the latter receiving some 65% of the total funding for the accompanying measures). In particular, 116 best software practice projects (ESSI) were added to the 109 already launched in 1995; this type of activities now includes the Eastern European countries in the context of INCO: the ESPITI software technology training activity involved 18 500 participants from 5 300 companies, 71% of which are SMEs; in the microelectronics field, over 200 companies were funded for the first experimental use of integrated circuits in products and 26 regional support centres were set up (FUSE).

On the technology stimulation front, 26 exploratory awards were granted to SMEs, the average funding amounting to ECU 34 200. There was a 33% success rate.

Areas of Activity:

The activities launched in 1996 cover all areas of the ESPRIT Programme and contribute directly to the development of the information society in Europe.

In the field of technologies for components and sub-systems: 0.35 μ and 0.25 μ technologies for even greater integrated circuit miniaturization; microelectronic production equipment, an area involving many SMEs; microsystems; peripheral and home automation subsystems. In the field of software technology, the RTD work covers database management, including object-oriented technologies, software re-engineering, with special emphasis on security problems; a new approach was introduced, namely trial applications with the aim of testing the suitability and viability of new technologies used in real-life situations. In the field of high-performance computing: multi-site and network applications using large computing and data-transmission capacities, simulation taking into

EXAMPLES OF RESULTS

European industry maintained its world leadership in 1996 in BICMOS analogue integrated circuits for industrial and telecommunications applications, a success story to which the RTD carried out as a result of ESPRIT made a significant contribution.

In many softwares where the date is represented by only 2 digits the year 2000 will be denoted as 00, which may give rise to accounting problems. It was acknowledged in 1996 that the best corrective software in the world has been developed under ESPRIT.

account the lack of precision of certain physical parameters, information management and decision aid systems, encapsulated systems; in addition, 20 technology transfer nodes were set up as the basis for 75 schemes to promote the use of high-performance computing techniques, aimed in particular at SMEs.

In connection with the OMI microprocessor initiative, mention should be made of the participation of over 30 new organizations, namely SMEs and users; a special effort was made in the field of multimedia systems, where RTD projects concern the development of digital and interactive techniques and technical issues relating to the protection of intellectual property rights; seven networks provides support for the use of multimedia technologies and eleven networks promote best practices with regard to technologies for business processes; in this area, the R&D demonstration projects involve cooperative information systems, quality management, and the integration of tools, and are in line with the needs of a wide variety of sectors (electricity, textiles, construction, insurance, etc.); various projects, such as the "Global Marketplace for SMEs" project, which plays a key role in the development of the Information Society, concern electronic commerce.

In the field of computer-aided manufacturing integration, best practice schemes were launched for SMEs and users, projects were organized around clusters to promote cross-fertilization, and various projects were launched with the common denominator of developing "agile enterprises".

Where long-term research is concerned, the projects focus on upstream industrial RTD relating to new emerging technologies and advanced technologies with a foreseeable medium/long-term industrial future (optoelectronic interconnection, nanotechnologies, intelligent information interfaces). Standardization questions are being addressed in several areas.

Activities coordinated with or carried out in conjunction with other programmes (Telematics, ACTS, etc.) were launched on topics such as: research networks, educational IT (e.g. Web for Schools), industrial property, etc. In addition, a large number of software projects involve the sector covered by the Aeronautics Task Force.

PROSOMA supplements the activities carried out in the various fields of dissemination of information and technology transfer. It has given rise to a multimedia compendium of results obtained in terms of RTD and best practices. This is accessible on-line (CORDIS, [www-http://www.cordis.lu/esprit/home.html](http://www.cordis.lu/esprit/home.html)), is also available on CD-Rom and has given rise to the publication of a work available in five languages analysing 200 cases. Also, an effort is made to bring IT SMEs closer to investment bodies (Annual Forum of the European IT Conference - EITC -, information service on the Internet, etc.).

Over 60 European industrialists, brought together by ESPRIT, within the W3C Consortium, are responsible in particular for standards for the identification and labelling of World-Wide-Web message contents, with applications for the prevention of the unlawful or dangerous use of the Internet.

Advertisements at sports stadia broadcast by television can be replaced, in real time, by other pictures, making it possible to select the advertising message according to the different countries in which the event is broadcast.

The ARM microprocessor developed as a result of an ESPRIT project is the market leader for low-consumption microprocessors (portable multimedia, mobile telephony). The turnover of the company which markets it has increased tenfold over the last five years.

FEATURES OF PARTICIPATION AND EXPLOITATION OF RESULTS

Some 27% of participants (40% of industrial participants) are users. SMEs are evenly divided between users and suppliers while the ratio is 2 to 1 in the case of large firms. SMEs represent some 25% of the programme in terms of participation and financing; large firms receive 40% of the total financing and represent 30% of the total participation. 11% of the participation in RTD projects is accounted for by "Objective 1" regions and a similar proportion in the case of accompanying measures; some 4.5% of total participation is accounted for by third countries.

A survey carried out in 1996 in the context of the evaluation of ESPRIT among 378 companies representative of participation in the programme showed that commercial exploitation of the results was achieved in 89% of cases in less than five years (55% in less than two years) and patents were filed in half of the cases.

A project for 3-D object digitization and teletransmission received one of the EITC's 1996 ITEA awards. The marketing of the resulting product is a world success.

ACTIVITIES IN 1997

The two-stage submission procedure has been extended to new areas and the procedures relating to technology stimulation measures for SMEs will be speeded up. Following the agreement on the IMS (Intelligent Manufacturing Systems) international cooperation programme, a joint "ESPRIT - Industrial and Materials Technologies" call for proposals was published in 1997. The work programme was again updated to take account of the measures in progress and new priorities; its presentation was shorter and clearer following the recommendations of the programme evaluation. In addition, to make it easier to submit proposals relating to several areas, an additional mechanism has been introduced, namely thematic calls. Four themes were proposed in 1997, and two were launched in March, namely IT for Mobility and Electronic Commerce.



INDUSTRIAL TECHNOLOGIES

4. INDUSTRIAL AND MATERIALS TECHNOLOGIES

ACTIVITIES

The following activities were evaluated in 1996.

RTD Projects:

The main activity in 1996 was the implementation and administration of the second IMT call for proposals and the negotiation of the projects selected. Many proposals were received (940) but fewer than in 1995 (1180) because of the absence of the aeronautics sub-area.

The various themes of the "Production technologies" and "Materials and technologies for product innovation" areas are in general well covered except for sub-area 1.5 "Human and organizational factors in production systems". In sub-area 3B "Technologies for means of surface transport" only theme 3B6 "Technologies for vehicle operation" is under-represented.

The average cost of proposals fell from ECU 4.3 million to ECU 3.8 million between 1995 and 1996, mainly because of the absence of aeronautical projects which are generally more expensive.

Research-industry collaboration continued. There was even an increase in the participation of SMEs: 50% of industrial partners are SMEs.

261 proposals were judged excellent and selected for funding totalling ECU 400 million, a success rate of 28% compared with 18.5% for the preceding call for proposals.

However, one disappointment with regard to the results of this second call concerns basic research. The Council decision indicates a ratio of 15:85 between the funds allocated to basic research and applied research. The ratio for the projects selected is only 8:100. Efforts to stimulate basic research were launched in the second half of 1996.

Thematic Networks:

In the context of the call for proposals continuously open since 1995, 71 proposals were received for exploratory phases and 35 for implementation phases. 73% of these proposals were selected for funding totalling ECU 36.6 million. The number of "Thematic networks" projects received and selected increases with each evaluation and for 1996 amounts to 49 exploratory-phase projects and 29 implementation-phase projects. An evaluation of the pilot phase (1995-96) has been launched which will make it possible to improve procedures in 1997.

EXAMPLES OF RESULTS

In 1990 the HOFIM (motor compressor) project was launched, bringing together Belgian, British, French and Swiss partners to conduct research into the most economic method of storing natural gas under pressure on a large scale. The motor compressor built in the context of the project was a world first in 1992. Entirely automated and with remote controls, it operates at 20 000 rpm and has an output of 2MW. Compared with traditional equipment, it is a very safe, non-polluting, energy-efficient and low-maintenance plant occupying a small surface area.

CRAFT:

The response rate to the continuously-open call for proposals is satisfactory with exception of area 3 (Transport) which is under-represented (4%). Of the 414 proposals received for Stage 1 and 145 received for Stage 2, 210 and 67 projects respectively were accepted for funding totalling ECU 36.7 million.

Accompanying Measures:

111 projects were selected from 161 proposals received, mainly divided between conferences (30%), grants (40%) and encouragement for SMEs to participate in the programme (26%).

Task Forces:

As in 1995 the programme contributed towards the work of the various Task Forces, in particular the "Water - Environment", "New Generation of Aircraft", "Car of Tomorrow", and "Maritime" Task Forces. These activities help to improve inter-programme coordination.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

The IMT Programme covers RTD activities ranging from basic research, through industrial research, cooperative research for SMEs, networking and training activities, to optimization and exploitation back-up activities.

In this way it helps to strengthen European industry's scientific and technical bases, and in so doing to increase competitiveness by generating activities aimed at improving the quality of life of individuals.

Strengthening Industry's S&T Bases

The stimulation of technological innovation, the main project evaluation criterion, makes a contribution, as a result of sustained collaboration between industries and universities, towards strengthening industry's S&T bases and also towards the development of new products, processes and systems.

The significant involvement of industry in the research projects (60%) demonstrates interest in the multidisciplinary activities under the programme. The systems approach pursued in the research projects also encourages vertical links between suppliers, manufacturers, users and service companies.

The multisectoral application of the results as a result of multidisciplinary technologies also makes it possible to extend the potential areas for industrial spin-offs.

Industrialized articles are shaped using moulds specially designed for them. The MODESTI project has enabled SMEs specializing in the subcontracting of such articles to adopt the new CAD and CAM technologies that are essential if they are to be competitive.

Silence on board vehicles is one of the key factors in comfort. In the context of the BRAIN project, European scientists have developed new mathematical models for the soundproofing of aircraft cabins at the design stage. This technology can also be applied to other means of transport.

The Car of Tomorrow; three projects aimed at the development of components for an electric or hybrid vehicle, with a total budget of ECU 15 million, were recommended in 1996. They concern modular hybrid propulsion concepts, the development of superbatteries, and inductive contactless charging systems.

Development of International Competitiveness

The involvement of more than four Member States on average per collaborative research project is indicative of how, through these projects, industry can address issues related to the globalization of the economy and, in so doing, prepare itself for international competition. In addition, studies indicate that it is mainly the high-tech sectors which have the highest growth rates and which in turn generate the best prospects as regards employment and the environment.

Contribution to other Community Policies

Economic and social cohesion were strengthened as a result of project collaboration involving an average of seven participants from four different Member States and the participation of a large number of new organizations (71%) compared with the preceding call. 13% of participants are from objective 1 regions. The participation of SMEs (many from less-favoured regions) in the RTD projects amounts to 32%, representing 50% of total industrial participation; SMEs account for 29% of the budget and coordinate 26% of the projects.

International cooperation is growing, amounting to a 2.5% participation for non-EU countries under the latest call for proposals.

WORK PROGRAMME FOR 1997

The proposal evaluation process will be repeated following the third IMT call for proposals the closing dates for which are 30 April 1997 for basic research and means of transport, and 15 September 1997 for industrial research corresponding to areas 1 and 2.

Two CRAFT evaluation exercises and three thematic network evaluation exercises will take place.

Two other areas of work will also be encouraged. On the one hand, the programme accompanying measures (3% of the budget) will continue to be implemented on the basis of the call for proposals published on 15 December 1995 which is continuously open until the end of 1997; a new phase of evaluation of completed projects will also be initiated. On the other hand, discussion and study workshops will take place to prepare for the 5th Framework Programme. A major conference will also take place in Toulouse from 27 to 30 October 1997 to present the main results of the programme.

Concerning machine tools, where the European industry is the world leader, 11 new projects involving total Community funding of ECU 21 million are helping to develop advanced production systems aimed at ensuring increased flexibility and productivity. New production methods, eg dry machining techniques, will be developed to bring about a substantial improvement in working conditions and ensure that there is less impact on the environment.

The microsystems boom: 30 instrumentation and electronics projects were selected in 1996. With a Community budget of nearly ECU 50 million, they concern micro-machining, new materials and design methods technologies. Applications will range from laser or ink-jet printing, through industrial monitoring under extreme conditions, to ultrasonic imaging.



5. MEASUREMENT AND TESTING

ACTIVITIES

RTD Projects:

In the case of themes 2 and 3 (open call for proposals): implementation of the work programme in 1996 resulted in the evaluation of over 400 proposals covering respectively theme 2: research related to written standards and technical support to trade and theme 3: measurements related to the needs of society. The significant features of this call are, on the one hand, a considerable response (industry accounting for 20%) and, on the other, a balanced distribution of the number of proposals received between the various subjects, with the exception of subjects introduced recently: support for customs laboratories and for meteorological activities in the field of forensic medicine and scientific aspects of policy.

A total of 65 projects were funded by means of a Community contribution totalling ECU 31.7 million.

In the case of support for Community policies (targeted calls): the Commission invites industrial and government laboratories to submit proposals for specific research topics regarded as important for the implementation of Community policies (agriculture, health, environment) and for European standardization (CEN, CENELEC, ETSI). 32 of the 72 proposals received were funded (44%).

Thematic Networks:

23 proposals (15 exploratory phases and 8 implementation phases) were received in the context of the continuously open call. 13 proposals were funded, the total amount of funding being ECU 910 000.

CRAFT/SME:

The response to this call was moderate, with 41 proposals being evaluated, including 34 exploratory awards. However, it should be pointed out that SME participation in the open call for themes 2 and 3 amounts to 10%. This category mainly comprises measurement and testing laboratories which provide analyses to industry, trade and government institutions

GENERAL CONSIDERATIONS

The objectives of the programme are met in particular as a result of improving the effectiveness of the targeted calls and by strengthening economic and social cohesion (17% of the participants are from Objective 1 regions).

EXAMPLES OF RESULTS

Monitoring the quality of bathing water: 34 laboratories took part in the project. The techniques used to monitor seawater quality were evaluated. The accuracy, reliability and comparability of the results were improved. The recommendations should be incorporated in European legislation.

Monitoring pollution of the sea: Decisions based on poor data may have disastrous consequences for the marine environment. In the QUASIMEME 90 project, monitoring laboratories have identified the main sources of error by pursuing a global quality assurance approach. A European marine monitoring network has been set up.

The significant participation of third-country laboratories is indicative of their interest in taking part in the general movement towards harmonizing quality standards and controls to facilitate world trade.

The success rate for the targeted calls confirms the importance of this type of approach. However, it is necessary to develop also a system of subject selection which makes it possible to adapt continuously to the needs expressed by the users of RTD results.

The participation of SMEs in RTD activities related to measurements and testing and to applied metrology in general is difficult in a CRAFT environment. However, a real need has emerged for the transfer of quality assurance and measurement technologies to SMEs following the worldwide introduction of the ISO 9000 certification and accreditation systems.

WORK PROGRAMME FOR 1997

The 1997 work programme focuses on the start-up of the projects selected for themes 2 and 3.

Taking into account the budget available and the need to adjust the budget split between the three programmes themes, it is proposed that the proposals selected under the fifth targeted call should be financed and that, where appropriate, a final call should be launched to support priority and urgent activities. In addition, seminars and consultations will be organized to clarify the scientific and technical aspects related to standardization and applied metrology for the 5th FP.

Real-time blood analysis: a prototype has been developed to measure rapidly and continuously the chemical parameters of the blood of patients in intensive care. Changes in sugar and lactate levels can be successfully detected within five minutes of their appearance. Other applications are possible in cases where continuous monitoring is necessary, e.g. in biotechnology, industrial production and environmental monitoring.

Quality criteria for boiler manufacturers: the preparation of a European Directive to establish a licensing system for gas boilers has worried industrialists who have realized that the various monitoring centres were unable to give the comparable results required by the licensing system. The aim of the project was to develop and improve testing procedures to ensure that the difference in results between laboratories is less than 2.5%. The licensing system is based on a scale with a 3% margin. This work has made it possible to rationalize and reduce the cost of testing. Certain procedures will be incorporated in European standards.



ENVIRONMENT

6. ENVIRONMENT AND CLIMATE

ACTIVITIES IN 1996

1996 was marked by a consolidation of activities under the programme and a transition towards laying the foundation for environmental activities in the Fifth Framework Programme.

Calls have now been issued for all areas of the programme and the cumulative effect of the first phase of the programme (1994-1996), together with the second main call for the second phase of the programme (1997-1998) launched on 17 September 1996 and closed on 15 January 1997, has resulted in over 3,000 proposals requesting ECU 2819 million and involving 17,000 participants from the 15 Member States and 49 non EU countries. Overall, there has been a financial over-subscription rate by a factor of almost 6.

More than 360 RTD projects and concerted actions have been selected to receive financial support from the calls evaluated in 1995 and 1996. These involve an EU financial contribution of ECU 269 million and 2300 participants. Underpinning activities to ensure an appropriately qualified future environmental scientific community also continue to play an important role in the programme: in 1996 funding has been provided for a further 35 training grants and 9 advanced training courses. These complement the accompanying measures for workshops, seminars and conferences aimed at pursuing the objectives of the programme, spreading best practice resulting from environmental research activity and ensuring the transfer and use of scientific results and knowledge.

At the global level, activities under the programme continue to be a vital in-put to international initiatives relating to the environment. In particular, in 1996 the ENRICH initiative (European Network for Research in Global Change) was relaunched and the subject of a targeted call for proposals to complement similar networks for the Americas and Asia-Pacific region (based around the Inter-American Institute for Global Change Research and the Asia-Pacific Institute for Global Change Research).

During the year the work programme was revised for the second phase of the programme. Accompanying the second main call was a "Stepping Stone" document which highlighted the moves towards problem-solving approaches for key areas affecting a healthier planet for tomorrow, the safety of the citizen from environmental risks, the future industry-environment partnership in a competitive market and socio-economic development and environmental sustainability: improving the links.

EXAMPLES OF RESULTS

The arctic mission of the Airborne Polar Experiment (APE) explored mechanisms of ozone depletion in polar stratospheric clouds and particularly the release of ozone destroying chlorine species from the clouds. The mission used the converted Russian spy aircraft "Geophysica", equipped with a new scientific payload.

The projects PEACE and APHEA provided direct evidence of air pollution in European cities and risk estimates to human health now being used in the development of WMO Air Quality Guidelines, as well as Air Quality Limit Values of the Commission.

The impact of major disasters on citizens - flooding and earthquakes - was of particular importance during 1996. A communication on earthquakes was adopted by the Commission which recognised the partnership between the environment and climate RTD programme and other programmes to contribute to the safety of the citizen and to alleviate effects of earthquakes on the economy. It emphasised the need to reinforce international co-operation, in particular with Japan and the USA, in this area.

Following the Rhine and Meuse floodings in 1995, a European-wide concerted action on river basin modelling, management and flood mitigation, is now underway.

In the field of satellite earth observation, the Centre for Earth Observation entered its design and implementation phase, and the Commission adopted a new communication on space which set out the rationale and possible measures for a continued Community role in this area.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

Contribution to the reinforcement of the S&T bases in the industry and of competitiveness: The five-year assessment on the programme recognised that there were obvious and good reasons for industrial participation running at a lower level in this programme than in some other EU RTD programmes. Nevertheless, for those areas of the programme more directly relevant for an industrial involvement in the fields of environmental technologies and space, over 51% of projects funded involve an industrial participant and 29% involve at least one SME. Signs are emerging of increased industrial interest, and measures currently being taken should provide a platform for further take-up and participation by industry of the opportunities on offer.

Contribution to other Community policies: The raft of projects is providing a sound scientific basis for the development, in particular, of environmental policies and support for sustainable development and the Fifth Environment Action programme. They are also providing a contribution for the development of action to be taken in negotiations on global issues, such as impact of global change.

Research in the field of space techniques explicitly seeks to encourage the cost effective use of satellite earth observation in the implementation of EU environmental policy.

WORK PROGRAMME FOR 1997

The main accent will be put on evaluating the proposals submitted as a result of the second main call which closed on 15 January 1997, together with the launch in June 1997 of a second call targeted at activities relating to the Centre for Earth Observation.

Within the "ULYSSES" project, techniques have been developed for undertaking participatory integrated assessments to relate urban lifestyles and climate change and more generally to improve the basis of environmental decision making.

The "Medalus III" project is developing degradation indicators for the mapping of areas vulnerable to desertification in the Mediterranean regions.

The results of the "EURO SEISMOD" project on local variations in land movements due to factors specific to the location have been applied immediately in urban planning.

For the first time in Europe, a complete expert system for evaluation of the deterioration of brick masonry historic buildings has been developed. Software results have been presented in workshops, conferences and TV programmes and had an enormous success amongst architects and policy makers.

Special attention is being paid to measures to strengthen or reinforce programme implementation issues identified during the first phase of the programme, and in monitoring and assessment exercises. In particular, academia and research organizations continue to dominate the programme and efforts will be made to increase the industrial participation in the programme, especially by SMEs, including through a greater take-up of the assistance under the technology stimulation measures.

Steps will also be taken to more effectively disseminate knowledge and results of the programme. There is no shortage of published results known within the scientific community; on the basis of a questionnaire sent to more than 800 participants, the five-year assessment concluded that the average number of publications in refereed journals was 13 per project and in other publications 14 per project. Nevertheless, the major challenge is to transform rapidly the outputs of projects into a format which can be targeted at, and readily assimilated by, policy makers and users such as commerce, the service sector and industrial enterprises.

The research opportunities in the space techniques areas will be promoted. These were included for the first time in the Fourth Framework Programme and are aimed at creating a synergy between the scientific community, industry and users. Methodological research and pilot projects were successfully launched in 1996, and similar actions will be continued in 1997. However, as regards feasibility and preliminary development of new sensors, the withdrawal in 1996 of the proposal relating to the AMAS instrument (Advanced Millimetre Wave Atmospheric Sounder) foreseen for launch in 1999 on the Russian meteor 3M satellite, for which funding of up to ECU 17 million in 1996-1997 was foreseen, had a major impact on the programme.

The VEGETATION instrument which has received an EU contribution of ECU 50 million in the development phase was delivered to CNES in December 1996 for integration into the SPOT 4 satellite foreseen for launch at the beginning of 1998.



7. MARINE SCIENCES AND TECHNOLOGIES

ACTIVITIES

The second general call for proposals provided for in the work programme (closing date: 15 October 1996) covered the entire programme except areas B1.2 (Coastal Ecosystems) and D (Support Initiatives).

The 213 eligible proposals received involve 1 514 participants and a total sum requested amounting to ECU 326.2 million, more than four times the amount available for the call. All the areas were covered by these new proposals, but there was a slight shortfall in the case of theme III (Operational Oceanography) on account of the ineligibility of certain proposals. 275 experts took part in the evaluations. The procedure, a new one, comprised two stages, one concerning scientific merit, the financial aspects, the proposed partnership and the dissemination of results; the other concerning strategic aspects and the European dimension. 91 proposals reached stage 2. The intention is to fund 56 of them in 1997.

A call for proposals concerning area D expired on 17 June. Two of the five eligible proposals received will be funded in 1997.

The programme received 65 applications for sectoral grants: 21 will be awarded. Four advanced training courses were organized. Nine exploratory awards were allocated to SMEs. The programme continued in its efforts to develop a harmonized policy for the exchange and management of oceanographic data with the Member States and international organizations. MAST played an active part in the organization of the third international conference on underwater acoustics on Crete.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

The European dimension of the projects submitted in 1996 is reflected in various ways: the scale of the project (case of OMEX-II, a new regional project), geographical complementarity of the study sites, opportunity to set up networks of laboratories capable of measuring up to their North American counterparts on leading-edge subjects such as: biodiversity and marine microbiology, the design of unmanned underwater vehicles and underwater laboratories, drilling techniques adapted to the increasing depth necessitated by offshore oil exploration, and marine biotechnologies.

The launching of major projects concerning regional themes (MTP for the Mediterranean, BASYS for the Baltic and CANIGO for the Gibraltar-Azores area) is intended to strengthen economic and social cohesion. Each of these projects brings together between 50 and 70 participating institutes.

EXAMPLES OF RESULTS

The pilot phase of the MTP (Mediterranean Targeted Project) has made it possible to detect in the deep waters of the Mediterranean a signal of climate change under way; it has highlighted an increase in nitrate and phosphate inputs, a reduction in the lead content of surface waters and a change in the conditions in the Aegean Sea which suggest increased long-term biological productivity. Results of this kind make it possible to monitor the development of the marine environment of the Mediterranean.

The ESOP (European Subpolar Ocean Programme) project has demonstrated the extreme short-term variability of marine processes liable to influence water circulation in the North Atlantic and hence Europe's climate.

Area C (Technologies) attracted nearly half of all the proposals, ie more than usual, and as a result of this industry's participation has increased from 7 % after the first call to 15 %. SME participation has levelled off at 10% of total industrial participation.

Nearly 3% of all the participants are from non-EU/EFTA countries, and in particular Israel and the Eastern European countries.

WORK PROGRAMME FOR 1997

The panel set up for the annual evaluation regretted the difficulty that the programme seems to have in attracting SMEs, despite recourse to national contact points. A more aggressive approach to the dissemination of the results of the programme is now aimed at improving this state of affairs.

The 1997 work programme has two main features:

- 1) Evaluation of proposals received on 15 January on theme B1.2 (coastal ecosystems) and on the ENRICH (European Network for Research into Global Change) initiative, and on 27 June on various sub-themes of area D (support initiatives).
- 2) Possible publication of a call for proposals targeted on operational oceanography, following the disappointment with the second general call.

The leading European specialists in physical processes (currents, waves, sedimentation) have developed digital simulation models for coastal area management. The studies are at the leading edge of world research in this field.

A project concerning coastal protection structures incorporates various aspects (hydrodynamics, geotechnical aspects, structure) in a new approach which is different from the traditional empirical approach.

A new type of remote handler (AMADEUS project) and a drilling tool which makes it possible to recover sediment core samples at depths of between 30 and 5 000 metres are being developed.



LIFE SCIENCES AND TECHNOLOGIES

8. BIOTECHNOLOGY

ACTIVITIES

Objectives :

The specific programme for biotechnology continued to pursue its original objectives in 1996: to understand the mechanisms whereby the living cell manages to be so productive, and to generate the knowledge needed for industrial progress in the areas targeted for community intervention .

In order to concentrate on what distinguishes biotechnologies from other modern technologies, the programme focuses on the following research areas: the cell factory; genome analysis; plant and animal biotechnology; cellular communication in neurosciences; immunology and generic vaccinology; structural biology; prenatal research; biodiversity and social acceptability; infrastructures and horizontal activities (demonstration activities; legal, ethical and social aspects; public perceptions; socio-economic impacts).

RTD Projects:

The second call for proposals launched on 15 September 1995 was followed by a Commission Decision concerning project evaluation on 31 May 1996. This call attracted 786 proposals, 152 of which were selected and allocated funding totalling ECU 208 million.

The third call for proposals was launched on 15 June 1996, attracting 391 proposals which were evaluated by independent experts in November 1996.

Technology Stimulation Measures for SMEs:

Following the second call for proposals which was permanently open until 31 December 1996 for exploratory awards, the Commission received 76 proposals between 10 January 1996 and 31 December 1996.

Research Training Grants:

In 1996, 118 research training grants were awarded. A new call for proposals for research training grants was published on 15 June 1996.

Other Accompanying Measures:

A call for proposals for training grants for practical courses in the field of biotechnology was published on 17 December 1996.

EXAMPLES OF RESULTS

After nearly 10 years of work by a network of some 100 European laboratories funded by the Community biotechnology programmes, the complete sequence of the wheat genome was unravelled. This was a major scientific breakthrough, revolutionizing biological research and making it possible to make enormous progress in the acquisition of knowledge of human genetic illnesses.

The first synthetic vaccine has been developed. It comprises a protein which triggers immune protection against a family of viruses which mainly infect animals (parvoviruses). This project, involving three partners, was led by a Spanish SME. Three patents have been filed and the technology has made it possible to produce parvovirus diagnosis kits which have already been marketed.

Transmissible Spongiform Encephalopathies (TSE):

In conclusions adopted on 7 October 1996, the Council took the view that it was necessary to improve cooperation and the coordination of research into TSE-related subjects, in particular in the context of the Biotechnology Programme. On 5 December 1996 the Commission submitted a Communication entitled "A European Initiative on Transmissible Spongiform Encephalopathies" containing an Action Plan for future research activities in this field.

CONTRIBUTION TOWARDS STRENGTHENING INDUSTRY'S S&T BASES AND DEVELOPING INTERNATIONAL COMPETITIVENESS.

The increased industrial participation in response to the second call (66%) indicates that the Biotechnology Programme is increasingly moving towards a strengthening of the scientific base, enabling European industry to become more competitive at international level.

WORK PROGRAMME FOR 1997

The fourth call will be launched on 17 June 1997 and will expire on 15 October 1997. All the contracts arising from the third call will be negotiated and concluded before the end of the year.

A budget of around ECU 129 million will be committed in 1997 for RTD projects, research training grants and other accompanying measures.

A call for proposals specific to TSE will be launched in 1997.

Lipases are enzymes which speed up the breakdown of fats in living organisms. They have numerous industrial applications. A consortium of 20 laboratories has succeeded, to a large extent, in determining the structure of lipases and the link between their structure and their functions and hence how they operate. The first commercial result of this project is "Lipolase", developed by a Danish company. Many patents have been filed and a new firm was recently set up.

The publication of the 1996 Directory of Biotechnology Trainees provided an opportunity to consider the impact of the training part of the specific programme for biotechnology: over the last 10 years around 1000 biotechnology research grants have been awarded. At the moment nearly 150 researchers are working in another Community country (the vast majority for a year) thanks to the Biotechnology Programme.



9. BIOMEDICINE AND HEALTH

ACTIVITIES

During 1996 two-thirds of the BIOMED 1 projects developed within the 3rd FP came to an end. In 1996, 252 projects were funded for an amount of 121 million ECU as a result of the first call of BIOMED 2.

In March 1996 a second call for proposals was launched in the areas Pharmaceuticals; Biomedical technology and engineering; Brain; AIDS, tuberculosis and other infectious diseases; and Human genome.

Of 657 proposals, 125 have been selected for Community support with a total contribution of 87.5 millions Ecus. The selected proposals, notably in the fields of Pharmaceuticals, Biomedical Engineering and Brain research, are expected to underpin the public health initiatives in the context of Article 129 of the Treaty.

The Task Force Vaccines-Viral diseases continued its work, the First Report of the TFVV was finalised in 1996. The TFVV succeeded in identifying clear R&D priorities for research at European level. As a consequence of these efforts, the BIOMED 2 and BIOTECH Working programmes were updated, in agreement with the programme committees. Altogether, BIOMED and BIOTECH supported 34 projects in the vaccine field for a total of ECU 26.8 million.

An interdisciplinary conference on Cancer research was organized in September 1996, aiming at assessing ongoing research activities, outlining weaknesses and defining future research priorities.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

The Brain Research projects cover different sectors including development and neurodegeneration; study of brain receptors and their role in disease development; therapeutic approaches to the treatment of diseases; studies on the identification of susceptible genes for the development of neurodegenerative or psychiatric disorders; and studies aimed at assessing cognitive functions, such as memory and learning.

In the Human Genome research area, the emphasis has shifted from the provision of an adequate research infrastructure to a closer coordination of research on the following sectors: improvement of the genetic map; physical mapping; data handling and technology development. Stronger visible impact of the new projects being funded is centered on the role of genes and gene products in disease aetiology and pathogenesis. Some of the new projects propose to study genetic susceptibility in various multifactorial diseases, and aim at developing tools for systematic gene search.

On 20 March 1996 the UK authorities announced the appearance of nine cases of a new variant of Creutzfeldt-Jakob Disease (nvCJD) which raised concerns about the transmission of the BSE agent to man via the food chain. In June 1996 the Commission declared its intention of proposing a comprehensive action plan for research on BSE/CJD.

EXAMPLES OF RESULTS

Vaccines:

Three demonstration projects aim at the production by industry, of prototype vaccines against Malaria, Hepatitis B and AIDS as designed by their academic inventors, and at their pilot clinical testing, preceding the larger scale trials necessary for their future registration. Fore-front concepts in vaccinology are brought forward in these projects which are supported by both the Biomedicine & Health and Biotechnology programmes.

Following an invitation at the Research Council of 7 October, the Commission presented at the Research Council of 5 December a Communication on "A European initiative on transmissible spongiform encephalopathies" (TSEs) which comprises both the coordination of activities between Member States and a specific call for proposals. The Council agreed on the proposed action plan and adopted a political agreement on an additional budget of ECU 35 million, in the context of the proposed financial supplement for FP4, to be devoted to research activities in the field of TSEs and vaccines and viral diseases.

Within the first call for proposals of the specific research programme in Biomedicine and Health, six proposals in the field of BSE/CJD were submitted; four were selected.

In the field of infectious diseases, in view of the increasing threat from emerging and re-emerging infectious agents, the BIOMED 2 programme took a number of actions aiming at the development of safe and effective vaccines against diseases where no or only inefficient drugs are available or where human suffering and/or cost for society are high. Major efforts were also devoted to the HIV/AIDS epidemics, and to the problem of tuberculosis re-emergence.

A High-Level Workshop was organised in Brussels with the objective of identifying clear research priorities in the field of medical, socio-economic and detection aspects of drug abuse. The results of the workshop have been taken up in the conclusions of the Irish Presidency, which called for a development of research activities in these fields.

Concerning Biomedical Ethics, actions to increase the involvement of Patients' Associations in the ethical debate have been initiated. A conference on "Biomedical Research and the concerns of Patients' Associations" was held in Brussels in September 1996, in which scientists, lawyers and philosophers and several European Patients' Associations discussed together the problems of bioethical research. Furthermore, a report on "AIDS, Ethics, Justice and European Policy" was published, presenting an overview of the research carried out within a BIOMED Concerted Action.

The BIOMED 2 programme supported demonstration projects in order to prove the techno-economic viability of new medical practices (e.g., non invasive monitoring of the performance of dental implants at the bone-implant interface and a somatic gene therapy method for the treatment of leukaemia) and to disseminate these practices to users, industry, public entities and other targeted interest groupings.

WORK PROGRAMME FOR 1997

The 5-year evaluation report was finalized and steps will be taken to implement its suggestions for improvement.

In 1997, the proposals introduced in the third BIOMED 2 Call for proposals will be evaluated and selected. It is expected that approximately 160 proposals out of 1002 received will be funded for an amount of 72 million ECU.

Brain:

The project "Creutzfeldt Jakob Disease surveillance in the European Union" which assembled data from 5 European countries was aimed at studying the frequency and distribution of CJD in relation to the animal form. This is the largest systematic survey of CJD ever carried out and is at the basis of the discovery of the new variant for this disease.

European researchers of the PARADIGM project, in collaboration with research groups in the US and Japan, identified on chromosome 12q the gene responsible for Maturity-Onset Diabetes in the Young (MODY 3). MODY 3 is characterized by autosomal dominant inheritance and an age of onset of 25 years or younger. Mapping of genes involved in diabetes will further the understanding of the genetic causes underlying this disease, a first step in the development of new therapies.

A joint call for proposals in the field of transmissible spongiform encephalopathies launched within the Life Sciences and Technologies programmes during the second quarter of 1997 is conditional on a decision by the European Parliament and Council on the supplementary funding of FP4 .

Specific attention will be given to the preparation of the 5th FP, in particular the relevant key actions and generic activities with a biomedical and health aspect in the context of the programme "Unlocking the resources of the living world and the ecosystem".

Specific efforts will be undertaken to disseminate and exploit the results of BIOMED 1 projects.



10. AGRICULTURE AND FISHERIES

(INCLUDING AGRO-INDUSTRY, FOOD TECHNOLOGIES, FORESTRY, AQUACULTURE AND RURAL DEVELOPMENT)

ACTIVITIES

Shared-cost projects: 154 new projects were signed involving a Community contribution totalling ECU 160 million, the average success rate for the programme being 21%. The main research areas were well covered, with the exception of the following areas: scaling-up, promoting the quality of agricultural production, rural development and better use of under-used fish species.

Over 30% of participants in areas 1, 2 and 3 are industrial participants, and their participation is tending to increase in both areas. Projects in areas 4 and 5 focus more on support for the Common Agricultural Policy (CAP) and the Common Fisheries Policy (CFP) and the level of industrial participation is lower (10%).

Concerted action: The number of concerted action contracts rose from 9 in 1995 to 36 in 1996. The increase was particularly significant in the field of agriculture, forestry and rural development. These actions facilitate the coordination of research activities funded by the Member States and create networks of researchers and users. The average number of participants per action is 15, on average from 9 different countries. The thematic networks will be actively promoted in 1997.

Technology stimulation measures for SMEs: 67 projects (62 exploratory awards and 5 cooperative projects) were the subject of contracts, the average success rate for this type of proposal being 39%. The number of proposals for exploratory awards received levelled off, but the number of proposals for cooperative projects is rising as a result of the accompanying measures carried out in collaboration with the national focal points and also as a result of exploratory awards granted earlier. 165 SMEs benefited from the measures in 1996 and 86 SMEs participated in shared-cost collaborative projects.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

Strengthening the competitiveness of agro-industry: Food sector research mainly provides generic knowledge to enable producers to supply foodstuffs which are safer, healthier from the nutritional point of view and with better organoleptic properties. Integrated chains for the optimum use of renewable plant raw materials for the production of energy, chemicals and competitive wood products were developed. The integrated chains often comprise a series of projects each of which covers certain links in the chain but which are coordinated to ensure overall coherence. Under the last call for area 1 (5th call) projects to complete existing chains will be selected.

EXAMPLES OF RESULTS

Four patents were filed concerning the characterization of the genes which control the synthesis of lignins and concerning the development of genetic engineering techniques, in order to allow the production of new crops and types of wood suited to the needs of the pulp industry. This helps to reduce production costs and environmental impacts.

A small Irish company, collaborating with seven research centres and a French SME, has improved its salad packaging technology to increase keeping time and quality. As a result it increased its turnover fourfold and created 100 jobs.

Contribution to the reformed CAP and Community rural development policy: The projects make a contribution to the design of tools and systems needed to optimize the use of the endogenous resources of the rural world. They focus on comprehensive approaches and the multi-functional and sustainable management of the environment, and incorporate socio-economic and environmental aspects.

Support for the objectives of the CFP: Analysis of relationships between catch capacity, the extent of fishing and mortality are still the main research topics where fisheries management is concerned. Other priorities include better knowledge of the socio-economic aspects of fishing and aquaculture and an evaluation of the consequences of applying the CFP Regulations. An increase in the competitiveness of the fish farming industry has been noted. Significant efforts have been made to diversify the species of fish farmed, in order to ensure the sector's economic viability.

WORK PROGRAMME FOR 1997

A budget of ECU 138 million will be committed in 1997 to fund projects selected following the fourth and fifth call for proposals, together with exploratory awards and cooperative research projects.

A special call for proposals targeted at transmissible spongiform encephalopathy (TSE) involving a total amount of ECU 8.8 million expired on 14 February 1997. 24 proposals concerning detection methods and the study of the development of the illness have been received. A decision by the Commission on the proposals to be funded is expected in the course of July. Subject to the decision awaited from the European Parliament and the Council on the supplementary funding for the 4th Framework Programme, the Commission will publish another call for proposals concerning TSE in 1997 in the context of the life sciences programmes.

Publication of the sixth call for proposals under the programme was postponed from June to October in order to evaluate the results of the fifth call for proposals before deciding on the areas of the work programme which will be covered in the last call for the programme. The final date for the submission of cooperative research projects was also postponed from December 1997 to 8 April 1998.

Progress has been made in the detection of bovine tuberculosis by blood analysis, and the establishment of a scientific network dedicated to a swine sickness which is developing to a disturbing extent: the porcine reproductive and respiratory syndrome.

A project has made it possible to improve knowledge of relationships between fishing capacity, the extent of fishing and fish mortality, with a view to furthering the CFP.

A project has demonstrated how the snowball effects of eco-tourism on local economies are more profitable than mass rural tourism models and give rise to more worthwhile investment in a sustainable development perspective.



ENERGY

11. NON-NUCLEAR ENERGY

I. R&D COMPONENT

ACTIVITIES

RTD projects:

In accordance with the undertaking given by the Commission on 22 November 1995, an action plan for renewable energy sources was implemented in 1996. It includes the organization of an additional call for proposals confined to three renewable energy themes :

- photovoltaic solar energy
- wind energy
- biomass energy

121 proposals were submitted in response to this call for proposals which closed on 14 May 1996. It was the subject of a Commission decision to fund 51 projects involving a Community contribution totalling ECU 39 million. A selection rate of two proposals out of five was achieved as a result of the following measures:

- in support of this call for proposals, an information and awareness campaign among potential participants in the programme was conducted in collaboration with the Member States, ensuring direct communication between the Commission Services and over 1 000 people;
- out of concern for transparency, the programme evaluation criteria were circulated in the information package together with a guide to improve the drafting of proposals. A new option (pre-proposal check) was offered to proposers so that they can have the informal opinion of the Commission Services with regard to eligibility and participation conditions.

Technology stimulation measures for SMEs:

16 exploratory awards for SMEs were granted, the total cost amounting to ECU 935 206 and the Community contribution amounting to ECU 467 603.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

Efforts focused on priority themes designed to meet the objectives of the programme, namely-security of supply, and clean production and use of conventional energy sources.

The additional effort with regard to renewable energy sources supplements the measures decided upon in 1995 and strengthens the European provisions aimed at reducing energy dependency. These

EXAMPLES OF RESULTS

An energy saving of 30% thanks to combined heat and power production was achieved by using 225 m² of hybrid solar panels on the facade of a municipal library.

As a result of the VESTAS project a windmill has been installed at Tjeareborg in Denmark weighing 100 tonnes per MW, i.e. half the usual weight for the same electrical capacity. This windmill has already delivered over 1 000 MWh and is in the commercialization phase.

The development of new materials for battery electrodes and electrolytes will make it possible to triple the range of electric vehicles. The inexpensive manufacturing process will make it possible to envisage other applications such as renewable energy storage.

alternative resources also help to reduce greenhouse gas emissions. In order to consolidate the exploitation of the results with a view to stimulating industrial competitiveness, the participation of the industries concerned and the final users of these new energy systems was strongly encouraged.

WORK PROGRAMME FOR 1997

The programme is entering its final phase of implementation with two consecutive calls for proposals: the first mainly concerns conventional energy sources while the second focuses on renewable energy sources. The indicative budgets are ECU 65-80 million and ECU 110-125 million respectively.

A study of the results of completed projects funded in the context of the 3rd FP started in 1996 for 100 contracts and will be completed in 1997.

The Danish SME Oedegaard & Danneskiold-Samsøe is marketing the results achieved in a JOULE project on modelling and stratigraphic inversion in the field of oil exploration. This success has resulted in the creation of new jobs in three Member States.

2. ENERGY DEMONSTRATION COMPONENT (THERMIE PROGRAMME)

ACTIVITIES

The THERMIE programme through shared cost actions (type A projects) is continuously encouraging the rational use of energy, underpinning the EU efforts to stabilise CO₂ emissions by the year 2000; making a vital contribution to security of supply; and helping EU competitiveness by reducing costs.

The technologies which will allow a switching from the use of fossil fuels towards renewable forms of energy are still not proven commercially nor replicated widely. The programme has made a significant contribution for the promotion of Renewable Energy Sources (RES) and has actively assisted their penetration in the market. There is now evidence of the continuous reduction in installed costs per Kwc and in Kwh produced in all of the five sectors : Wind, Biomass & Waste, Hydroelectric, Photovoltaics and Geothermal.

The Associated Measures (type B projects) have enabled the development of sectoral strategies as well as of a global energy RTD strategy. Some clearly focused dissemination activities have encouraged, on a massive scale, the spread of knowledge and upgraded the awareness of market actors, about the newly developed technologies and, thereby, contributed to the exploitation of the results of Community programmes.

The Buzzi Spa Cement Grinding plant equipped with horizontal roller mill through which 40% of energy savings were obtained, led to a high demand for this technology.

During 1996, 265 Type A proposals, 467 Type B and 55 proposals for target projects were received. The technical evaluation took place during April and May; on the 20th of June the Committee gave a favourable opinion to the Commission proposal; on the 24th of July the Commission decided on the short list for support; and on the 28th of November the first contract was signed.

Funding was provided for actions contributing to security of supply, reducing energy imports, cutting pollutant emissions, securing future competitiveness and encouraging economic and social cohesion:

- 83 proposals were selected in the areas of - Rational Use of Energy (RUE), Renewable Energy Sources (RES) and Fossil Fuels (FF) - representing a total amount of Community support of ECU 90.1 million;
- 11 proposals for target projects were selected in the domains of - RUE for Buildings, Integration of Renewable in Buildings, and RUE for Transport and Urban Infrastructure - representing a total amount of Community support of ECU 23.6 million;
- 165 associated measures aimed at disseminating new energy technologies, encouraging the involvement of SME's, and working towards a global RTD strategy, were also selected, representing a total amount of Community support of ECU 18 million.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

Security of supply. The energy technologies demonstrated within the activities of the programme help to minimise the impact of the rising price of fossil fuels: contribute to a decrease in the dependence on non-EU sources, and promote a diversity of fuel supply. Although current reserves of fossil fuels are substantial, some observers, such as the International Energy Agency, see signs of a repeat of the oil-price shocks seen in the 1970s, and a rise in global energy demand.

Competitiveness, growth and employment. Clean energy technologies drive industrial competitiveness and create jobs. From a social perspective, demonstration activities in the domains such as biomass production in rural areas help safeguard jobs in these sensitive areas. A country's ability to save energy - or use it more efficiently by developing innovative technologies or best practice - can also help improve industrial competitiveness and comfort.

Environmental Protection. Renewable energy sources and rational use of energy technologies can reduce polluting emissions. Clean coal systems contribute towards more efficient and less polluting use of fossil fuels, while clean technologies in the hydrocarbon sector reduce energy loss and allow more efficient exploration and refining.

Eight non-domestic buildings distributed over six different countries are incorporating new concepts and technologies which aim at saving 50% of energy needs and up to 70% reduction on CO2 emissions.
Eleven new-built demonstration projects carried out in seven Member States are encouraging the use of an integrated global energy design for either residential or tertiary applications.

A new traffic approach, designed to reduce energy needs, that integrates measures for the effective management of traffic flow in the cities of Barcelona, Bologna, Leipzig, Dublin and Toulouse.

The installation in Toledo of the highest efficiency photovoltaic cells in the world.

Building the global economy. The new energy technologies will create many opportunities for partnership between companies in the European Union and their counterparts in other regions, especially in emerging countries from Southeast Asia, the Mediterranean region and in Latin America.

In this context, actions designed to stimulate industrial co-operation with third countries in relevant clean and efficient technologies, have provided the extra-push to those technologies produced in Europe. The workshop on Energy Technology Transfer for Mutual Europe-Vietnam Benefit, recently organized in Hanoi is a good example of this. Collaboration with international financial institutions forms a central theme in several actions - namely joint actions with the EBRD and the World Bank - by channelling the necessary funds for the financing of concrete projects in outside countries which involve the transfer of successful EU technologies.

PROGRAMME ACTIVITIES FOR 1997

The THERMIE programme will provide funding, estimated at ECU 114 million, for the demonstration of clean and efficient energy technologies and it will support, to the tune of up to ECU 20 million, complementary accompanying measures designed to propagate and encourage at the appropriate moment the future use of demonstrated results. Within this overall budget, a number of initiatives to stimulate the participation of SMEs are also foreseen.



12. NUCLEAR FISSION SAFETY

ACTIVITIES

A call for proposals was launched in January 1995 with two dead lines: 20 March 1995 and 28 February 1996. 109 proposals were selected after the first dead line: three-quarters of the contracts were concluded in 1995, and the remainder during the first half of 1996.

In December 1995 an amendment to the call for proposals was published following the results of the evaluation of the proposals received by the first dead line. Priority was given to themes poorly covered following the first call.

By the second dead line for the call for proposals, 148 proposals had been received, involving 780 partners with on average five to six partners per proposal. The evaluation resulted in the selection of 89 proposals (66 proposals for research and training projects and 23 proposals for concerted actions).

In 1996, several events were organized by the programme:

- two international conferences: one in Minsk on the radiological consequences of the Chernobyl accident, and the other in Luxembourg on the results of the programme for the management and storage of radioactive waste (1990-94);
- 11 seminars on radiation protection, radioactive waste, decommissioning of nuclear facilities and reactor safety;
- five European Radiation Protection Education and Training (ERPET) courses.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

The nuclear fission programme helps to improve the safety of nuclear reactors and the competitiveness of the nuclear industry in particular through research concerning major accidents, advanced techniques for the decommissioning of nuclear facilities and methods for the safe management of radioactive waste.

An additional component concerns the protection of the public and the environment against the possible adverse effects of radiation which can result from the past, present and future use of nuclear energy and the medical applications of radiation.

EXAMPLES OF RESULTS

The selective extraction of radioelements from radioactive waste has been significantly improved as a result of the development of calyx-shaped molecules: in the case of caesium, decontamination is improved by a factor of 100.

RODOS - Real-time On-line Decision Support System - is a software developed to manage emergency situations in the event of radiological accidents. This system is now being incorporated into the national emergency response protocols in many European Union countries and also in Eastern Europe and the former Soviet Union.

WORK Programme FOR 1997

The call for proposals for concerted actions will remain open until 1 November 1997 with an intermediate time limit of 15 February 1997.

Six training courses will be organized by the programme in the fields of safety and radiation protection.

Two major conferences will be held in the second half of the year, one concerning severe accidents (FISA '97) and the other concerning radiation protection (RISK '97).

The development of burial methods has made it possible to establish reliable geological storage facilities for radioactive waste and ensure containment for over 100 000 years.

Studies concerning the increase in thyroid cancer in children living near Chernobyl have clearly demonstrated that the radioactive iodine dispersed following the accident is the cause, since the same phenomenon has not been observed for children conceived after the accident. These studies have made it possible to improve the treatment of young victims and provide appropriate humanitarian and technological aid in collaboration with ECHO et TACIS.



13. CONTROLLED THERMONUCLEAR FUSION

ACTIVITIES

Strategy:

The long-term objective of the Fusion Programme is the joint production of safe, environmentally-sound prototype reactors. After the Tokamak known as JET (Joint European Torus), the most powerful fusion device in the world, the proposed strategy towards achieving the prototype commercial reactor includes the construction of the following large facilities to incorporate:

- an experimental reactor ("*Next Step*"), which is now being designed in detail in the context of quadripartite cooperation between Euratom, Japan, Russia and the United States referred to ITER-EDA (International Thermonuclear Experimental Reactor - Engineering Design Activities). The overall objective of the ITER Tokamak is to demonstrate the scientific and technological feasibility of fusion energy for peaceful purposes;
- a demonstration reactor (*DEMO*) capable of producing significant quantities of electricity.

EXAMPLES OF PROJECTS

JET is the biggest Tokamak in the world, and no individual Member State could have built it on its own.

ITER, which is also a Tokamak, will be the first experimental reactor capable of producing 1.5 GW of fusion power in long pulses.

Implementation:

The programme, which embraces all the activities undertaken in the Union (plus Switzerland) in the field of controlled thermonuclear fusion with magnetic confinement, is not based on calls for proposals but instead is implemented in the context of Association Contracts (with the Member States and Switzerland or organizations in the Member States), the JET Joint Undertaking, the NET (Next European Torus) Agreement which takes account of Euratom's participation in ITER-EDA, and other limited-duration contracts. The Community's financial contribution towards the current expenditure of the Associations and the limited-duration contracts is a uniform rate of around 25%. Subject to the agreement of the CCFP (Consultative Committee for the Fusion Programme), the Commission can fund the investment costs of priority projects at a uniform rate of around 45% and certain specific tasks (in industry) at a rate of up to 100%. A Committee of independent experts responsible for the external evaluation of progress with the programme has been set up by the Commission in accordance with the Programme Decision. In its report the Committee stresses the progress made with the Fusion Programme over the last five years.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

As with the other major fusion programmes elsewhere in the world, the European Union's fusion activities are now directed towards the Next Step, a device in which for the first time all the physics and technology

aspects necessary for the combustion of the long-pulse fusion plasma will be incorporated.

“Next Step” Activities: In 1996 the preliminary design activities of the central project team divided between three centres (San Diego in the United States, Naka in Japan and Garching in Germany) and the four partner teams (known as the Home Teams) as part of the ITER-EDA collaboration made it possible to confirm and optimize the solutions selected with a view to the performances to be achieved (1 500 MW of fusion power impulses of up to 1 000 seconds). The technological choices for the ITER systems (magnets, first wall, shield, vacuum chamber, remote handling equipment and auxiliary systems) were more fully specified as a result of ongoing RTD. Europe made a substantial contribution to the work in question, in particular as regards power evacuation, energy and particular transport problems, in particular JET was operated with 28 MW of auxiliary heating in radiative conditions with the MkIIA divertor. Results of this kind have direct implications for the Next Step.

Concept improvements: In the context of the Associations, the operation of specialized devices has contributed towards the consolidation of the database required for the Next Step and concept improvements which in the long term will enable DEMO to be defined. A new member (TEKES, Finland) has joined the JET Joint Undertaking. On 31 May 1996 the Trilateral Euregio Cluster (TEC), bringing together the fusion activities of the Associations (Euratom - Belgian State, Euratom - FOM in the Netherlands, and Euratom - KFA in North Rhine Westphalia), was ratified. Association contracts were concluded with Dublin City University (Ireland) on 19 August 1996 and with Austrian Academy of Sciences on 15 November 1996. The construction of the TJ-2 Stellarator (CIEMAT - Madrid) was completed at the end of 1996. In tandem with the experiments, theoretical research continued, among other things concerning the development of innovative concepts.

Long-term technology: Work continued on this in the laboratories and in the industry. A European work programme until the end of 1998 was launched for the tritium breeding blanket. In the context of an International Energy Agency (IEA, Paris) implementing agreement, the conceptual design of a neutron source based on deuteron acceleration (International Fusion Materials Irradiation Facility, IFMIF) was finalized. Following the Safety and Environmental Assessment of Fusion Power (SEAFP) study, work was carried out in support of long-term research in the same area (SEAL). Also, a Working Party on Socio-Economic Research on Fusion (SEFR) was set up in order to draw up a work programme.

Industrial participation: European industry has long been involved in the Fusion Programme for specific contracts for the supply of components, scientific equipment, materials and services for the construction and operation of fusion devices. In 1996 the Commission updated the list of European firms/groups of firms with a view to their

EXAMPLES OF RESULTS

Improved refinement conditions have been identified in the JET Tokamak.

Leading-edge technologies made it possible to obtain magnetic surfaces perfectly in accordance with the predictions in the TH-2 Stellarator.

Two-minute plasma discharges can be produced in the TORE-SUPRA Tokamak.

The detailed design of ITER will be completed towards mid-1998. The preliminary design team consists of researchers from Japan (48), Russia (28), the United States (35) and the European Union (54, including five Canadians contributing to ITER through the European Union).

participation for a new three-year period in the 15 technologies specific to fusion (in particular ITER-EDA).

Development of international collaboration: Separately from the ITER-EDA, collaboration continued within the IEA (nine implementing agreements) and, in a bilateral framework, with the United States, Japan and Canada.

WORK PROGRAMME FOR 1997

In the JET context, deuterium-tritium experiments (DTE 1) will be conducted from April to June; in addition, the Council's decision to extend the project until the end of 1999 (OJ L 117, 14 May 1996) will make it possible to conduct other experiments with an impact on the final preliminary design of the Next Step. The construction of the large W 7-X Stellarator (Greifswald, Germany), and the MAST Tokamak (Culham, United Kingdom) is continuing. The DED (Dynamic Ergodic Divertor) in the TEXTOR Tokamak (Jülich, Germany) and CIEL (Composants Internes Et Limiteurs) systems in the TORE-SUPRA Tokamak (Cadarache, France) are being examined and construction could commence this year. In support of the experimental work in all the laboratories, theoretical work focusing mainly on the interpretation of the results of the experiments, the modelling of thermonuclear plasmas and concept improvements, will be continued. Like last year, Marie Curie fellowships will be granted (between 10 and 15 per annum) and the mobility of researchers (between 200 and 300 per annum) will continue to be encouraged. Bilateral collaboration is being established with Russia, Ukraine and Kazakhstan.

The main task of JET will be to establish reliable methods of monitoring plasma purity in conditions applicable to ITER. Efforts will also be made to achieve the highest possible performances with fusion plasmas.



14. TRANSPORT

ACTIVITIES IN 1996

RTD Projects :

A total of 97 contracts with a Community contribution of ECU 117 million were signed as a result of the first call for proposals of the transport RTD programme.

In the second call for proposals, with a closing date of 15.03.1996, all areas of the programme were open (Strategic Research, Rail transport, Integrated Transport Chains, Air Transport, Urban Transport, Waterborne Transport and Road Transport). 225 proposals requesting ECU 209 million of EU funding were received. They involved 1606 organizations of which 703 were industrial participants and 597 were SMEs (37%). 84 Proposals were retained for funding with a Community contribution of approx. ECU 50 million. By the year end 35 contracts (ECU 27 million) had already been signed.

Technology Stimulation Measures for SMEs:

29 Proposals for exploratory awards for SMEs were received in 1996. In total 59 proposals were received for the programme under the scheme with 32 proposals being selected for funding.

CONTRIBUTIONS TO COMMUNITY RTD OBJECTIVES

Reinforcement of the S&T base of industry:

At the year end a total of 1266 organizations were participating in projects underway in the Transport RTD Programme. A total of 415 of these participants were from industry. The 1996 5-year assessment report showed that on average a total of 20 publications in referred journals, 20 other publications, 5 new prototypes, 4 new methods/tests and 4 new software applications/codes had been developed per project in the predecessor to the current Transport RTD Programme namely EURET. Such outputs were considered by the panel of experts to have clear benefits for the S&T base of European industry.

Promotion of competitiveness:

On the basis of a questionnaire survey, the 5 year assessment indicated that 83% of all participants in the transport RTD activities estimated that participation had been important to the development of the business strategy of their company; 80% that participation had been important to the development of the company's technology strategy; 66% that their technical standing relative to their competitors had improved as a result of the participation, and 46% that their market position relative to their competitors had improved as a result of participation.

EXAMPLES OF RESULTS

The projects financed in the Transport RTD Programme address a wide range of topics. Priority areas include the development and demonstration of traffic management systems for the different transport modes, transport intermodality for both passengers and goods, safety, interoperability, scenarios and socio-economic assessments.

ERTMS aims at the development of a European Rail traffic Management System.

The Maritime Black Box aims at the development and demonstration of a voyage data recorder (black box) in the maritime sector.

Support to other Community policies:

A substantial number of participation in the programme at the end of 1996 come from objective 1 regions. 392 Small and Medium Sized Enterprises are participating in the programme (31%). 85 Participation (7%) is from third countries with a total of 20 participation (2%) from Central and Eastern European countries.

The 5 year assessment noted that "the contribution of the specific transport RTD Programmes to assisting in the implementation of the transport policy of the EU is considerable." This contribution has been reflected in recent policy initiatives such as the Trans European Networks, the Green Papers on the Citizen's Network and Fair and Efficient Pricing and the recent White Paper on the Railways which have sought to build upon the research being carried out in the respective fields.

WORK PROGRAMME FOR 1997

The remaining contracts arising from the Second Call for Proposals are being signed. The follow-up of the projects will continue. About 20 projects will terminate their work.

The third Call for Proposals closed on 17 March 1997, a Community contribution of some ECU 65 million is foreseen. The proposals will be evaluated and subject to contract negotiations. The third Call includes a new task which specifically aims at the implementation of a comprehensive dissemination and exploitation strategy. Such a task will facilitate the bridging of the gap between the research work and the concrete deployment of the RTD results.

Finally, a further Call may be launched in the second half of the year on the specific theme "Transport Intermodality" which has been proposed as a priority in the Commission's proposal for supplementary funding for the Fourth Framework Programme on which a decision of the European Parliament and the Council is expected.

WALCYNG and ADONIS aim at the development of strategies and concepts to promote the substitution of short-distance car trips by cycling and walking.

COMMUTE and MEET are evaluating the environmental impact assessment of transport systems and looking to support the development of the Strategic Environmental Impact Assessment required for the Trans European Transport Networks (TEN-T).



15. TARGETED SOCIO-ECONOMIC RESEARCH

ACTIVITIES IN 1996

RTD Projects:

All 38 projects selected from the first call for proposals (March 95) were successfully launched in the beginning of 1996. Preliminary reports (first 6 months) from these projects were available in autumn 1996 and the recently completed 5-year assessment of areas covered by the TSER programme commented on the considerable added value which is likely to arise from the projects.

The availability of extra credits during 1996 has permitted the funding of 9 additional projects drawn from the 1995 reserve list which brings the portfolio of funded RTD activities (circa ECU 25 million) to 35 shared-cost research projects and 12 thematic networks distributed across the programmes research areas:

Area I: evaluation of science and technology policy options in Europe

Area II: research into education and training

Area III: research into social integration and exclusion in Europe

In addition to organizations from the Member States, associated countries and Switzerland, researchers from the Slovak Republic, Lithuania, Hungary, Poland, also participate in a number of projects.

A second call for proposals was launched in October 1996. The focus was placed on key work programme areas to encourage the emergence of activities which would exploit on links between the three programme areas, to address those issues which were not addressed in the first call, and to reduce the risk of oversubscription. Preliminary results from the second call which closed on 15th January 1997 indicate that these objectives have been largely achieved.

Accompanying Measures and Dissemination Activities:

A number of accompanying, preparatory and support measures were launched such as project progress seminars, thematic workshops in the areas of Systems of Innovation and Technology Foresight, and a joint action with Commission departments concerned on the acquisition of skills. This action follows directly from the objectives of the Commission's White Paper on "Teaching and Learning : Towards the Learning Society".

Inter Programme Coordination:

In December 1996, a joint call for proposals on educative multimedia software was launched. The TSER programme is one of the six community funded programmes participating in this call which represents a significant example of inter programme coordination and demonstrates the importance of socio-economic research.

EXAMPLES OF PROJECTS

The project European Comparison of Public Research Systems aims at providing an improved understanding of the dynamics of public research systems, especially strengths and weaknesses of different forms of organisational structures across Europe.

Regis Project seeks to find out whether regional innovation systems are becoming more divergent (pursuing their own path) or convergent as a consequence of "institutional borrowing", including the effect of EU policies.

Spin-off activities project is analysing the role of Universities in the development of academic entrepreneurship in peripheral regions.

Science and Technology Coordination:

Progress was slower than anticipated as regards the identification of topics or initiatives in the social and economic sciences which might lend themselves to better coordination between Member States. Indeed, the work towards a better integration of the social science community in Europe was particularly strongly supported by the 5-year assessment report.

WORK PROGRAMME FOR 1997

RTD Projects:

A major activity in the early months of 1997 is the evaluation of proposals submitted under the second call and the selection of successful projects.

Later in 1997 a third call for proposals for RTD actions will be launched. This call will consolidate the portfolio of activities funded under the previous calls and place emphasis on issues such as: globalization and employment, labour market changes and regulation, exploitation of science and technology and skills, the direct and indirect costs of exclusion and unemployment, economic benefits of investment in education and training, barriers to labour market development, public service efficiency, innovation and liberalization.

Accompanying Measures and Dissemination Activities:

A number of initiatives will also be launched within the European Technology Assessment Network (ETAN). The remit of ETAN has recently been substantially enhanced and now encompasses a broader range of S&T policy issues than those covered by the TSER programme from which it draws part of its funding.

A substantial programme of optimization and dissemination activities and a series of thematic studies on key policy issues are being planned. The objective is to extract from projects or clusters of projects key factual information of direct relevance to policy making.

The European Network for Educational Research on Assessment Effectiveness and Innovation focusing on the improvement of an underlying structure of research into education.

EVALUE is evaluating processes of auto-evaluation in universities in a period of changing educational governance. The aim is to improve the knowledge of the impact of auto-evaluation on performances of universities.

MIGRINE is a network which aims at analysing migrant insertion in the informal economies and the impact on the host societies.

TRANSLAM is a network which studies the social integration by transitional labour markets and to identify new pathways for labour market policy.



2ND ACTIVITY OF THE 4TH FRAMEWORK PROGRAMME

COOPERATION WITH THIRD COUNTRIES AND INTERNATIONAL ORGANIZATIONS

ACTIVITIES IN 1996

RTD Projects:

In the context of cooperation with the Central European countries and the New Independent States arising from the former Soviet Union (COPERNICUS), the Commission approved 299 projects involving a total of ECU 68 million (main areas covered: environment, health, research focusing on industry). In parallel, INTAS funded 224 projects involving a total of ECU 11.2 million (physics, chemistry, human sciences). Other activities concerning Eastern Europe were carried out in relation to specific programmes (transport, energy, information technologies) under of the 1st activity, in which the CEECs were encouraged to participate with the support of the International Cooperation Programme (INCO).

Where the developing countries (DCs) are concerned, 600 contracts under previous initiatives (STD 3, ISC, Avicenne) are in their final stages. 136 additional contracts have been negotiated concerning in particular health, agriculture, agro-industry, and renewable natural resources.

20 new COST projects also began, bringing to 140 the total number of projects in progress in 17 areas (materials, telecoms, civil engineering). In 1996 the Commission took part in 15 EUREKA projects and closer links were established with various European research bodies, e.g. the European Molecular Biology Laboratory (EBML).

S&T Agreements and Scientific Contacts:

The main features of 1996 were as follows (apart from the scientific provisions resulting from the EU-India Protocol of Agreement in particular): the preparations for the conclusion of Agreements on Nuclear Safety and Thermonuclear Fusion between the Community and the Russian Federation, Ukraine and the Republic of Kazakhstan; the entry into force of the Agreement with the United States on the Peaceful Use of Nuclear Energy, and the signature of an Agreement on the same subject with Argentina. Other features of note were the following: the entry into force of the EU-Canada and EU-Israel S&T Agreements; the signature of an Agreement with South Africa; talks with Switzerland with a view to an Agreement; renewal for a further five years of the EU-

EXAMPLES OF RESULTS

The Japan/Korea grants programme: altogether, since 1986, as a result of the EU programme, over 350 European scientists have familiarized themselves with Japanese science and technology as a result of visits ranging from 6 to 24 months in length. Scientific areas concerned: Life sciences, maths-physics-chemistry, information and communications technologies, industrial and materials technologies, environment, fusion.

USA Administrative Arrangement concerning Biotechnology and the Agreement with Canada on Nuclear Waste Management.

A series of political and technical contacts were established, in particular: scientific missions in Asia, Africa and Latin America; 2nd meeting of the EU-Japan S&T Forum; EU/China exchange of views on a future S&T Cooperation Agreement.

In parallel, 38 seminars were held in the context of the INCO-DC Programme, e.g. concerning malaria, rice, water, etc., for the purposes of information and political dialogue with a view to a possible rethinking of cooperation in future. Mention should also be made of two meetings of the Euro-Mediterranean S&T Committee following the Barcelona Conference.

Future Guidelines:

Following the 1995 general Communication concerning international RTD cooperation prospects, a Communication was adopted on the promotion of cooperation with the emerging economies (e.g. China, India and Brazil) to take account of their role as partners/competitors. Studies are in progress concerning the potential for S&T cooperation with some of these countries.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

Developing International Competitiveness: INCO contributes in many ways to the promotion of the competitiveness of industry and other economic sectors in Europe, for example, by giving supplementary added value to Union RTD and helping to give complementary illumination to the definition of policies adopted by the EU (e.g. energy, transport) in the light of the experience of third countries; thanks also to the "big market effect" that can be achieved as a result of commercial cooperation arising themselves from S&T cooperation.

Strengthening the EU's S&T Basis: Europe has much to gain from cooperation with partners from every corner of the universe: identification of promising themes, access to information sources, know-how, equipment. In the field of development-related research, INCO-DC has helped to maintain and strengthen the Union's research capacities. Above and beyond these expected scientific benefits, international RTD cooperation contributes towards the influence of European science and technology throughout the world.

INCO's Contribution to other Community Policies (Examples):

- EU enlargement policy: modernization of the RTD arrangements is a catalyst for the integration of the CEECs to the extent that effective RTD presupposes a suitable environment (teaching, training, communications). The support provided by INCO for the participation of the CEECs in Union RTD policies has therefore helped to prepare for the integration of these countries.

Eastern Europe and environmentally-friendly energy sources: cooperation with Russia in the field of non-nuclear energy research has already made it possible to develop advanced burners for the clean use of coal which could be marketed on a large scale.

The Mediterranean third countries and water management: the supply, appropriate management and development of water resources are priority issues for all the southern and eastern Mediterranean countries. Since 1992 the EU has funded 61 joint research projects which have contributed towards the conservation and integrated management of this vulnerable and scarce resource, e.g. concerning waste water treatment and reuse in this region bordering on Europe.

- development aid policy: INCO-DC has helped to reinforce European research capacities in areas related to development, the aim being to encourage RTD in these areas in the DCs (networks including DCs have been set up in areas such as tropical forests, perennial oleagineous plants) and to supplement the effects of other policies related to development policy: EU/ACP fisheries policy, health (e.g. swine fever, malaria).
- EU foreign policy: INCO's contribution to the activities of the International Science and Technology Centre in Moscow has supported the efforts to redeploy Russian military researchers to civilian activities (involving over 11 000 scientists altogether since 1994).

Action to combat malaria in the DCs: it is estimated that malaria threatens 250 million people a year and that 1 million die. EU action in this area makes it possible to make progress, through joint research projects (in the laboratory and *in situ*) towards better controlled prevention and ultimately the development of a vaccine against this disease.

WORK PROGRAMME FOR 1997:

Implementation of Priorities:

Monitoring of the implementation of INCO in 1996; monitoring of INCO-DC contracts and outstanding contracts from previous initiatives; accompanying measures for information, dissemination; visibility study for a single management information system for all the DGs involved in INCO; INCO-DC and COPERNICUS call for proposals; selection of Community Japan-Korea grant holders; carrying out of "emerging economies" studies; meetings of the Megascience Forum and the Carnegie Group; communication efforts in accordance with the recommendations of the five-year assessment of INCO.

Political Priorities:

- **Preparing for the future:** adoption of communications on associated DCs, the Euro-Mediterranean scientific area, the European initiative on agricultural research for development, and scientific and technical research/development; implementation of the "emerging economies" communication; adjustment of the objectives and operation of COST; strengthening of COST/EUREKA/international organizations/framework programme synergies; study concerning the Member States' RTD cooperation activities with non-EU countries and international organizations...
- **Strengthening Europe's presence in the international arena:** completion of the negotiation of the agreement with the USA; exploration of the possibilities with regard to an S&T agreement with Russia; launching of the negotiation of an S&T agreement with China and with Canada in areas covered by the Euratom Treaty; completion of the association agreement with Switzerland with regard to the 4th Framework Programme; adjustment of the EEA agreement to take account of the supplementary financing; continued dialogue with the DCs, including the joint identification of priorities...
- **Preparing for enlargement and promoting relations with non-associated Dcs:** in the context of the pre-accession strategy: developing the structured dialogue with the applicant countries (dialogue in the Research Council); encouraging increased participation by the Central European countries in the other specific programmes under the Framework Programme; contributing towards the opinions on the applications from these countries; preparing for their full participation in the 5th Framework Programme...

- **Follow up to the Euro-Med Conference (Barcelona) and developing links with the DCs:** joint organization with the Presidency of the European Conference on research partnership for sustainable development (Leiden); Secretariat of the Euro-Mediterranean RTD Monitoring Committee and also the European initiative on agricultural research for development; coordination of other activities (e.g. EU/ACP fisheries initiative; research with DCs concerning health....)



3RD ACTIVITY OF THE 4TH FRAMEWORK PROGRAMME

DISSEMINATION AND OPTIMIZATION OF RESULTS **(the INNOVATION Programme)**

ACTIVITIES IN 1996

Projects which in 1995 went through the evaluation and selection were implemented in 1996. They concern five action lines: the network of Innovation Relay Centres (IRC's), the Commission Research and Development Information Services (CORDIS), the Technology Transfer and Technology Validation Projects and the Assistance in the Protection and Exploitation of RTD Results.

Innovation Relay Centres are platforms for transnational technology transfer. A network of 52 centres, consisting of 167 organizations, became operational at the beginning of 1996. During the first eight months of operation the network already received 39000 requests for assistance related to technology transfer and/or to the submission of proposals for EU RTD programmes; carried out 2400 audits or consultancies related to (transnational) technology transfer offers or requests; took part in the negotiations of 370 (transnational) technology transfer agreements of which in the end 103 were signed.

As regards the Community Research and Development Information Service (CORDIS), the system experienced in 1996 a dramatic increase in the number of users, which rased by a factor of three to more than 25000 per month on average. This increase is associated with an improved quality of the service (i.e. more information available, and a faster update of the information) and, with the access of the data bases through the Web, which is now by far the most common means of access to CORDIS.

Technology transfer and technology validation projects are test-beds to demonstrate mainly intersectoral technology transfer mechanisms, new approaches and methods of innovation management and the development of new technology based businesses. 100 proposals were selected for a small definition phase, out of which in the end 60 projects were retained for the implementation phase with a Community support ranging between 0.5 and ECU 1.5 million per project.

As part of the Assistance in the Protection and Exploitation of RTD results a scheme called QUICK SCAN has been pilot-tested in 1996 on the 100 definition phases of the technology transfer and technology validation projects referred to above. Under this scheme the European Patent Office performs a data base search to provide a "novelty check" of the RTD proposals. It is estimated that the funding directly saved

EXAMPLE OF RESULTS

In order to have the widest population possible benefiting from the results of Community RTD, consortia which have exploitable results but either cannot exploit themselves or not exclusively are invited to document and make known these results, the latter e.g. via CORDIS or the network of Innovation Relay Centres. A standardized form called Technology Implementation Plan, has been developed. It has been structured to accommodate the information which is necessary for third parties to get a picture of the characteristics of the research results and their exploitation potential.

through this first application of Quick Scan is ten times larger than the cost of the action.

Calls for proposals were published and the response evaluated for five other action lines : (i) regional actions, (ii) promotion of innovation management techniques, (iii) increasing public awareness of research and technology, (iv) European networks and services and (v) the network of energy technology promotion organizations. Together these calls yielded 392 proposals of which 131 were selected.

In particular, the regional actions include audits of regional infrastructures to support innovation and technology transfer with a view to improving the functioning of these infrastructures (in particular to attune them more to the needs of SMEs in their region). Currently 67 regions are participating in this scheme which is co-financed by the EU's regional policy. Among the most interesting initial results are: - the setting up of a research trust in the Islands and Highlands region of Scotland to cover the needs of an otherwise isolated region; - the setting up of an innovation voucher system in Finland which enables SMEs to buy services from innovation support bodies of their choice; - the reorientation of the technological centres in the Spanish region of Extremadura and the drastic re-organization of the innovation support system in the Italian region of Umbria to bring them closer to the needs of local SMEs; - the setting up of a specific scheme in SüdBrandenburg to encourage the co-operation between SMEs; - the diffusion of the value analysis methodology in Limburg for which it is estimated that the benefits derived from this sole action covers more than the total cost of the project (400.000 ECUS).

As regards the action line "Creation of a favourable Environment for Financing Innovation", preparations were made in 1996 to launch at the beginning of 1997 three major new activities:

1. A pilot activity called I-TEC (Innovation and Technology Equity Capital) to encourage early stage, innovative technology investment, which opens a collaboration with the European Investment Fund (EIF), an independent financial agency that may take equity investment in venture capital funds specialising in early stage financing of new technology-based firms. I-TEC is to support the establishment of an adequate availability of skilled human resources necessary to appraise and follow-up such early stage technology investments. It is estimated that I-TEC, with a budget of ECU 7.5 million, will mobilise ECU 75 million for such investments;
2. An activity to provide a forum for the systematic exchange of experience between national and regional policy makers, financiers, in particular venture capitalists but also bankers and "business angels" and organizations promoting innovation;
3. The third activity aims at linking participants in the fourth RTD Framework Programme to financiers with a view to contribute to the promotion of the exploitation of Community research results.

Following the request by the Council and the European Parliament for close co-ordination of the dissemination and optimization activities carried out under the specific programmes of the first

To improve the exploitation orientation of the specific programmes of Activity I, seminars have been organized on IPR (attended by 140 project officers), on financing innovation, and on the Quick Scan methodology (novelty check).

A common methodology for assessing the results of the RTD projects has been developed. This is being tested on samples of RTD projects from several specific programmes of Activity I including :
Information Technologies, Industrial & Material Technologies, Life Sciences and Non Nuclear Energy.

activity with those carried out by activity three, an interprogramme co-ordination and planning mechanism was setup during 1995 and has started to yield tangible results in 1996.

WORK PROGRAMME IN 1997

Calls for proposals for the following action lines will be included: the European Innovation Monitoring System, the Financial Environment, Regional Actions, Technology Transfer and Technology Validation Projects and the IPR assistance services. The interprogramme coordination for the dissemination and optimization of European Union sponsored R&D results will be continued and will begin the task of identifying "good practices" in specific programmes of Activity I and III with respect to criteria, selection, implementation and monitoring of projects so as to increase the exploitation potential of those projects.

In addition, ad hoc dissemination and exploitation services will be provided in support of all Community policies.



4TH ACTIVITY OF THE 4TH FRAMEWORK PROGRAMME

STIMULATION OF THE TRAINING AND MOBILITY OF RESEARCHERS

ACTIVITIES

In 1996 six calls for proposals were published in connection with the training and mobility of researchers (TMR) programme. As a result of these calls and the ones launched in 1995, 1285 contracts were concluded in the course of 1996, out of total of around 8 700 proposals received, corresponding to a total of ECU 266.24 million.

Of these 1285 contracts 96 concern networks, 19 concern large-scale facilities, 1040 concern grants, and 130 concern Euroconferences, summer schools and practical courses.

Among these accompanying measures mention can be made of the following:

- the holding in France of the second seminar for researchers who have received a Community grant under the programme at French research institutions;
- the holding in Finland of the 8th European Contest for Young Scientists aged between 15 and 20;
- establishment of the Marie Curie Fellowship Association for European researchers who have received a Community research grant.

30 of the 800 contracts concluded under the SCIENCE programme (2nd Framework Programme) are still in progress. As far as the Human Capital and Mobility (HCM - 3rd Framework Programme) Programme is concerned, there are still in progress 323 "research networks" contracts, 29 "large-scale facilities" contracts, 95 individual grants contracts, 252 institutional grants contracts and 55 contracts for Euroconferences, summer schools and practical courses. In the context of the institutional grants under the 4th Framework Programme, 350 new grant holders were selected in 1996.

Measures to coordinate all Community training activities were stepped up both with regard to training through research (common rules governing grants, single entry point for grant proposals, centralization of written procedures for all grants awarded under the specific programmes) and with regard to training activities other than research.

EXAMPLES OF RESULTS

The "Microfabrication with synchrotron radiation" network has developed a technique for the fabrication of mechanical systems on a millimetre scale involving the use of the synchrotron, considerably reducing development costs (Publication available: Microfabrication with synchrotron radiation - ISBN 92-827-4012-9).

The "Envirotrace" network, including a major industrial partner of the petrochemical industry, has developed several techniques for analysing traces in the environment of wastes arising from industrial activities (publication available: Envirotrace - ISBN 92-827-9101-7).

Application of the total quality management technique to grants made it possible to reduce the time between the closing dates for the calls and the communication of results to applicants from seven months (first call) to four months and three weeks (fourth call).

The INTERNET was used as one of the main channels of information and to promote the programme (calls for proposals, publications of lists of contracts and scientific events, vacant posts within the networks and opportunities for access to large-scale facilities. 50.000 programme infopacks were sent via the INTERNET in 1996.

CONTRIBUTION TO COMMUNITY RTD OBJECTIVES

Economic and social cohesion: assuming equivalent scientific/technological merit, additional points are awarded, when proposals are evaluated, for projects in which participants from Objective 1 regions are involved. In addition, the system of return grants (103 such grants were approved by the Commission in 1996) has enabled researchers in receipt of HCM grants originating in less-favoured regions (Objective 1 regions) to return to their region of origin in order to make use of the knowledge acquired. As a result, 13% of the contracts signed in 1996 are for participants from the less-favoured regions.

Industrial participation: the system of additional points also applies where participants in a project are from industry. Industrial participation in the programme is still very much on the low side despite the effort made to increase it. A significant increase might be envisaged in the context of the new proposals adopted for the 5th FP.

Employment: the 1040 grants awarded in 1996 correspond to 2100 man-years of research. They increase their recipients' chances of finding employment after their fellowship. The "training" component of the "networks" contracts also created some 2500 man-years of employment. 3% of the contracts signed in 1996 involve participants from third countries.

WORK PROGRAMME FOR 1997

Five calls for proposals were published in 1997 under the TMR Programme, involving a total budget of around ECU 313 million.

In the context of the accompanying measures, among other things the Seminar for Marie Curie Fellows and the European Contest for Young Scientists, which take place each year in a different Member State, will be organized. Steps will be taken to ensure that the Marie Curie Fellowship Association acquires legal status. Another proposal is to create a European prize for scientific excellence, the Descartes prize, for the best research projects funded by the Community.

Efforts to step up the measures to coordinate all Community training activities and activities relating to the dissemination and optimization of the results of contracts will be continued.

The funding, through the "large-scale facilities" activity, of the European Northern Hemisphere Observatory (ENO) has made possible, among other things, the simultaneous observation by several multinational teams and several observatories of the Hale-Bopp comet, thus making it possible to increase knowledge about the formation of the solar system in general and comets in particular.

Research conducted by a grant holder funded by the programme on the regulating role played by certain enzymes in cell division represented a major break through resulting in better knowledge about possible cancer treatments.

As a result of basic computer work, a grant holder funded by the programme has developed a mathematical model which significantly improves the control of self-propelling mechanical systems or robots.

Where research training grants are concerned, as a result of the fact that the tax and social charges to which the grants are subject vary considerably from one Member State to another the conditions regarding the integration of grant holders in the host country are unequal and sometimes unfair. Although this situation has markedly improved under the TMR Programme, discussions are continuing about what steps should be taken in this connection.



JOINT RESEARCH CENTER (JRC)

The JRC is established by the European Commission with headquarters in Brussels. Five separate sites, located in Belgium, Germany, Italy, the Netherlands and Spain, house seven different institutes, each with its own focus of expertise:

Institute for Reference Materials & Measurements, **IRMM**, GEEL (B)
Institute for Transuranium Elements, **ITU**, KARLSRUHE (D)
Institute for Advanced Materials, **IAM**, PETTEN (NL) & ISPRA (I)
Institute for Systems, Informatics and Safety, **ISIS**, ISPRA (I)
Environment Institute, **EI**, ISPRA (I)
Space Applications Institute, **SAI**, ISPRA (I)
Institute for Prospective Technological Studies, **IPTS**, SEVILLE (E)

The Joint Research Centre is increasingly a driving force in European R&D in favour of both industry and consumers. It carries out the specific Community research programmes, decided upon by the Council and funded by the European Union budget; provides customer-driven research in support for other community policies, such as the environment, agriculture or nuclear safety; and engages itself successfully in competitive activities, i.e. participating with industry, research organizations and universities of the Member States or associated countries in Community programmes, including shared-cost actions under the Framework Programmes and provides paid services to private and public customers.

During 1996 the JRC was evaluated by Visiting Groups to each of the seven institutes and an overall evaluation was provided by Prof. J.M. Rojo, former Secretary of State for Research and Universities of Spain. This evaluation contributed to the five-year assessment of the Framework Programmes.

The statutory staff, comprising officials and temporary agents of the JRC, was 1,746 at the end of 1996. To this number one must add 186 scientists who were active in the Centre and were paid by the JRC under various hosting schemes. A further 200 scientists and trainees worked at the JRC under other arrangements.

The global credits committed by the JRC in 1996 were around ECU 273 million.

DIRECT ACTION

JRC's contribution as direct action to the implementation of the Framework Programmes 1994-1998 is defined in the two specific programmes 1995-1998 to be executed by the JRC for the EC and the

EXAMPLES OF RESULTS

The MARS project (Monitoring Agriculture with Remote Sensing) provides constantly updated agrometeorological information enabling accurate monitoring and extrapolation of crop development in Europe and beyond. It provides homogeneous information in real time covering a wide geographical area. It is also useful in identifying abnormalities in crop development.

Biomedical Reference Materials, are now certified by the JRC. An agreement with the International Federation of Clinical Chemistry (IFCC), provides for reference materials to be tested and certified by the JRC.

EAEC. These programmes include institutional research activities and institutional scientific and technical support activities.

Institutional research activities:

This research is executed in the seven JRC Institutes and it amounted to 68% of the JRC programme activities in 1996. It contributed to the following themes of the RTD Framework Programmes:

- *Industrial Technologies and Materials Technologies:* on advanced materials, surface engineering, new ecofriendly materials and non-destructive evaluation techniques for the inspection of industrial structural components;
- *Measurements and Testing:* on reference measurements and materials and on the assessment of the reliability of structures;
- *Environment and Climate:* on atmosphere, soil, water and waste pollution, the setting up of the Centre for Earth Observation (CEO), a decentralised European data management and information system; applications of remote sensing techniques, and industrial hazards studies;
- *Non-Nuclear Energy:* on materials for clean technologies and on the standardization of photovoltaic devices;
- *Targeted Socio-Economic Research:* the Science and Technology Observatory function and prospective work;
- *Nuclear Fission Safety:* a number of research activities ranging from studies on reactor safety to nuclear safeguards and fissile materials management and the safety of nuclear fuels and actinides;
- *Controlled Thermonuclear Fusion:* mainly as support to ITER Project.

Institutional scientific and technical support activities:

These activities are necessary for the formulation and implementation of Community policies and accounted for 32% of the JRC's programme activities in 1996. They are customer driven, in fulfilment of impartial and neutral scientific and technical requirements arising from EU directives, decisions of the Commission and the Council, or obligations stemming from the Euratom Treaty and the work is executed in the JRC Institutes.

In 1996, the three main lines of JRC support activities were:

- The JRC Support for the Environmental Policy, accounted for 43% of the S&T support budget. It provided the Commission with scientific and technical assistance for the implementation of the legislation on chemical pollutants, atmospheric pollution, water quality, chemical waste, industrial risks, and nuclear safety. This work is part of the 5th EC Action Programme in the field of the environment.
- The JRC Support for the Common Agricultural Policy accounted for 17% of the S&T support budget. Work is carried out mainly in remote sensing to agricultural statistics and improved monitoring and

The Integrated Pollution Prevention and Control (IPPC) directive integrates the different pollution media (e.g. air and water or land) and takes into account both the sensitivity of the local environment and the technological progress. It covers large installations of the most polluting industrial sectors such as the chemical, metal and energy industries. The Best Available Techniques in these sectors will be identified by the 'IPPC Bureau' through a process involving representatives from the fifteen Member States of the Union and the relevant industrial and environmental organisations. The JRC has won the contract to manage the IPPC Bureau.

Eurocodes standards of the European construction industry are checked by a consortium of European laboratories, including the JRC which develops and operates the reaction wall facility (unique in Europe).

control at the Common Agricultural Policy, the operation of the "European Office for Wine, Alcohol and Spirit Drinks (BEVABS) and Research and Development on animal identification.

- The JRC Support for Nuclear Safeguards accounted for 32% of the S&T support budget and dealt mainly with training of inspectors; design of on-site laboratories for safeguards analysis at reprocessing plants such as Sellafield and La Hague; non destructive assay, sealing and identification techniques.

COMPETITIVE ACTIVITIES

The full spectrum of competitive activities were, for 1996:

Under the Framework Programmes:

- Participation of the JRC in Shared-Cost Actions. In response to further calls for proposals, the JRC and its partners presented 210 proposals.
- Competitive support measures: Scientific and technical support activities allocated on a competitive basis in the context of invitations to tender, on requests from the Commission's other Directorates General, new activities for ECU 10.6 million.

Outside the Framework Programmes:

- The conduct of research and supply of services under contract to third parties, including contracts secured in the context of the Member States' RTD Programmes, amounted to new contracts for ECU 13.6 million.
- JRC's participation in Community actions (e.g. PHARE, TACIS, co-operation with developing countries, etc.) where Community funding is obtained in the context of a competitive approach; new activities amounted to ECU 4.2 millions.

The Council conclusions stated that the shift towards competitive activities should average 22% for the EC Framework Programme and 10% for the EAEC Framework Programme from 1995 to 1998.

HER SUPPLEMENTARY PROGRAMME

In June 1996, the Council approved a new supplementary EURATOM programme for the High Flux Reactor (HFR) at Petten (NL), covering the period 1996-1999. The new programme, in which Germany, France and the Netherlands take part, has involved a complete overhaul of the management of the facility and an intensive drive towards a more direct commercial use of a considerable part of its capacity, involving the production of radio-isotopes for medical use. In 1996 an estimated 7 million patients were diagnosed or treated using radio-isotopes produced at Petten.

The European Agency for the Evaluation of Medicinal Products (EMA), relies for its drug approval and registration activities on the expertise of the JRC which develops and supports the technical systems needed for the market authorisation procedures.

The JRC has analysed confiscated fissile materials and provides clues as to its origin with the aid of a data bank. This has led to several projects in the frame of the TACIS and PHARE programmes and to act as expert witnesses in the courts or parliamentary inquiry committees of Member States concerning so-called vagabonding nuclear materials. The Institute is actively involved in the work of the P-8 International Technical Working Group on Illicit Trafficking of Nuclear Materials.

INFORMATION DAYS, PUBLICATIONS, AND CONFERENCES

Information Days were organised at the initiative of Members of the Board of Governors of the JRC in Dublin, Ireland and Espoo, Finland. An Information Day more targeted to nuclear applications took place in Stockholm, Sweden, and another one on environmental and remote sensing activities took place in Reykjavik, Iceland.

The JRC offered a vast array of publications on scientific matters, ranging from papers and articles published in scientific magazines; to conference papers, EUR reports, reviews, and information about the JRC posted on INTERNET, in total around 1,180 papers in 1996.

More detailed information can be found in the JRC Annual Report.



COMPETITIVE SCIENTIFIC AND TECHNICAL SUPPORT ACTIVITIES

The 4th RTD Framework Programme introduced competitive scientific and technical support activities in Annex IV on implementation arrangements. These activities cover work for the Commission's Directorates-General and which, since 1995, may be carried out by a research organization of a Member State or by the JRC (where the neutrality and independence of a Commission service is not required), and new projects planned by the Commission departments with effect from 1995. These support activities come within the first and third activity of the 4th Framework Programme.

These activities are implemented in two stages:

- the allocation on an annual basis of resources to the different Directorates-General;
- the administration of these resources by each of the Directorates-General.

In order to guarantee appropriate conditions of transparency and to satisfy the needs of the different Directorates-General, the resources are allocated by an interdepartmental group representing all the Directorates-General concerned, convened and chaired by the Commission's Secretariat-General. It meets on an *ad hoc* basis, but at least twice a year.

This group examines the needs identified by the Directorates-General. It analyses requests, verifies compatibility with the objectives of the Framework Programme and decides on annual allocation within the limits of the available budget. Apart from the relevance of the projects to the objectives of the scientific and technical support programme, account is taken of the availability of funding from other programmes and scope for integration or convergence between several projects.

The Directorates-General whose proposals are selected are responsible for managing the funds allocated. They utilize competition between suppliers in order to achieve the best result in light of their requirements. The resources allocated are managed independently and through application of the relevant rules in force, in particular the provisions of the Financial Regulation applicable to the General Budget of the European Communities.

Following the publication of over 30 calls for proposals in the Official Journal, the participating Directorates-General received 544 proposals (444 of which were eligible). Ultimately, 143 proposals were selected and financial commitments signed for a total of ECU 27 million, representing nearly 80% of the amount available in terms of commitment appropriations for the 1996 budget heading. 187 projects were in progress on 31 December 1996 while the cumulative total of projects since the beginning of 1995 is 257 (one project may correspond to several contracts). A total of

EXAMPLES OF RESULTS

The OLIWIN project tested and validated an agricultural information system for the regional monitoring of the state of vineyards and olive groves and to facilitate the estimation of output at the level of the large wine and oil growing regions of the European Union. The input data are mainly meteorological and soil data and agricultural and statistical information about the crops in question.

ECU 11 million was paid out for all the projects in progress in 1996 to research institutes, universities and other contract signatories.

Following the participation of six additional services in the activities covered by the budget heading in 1996, two new services submitted requests for 1997. Altogether, 16 Directorates-General and services will make use of the appropriations for competitive scientific and technical support activities in 1997.



ANNEX II

STATISTICAL AND FINANCIAL DATA : ANNUAL BASIS 1996 AND FRAMEWORK PROGRAMMES

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N.B. For the sake of convenience, the specific programme for agriculture and fisheries (including agro-industry, food technologies, forestry, agriculture and rural development) is sometimes referred to as "Agriculture and fisheries".

RTD activities in 1996:
FP4 + Euratom FP; FP2 + FP3
Shared-cost actions + concerted actions + accompanying measures (1) + JRC direct action

	New projects (contracts signed in 1996 - FP4 + Euratom FP)						All projects under way (2)	
	Community contribution (million ECU) (3)	Number of projects	Number of participations	Average number of participations per project	Average number of MS per project (4)	Average Community contribution per project (million ECU)	Number of projects under way at 31.12.96 (5)	Total payments 1996 (million ECU)
Shared-cost actions (1)	2.635,08	3918	18071	4,61	3,06	0,67	6244	2.047,48
Concerted actions (1)	77,02	247	3058	12,38	6,04	0,31	540	46,29
Preparatory, accompanying and support measures (1)	284,70	2230	4149	1,86	1,62	0,13	2589	209,33
TOTAL	2.996,80	6.395	25.278	3,95	2,77	0,47	9373	2.303,10

(1) Special measures are attached either to shared-cost actions, or to concerted actions, or to preparatory, accompanying and support measures, as appropriate.

(2) All signed contracts under way (completion date after 31.12.1996) for all specific programmes under FP4 + Euratom FP; FP2 + FP3.

(3) Sum of the total Community contributions to all new projects, as stipulated in the contracts (i.e. for the entire duration of each project).

(4) MS : Member States

(5) Projects under way at 31.12.1996 : signed contracts before 31.12.1996 with a completion date for research work after 31.12.1996.

Direct actions - JRC (6)	225,00	n/a	n/a	n/a	n/a	n/a	n/a	n/a
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(6) Only the 1996 commitments are shown for the direct actions.

RTD activities in 1996:
Specific programmes under FP4 + Euratom FP
Shared-cost actions + Concerted actions + Accompanying measures (1)
All projects (contracts signed in 1996)

Names of specific programmes (EC FP4 + EURATOM FP)	Total new projects (contracts signed in 1996; FP4 + Euratom FP)						Shared-cost actions (1)	Concerted actions (1)	Accompany- ing measures (1)
	Community contribution (million ECU) (2)	Number of projects	Number of participations	Average number of participations per project	Average number of MS per project (3)	Average Community contribution per project (million ECU)	Community contribution (million ECU) (1)	Community contribution (million ECU) (1)	Community contribution (million ECU) (1)
Telematics	79,72	153	1267	8,28	4,04	0,52	66,72	1,47	11,52
Communication technologies (4)	37,90	47	513	10,91	5,77	0,81	30,70	3,50	3,70
Information technologies	583,79	878	3467	3,95	3,77	0,66	444,01	0,00	139,78
Industrial and materials technologies	448,16	605	2895	4,79	2,68	0,74	445,00	0,40	2,76
Standards, measurements and testing	60,15	165	785	4,76	3,39	0,36	58,49	0,00	1,66
Environment and climate	231,24	416	2205	5,30	3,40	0,56	222,78	5,10	3,36
Marine science and technology	113,10	103	660	6,41	2,94	1,10	111,11	0,19	1,80
Biotechnology	228,11	356	1381	3,88	2,60	0,64	213,29	1,87	12,95
Biomedicine and health	125,16	366	3023	8,26	4,03	0,34	78,65	43,13	3,38
Agriculture and fisheries	183,42	485	1894	3,91	2,87	0,38	160,33	10,83	12,26
Non-nuclear energy	163,03	350	1316	3,76	2,71	0,47	143,98	0,00	19,05
Transport	79,97	89	864	9,71	6,00	0,90	59,95	2,30	17,71
Targeted socio-economic research	22,27	52	320	6,15	4,62	0,43	21,41	0,00	0,86
International cooperation (5)	91,02	572	1382	2,42	1,27	0,16	61,97	4,45	24,60
Dissemination and utilization of the results (6)	43,68	173	599	3,46	2,00	0,25	26,60	0,00	17,08
Training and mobility of researchers	264,24	1285	1979	1,54	1,34	0,21	254,30	0,00	9,95
Nuclear fission safety	62,02	120	536	4,47	2,98	0,52	57,49	3,78	0,76
Controlled thermonuclear fusion	179,82	180	192	1,07	1,01	1,00	178,30	0,00	1,52
TOTAL (7)	2996,80	6395	25278	3,95	2,77	0,47	2635,08	77,02	284,70

(1) Special measures are attached either to shared-cost actions, or to concerted actions, or to preparatory, accompanying and support measures, as appropriate.

(2) Sum of the total Community contributions to all new projects, as stipulated in the contracts (i.e. for the entire duration of each project).

(3) MS : Member States

(4) In 1996, amendments covering a Community contribution of ECU 49.50 million were signed to contracts originally signed in 1995.

(5) Horizontal international cooperation actions permitting certain non-member countries (e.g. those of Central and Eastern Europe) to participate in projects under specific programmes account for a further Community contribution of ECU 6.17 million.

(6) "Special measures" (99 projects - ECU 13.74 million) designed to support the establishment of infrastructure and innovation support networks are attached to the "preparatory, accompanying and support measures".

(7) Not including "competition in science and technology support activities", which have not been analysed in terms of contracts signed.

RTD activities in 1996:
Specific programmes under FP3
Shared-cost actions + Concerted actions + Accompanying measures

Total projects (contracts signed)

Names of specific programmes under FP3	Number of projects under way at 31.12.96 (1)	Overall number of projects (2)	Total payments 1996 (million ECU)	Overall Community contribution (million ECU) (3)
Information technologies	118	715	95,14	1.488,00
Communication technologies	0	123	16,53	521,60
Telematics applications of common interest	62	312	24,84	379,00
Industrial and materials technologies	323	1654	98,18	761,08
Measurements and testing	70	202	8,94	57,71
Environment	68	659	28,31	305,72
Marine science and technology	23	145	10,44	107,72
Biotechnology	43	374	20,52	174,78
Agriculture and agro-industrial research, fisheries	368	578	52,99	350,06
Biomedicine and health	151	627	16,63	144,26
Life sciences and technologies for developing countries	135	355	16,01	121,59
Non-nuclear energy	28	506	28,73	242,35
Nuclear fission safety	1	125	6,73	46,28
Controlled thermonuclear fusion	9	396	23,72	465,94
Human capital and mobility	754	3461	81,36	548,06
Centralized action for diffusion and utilization of results	6	207	4,67	60,76
TOTAL	2.159	10.439	533,74	5.774,91

(1) Projects under way at 31.12.1996: contracts signed before 31.12.1996 with a completion date for research work after 31.12.1996.

(2) Total number of projects since the beginning of the specific programme under FP3, including those which have already been completed.

(3) Overall Community contribution over the whole duration of the framework programme.

N.B. : The data on the 1990-1994 Thémie programme are not included in this table, as Thémie (1990-1994) is not covered by FP3.

RTD activities in 1996:
Specific programmes under FP4 + Euratom FP
Shared-cost actions + concerted actions + accompanying measures (1)

Total projects (contracts signed)

Names of specific programmes under FP4 + Euratom FP	Number of projects under way at 31.12.96 (1)	Overall number of projects (2)	Total payments 1996 (million ECU)	Overall Community contribution (million ECU) (3)
Telematics	373	389	158,46	376,42
Communication technologies	156	156	105,26	296,6
Information technologies	910	1035	311,57	831,85
Industrial and materials technologies	768	849	195,92	638,30
Standards, measurements & testing	162	215	22,69	77,60
Environment and climate	369	484	104,32	252,27
Marine science and technology	89	126	28,25	120,31
Biotechnology	348	429	103,79	293,75
Biomedicine and health	352	447	56,39	158,88
Agriculture and fisheries	462	594	64,87	303,19
Non-nuclear energy	849	878	97,54	435,47
Transport	98	102	40,84	120,32
Targeted socio-economic research	51	52	8,82	22,27
International cooperation	480	1.003	61,29	140,31
Dissemination & utilization of the results	179	444	32,72	80,88
Training and mobility of researchers	1.344	1.449	117,35	330,90
Nuclear fission safety	185	202	25,69	126,37
Controlled thermonuclear fusion	184	352	186,77	431,57
TOTAL	7359	9206	; (4) 1733,43	5.037,26

(1) Projects under way at 31.12.1996: contracts signed before 31.12.1996 with a completion date for research work after 31.12.1996.

(2) Total number of projects since the beginning of the specific programme under FP4, including those which have already been completed.

(3) Overall Community contribution over the whole duration of the framework programme.

(4) For payments, including ECU 10.89 million for "competition in science and technology support activities".

**RTD activities in 1996 :
Specific programmes under EC FP4 + Euratom FP**

Calls for proposals evaluated by the Commission in 1996

Names of specific programmes (FP4 + Euratom FP) and areas of work programme	OJ references and dates of calls for proposals	Number of proposals received	Number of eligible proposals	Proposals selected by the Commission (1)			
				Number	% of total eligible proposals	EC contribution million ECU	
TELEMATICS APPLICATIONS							
- Telematics applications	C240/14(15/09/95)	413	398	67	17	64	
Measures for SMEs	Open call	34	31	3	10	1,1	
COMMUNICATION TECHNOLOGIES (ACTS)							
- Interactive digital multimedia services	C240/7 (15/09/95)	179	66	33	50	37	
- Photonic technologies			15	9	60	6	
- High-speed networking			24	8	33	7	
- Personal communication			20	16	80	22	
- Intelligence in networks			23	16	70	21	
- Quality, security and reliability			5	5	100	2,8	
- Horizontal actions			19	10	53	9	
INFORMATION TECHNOLOGIES (ESPRIT)							
Software technologies; technologies for IT components and subsystems;	C337/26(15/12/95)	Stage 1:322	309	97	31	122	
Multimedia systems; long-term research; open microprocessor systems initiative; high-performance computing and networking;			Stage 2: 84	82	23	28	30
Technologies for business processes	C75/17 (15/03/96)	Stage 1:683	672	186	28	130	
Above areas + integration in manufacturing			Stage 2: 73	72	15	21	21
Above areas + integration in manufacturing	C271/35(17/09/96)	Stage 1:601	577	116	20	189	
Above areas + integration in manufacturing			Stage 2:188	177	37	21	50
Measures for SMEs	C357/07(15/12/94)	Open call	998	992	304	31	50
		Open call	77	77	26	34	0,9

(1) Including the reserve list, where appropriate.

Names of specific programmes (FP4 + Euratom FP) and areas of work programme	OJ references and dates of calls for proposals	Number of proposals received	Number of eligible proposals	Proposals selected by the Commission (1)		
				Number	% of total eligible proposals	EC contribution million ECU
INDUSTRIAL AND MATERIALS TECHNOLOGIES (Brite Euram)	C337/32(15/12/95)	1206	1144	543	47	482
Technology stimulation measures for SMEs	C357/3 (15/12/94)	Stage 1:414 Stage 2:145	333 122	210 67	63 55	8 29
STANDARDS, MEASUREMENTS AND TESTING						
- Research related to written standards and technical support to trade	C148/6 (15/06/95)	164	159	31	20	15
- Measurements related to the needs of society		250	236	34	14	16
Support for Community practices	C337/51(15/12/95) C357/7 (15/12/94)	77	70	33	44	26
	Open call	75	63	30	48	4
- Accompanying measures	C148/6 (15/06/95)	40	36	28	78	3,2
Technology stimulation measures for SMEs	C357/7 (15/12/94)	52	41	17	41	1,8
ENVIRONMENT AND CLIMATE						
Space techniques applied to environmental monitoring and research	C12/5 (17/01/95)	74	74	20	27	16
Technology stimulation measures for SMEs		43	38	17	45	1
MARINE SCIENCE AND TECHNOLOGY (MAST)						
Support initiatives	C75/5 (17/06/96)	6	5	2	40	0,7
Structure and dynamics of continental shelf ecosystems	C110/10(16/04/96)	226	214	57	27	76
Technology stimulation measures for SMEs		26	26	12	46	0,5

(1) Including the reserve list, where appropriate.

Table 4

Names of specific programmes (FP4 + Euratom FP) and areas of work programme	OJ references and dates of calls for proposals	Number of proposals received	Number of eligible proposals	Proposals selected by the Commission (1)		
				Number	% of total eligible proposals	EC contribution million ECU
BIOTECHNOLOGY	C240/9 (15/09/95)					
- Cell factories		110	110	30	27	47
- Genome analysis		15	15	7	47	22,09
- Plant and animal biotechnology		174	170	29	17	51
- Cell communication in neurosciences		127	127	28	22	30
- Immunology; trans-disease vaccinology		70	70	19	27	22
- Structural biology		148	148	24	16	32
- Pre-normative research, biodiversity and social acceptance		93	93	25	27	32
- Infrastructure		21	21	10	42	10
- Horizontal activities		28	28	10	36	0,5
- Grants	C337/30 (15/12/95)	229	229	117	51	10
Technology stimulation measures for SMEs	Open call	76	75	14	19	0,6
BIOMEDICINE AND HEALTH (BIOMED)	C75/20 (15/03/96)	776	769	261	34	139
Technology stimulation measures for SMEs	C12/7 (17/01/95)	49	45	23	47	0,9
AGRICULTURE AND FISHERIES (including agro-industry, food technologies, forestry, aquaculture and rural development) (FAIR)						
- Scaling-up and processing methodologies; generic science and advanced technologies for nutritious foods	C148/41 (15/06/95)	233	233	60	26	60
Integrated production and processing chains; agriculture, forestry and rural development; fisheries and aquaculture; concerted activities	C337/28(15/12/95)	797	794	152	19	125
Technology stimulation measures for SMEs	Open call	178	167	65	39	4,7
NON-NUCLEAR ENERGY (Joule - Thermie)						
- JOULE	C11/14 (16/01/96)	121	118	51	45	39
- Non-nuclear energy (THERMIE TYPE A)	C240/ (15/09/95)	320	279	94	34	114
- Non-nuclear energy (THERMIE TYPE B)	C357/ (15/09/94)	438	438	165	37	18

(1) Including the reserve list, where appropriate.

Names of specific programmes (FP4 + Euratom FP) and areas of work programme	OJ references and dates of calls for proposals	Number of proposals received	Number of eligible proposals	Proposals selected by the Commission (1)		
				Number	% of total eligible proposals	EC contribution million ECU
TRANSPORT						
- Strategic research	C337/40(15/12/95)	50	47	17	36	13
- Railways		23	23	8	35	6
- Integrated transport		22	19	7	37	5
- Air transport		30	28	14	50	6
- Urban transport		30	29	10	34	5
- Maritime transport		36	36	16	44	7
- Road transport		34	32	12	37	8
Technology stimulation measures for SMEs	C12/8 (17/01/95) Open call	29	29	15	52	0,5
INTERNATIONAL COOPERATION (INCO)						
- COPERNICUS	C271/25(17/10/95)	1932	1740	299	17	68
- Training (Fellowship Japan, Korea)	C38/10 (15/02/95)	82	79	63	80	4
- Developing countries	C64/8 (15/03/95)	1068	805	136	16	59
- Developing countries (Information and communications technologies)	C75/31 (15/03/96)	164	159	58	36	11

(1) Including the reserve list, where appropriate.

Table 4

Names of specific programmes (FP4 + Euratom FP) and areas of work programme	OJ references and dates of calls for proposals	Number of proposals received	Number of eligible proposals	Proposals selected by the Commission (1)		
				Number	% of total eligible proposals	EC contribution million ECU
DISSEMINATION AND OPTIMIZATION OF RESULTS (Innovation)						
- Validation and technology transfer projects	C271/20(17/09/96)	314	302	n/a	n/a	n/a
- Regional activity	C240/15(15/09/95)	61	60	26	43	4,6
- Best practices and methodology for increasing public awareness of the innovation process	C240/18(15/09/95)	29	28	11	39	2
- European networks and services	C337/24(15/15/95)	124	113	23	20	7
- OPET network	C337/12(15/12/95)	70	70	40	57	4,4
- Management of technological innovation	C337/14(15/12/95)	108	108	31	29	9
TRAINING AND MOBILITY OF RESEARCHERS						
- Training through research	C148/37(15/06/95)	1992	1728	350	20	30
	C240/18(15/09/95)	2213	1945	390	20	31
	C75/17 (15/03/96)	2459	2262	417	18	35
- Research networks	C12/11 (17/01/95)	1437	1427	96	7	155
- Accompanying measures	C337/42(15/12/95)	210	201	58	29	4
	C148/37(18/06/95)	253	201	72	35	6
NUCLEAR FISSION SAFETY	C12/3 (17/01/95)	152	148	89	60	44
	C38/12 (15/02/95)					
	Corrigendum					

(1) Including the reserve list, where appropriate.

n/a: not available

RTD activities in 1996:
Specific programmes under FP4 + Euratom FP
Shared-cost actions (SCA) (1); New projects (contracts signed in 1996)

Community contribution (in million ECU) and number of participations by type of participant

Type of participant Names of specific programmes (EC FP4 + Euratom FP)	European Union														Total	
	LE(2)		SME(3)		RB (4)		HEI(5)		Other (6)		Int. Org. (7)		Third countries (8)		Comm. contrib. (M ECU)	Number of participations
	Comm. contrib. (M ECU)	Number of participations	Comm. contrib. (M ECU)	Number of participations	Comm. contrib. (M ECU)	Number of participations	Comm. contrib. (M ECU)	Number of participations	Comm. contrib. (M ECU)	Number of participations	Comm. contrib. (M ECU)	Number of participations	Comm. contrib. (M ECU)	Number of participations	Comm. contrib. (M ECU)	Number of participations
Telematics	11,25	148	14,08	226	9,65	150	16,39	276	12,28	268	1,1	17	1,97	61	66,72	1148
Communication technologies	11	125	5,5	87	5,4	63	4,5	58	1,8	25	0,7	6	1,8	50	30,70	414
Information technologies	188,35	691	90,41	462	61,69	264	72,64	331	19,81	149	0,65	3	10,46	96	444,01	1998
Industrial and materials technologies	164,29	715	111,03	1.196	74,85	400	82,19	402	8,41	31	0,93	2	3,30	59	445,00	2805
Standards, measurements and testing	5,86	86	9,17	116	26,17	335	14,57	148	1,55	28	0,01	1	1,16	27	58,49	741
Environment and climate	4,10	38	6,80	77	88,72	777	111,64	900	3,46	50	0,54	5	7,52	195	222,78	2042
Marine science and technology	1,94	11	5,02	43	39,80	215	52,36	259	2,99	19	0,00	0	9,00	70	111,11	617
Biotechnology	10,49	75	9,70	81	74,86	329	108,10	485	1,88	17	4,32	18	3,94	58	213,29	1063
Biomedicine and health	1,47	20	4,38	68	23,53	220	46,35	440	1,77	26	0,40	2	0,75	46	78,65	822
Agriculture and fisheries	7,55	74	16,16	251	59,23	343	68,64	366	3,14	29	0,13	2	5,48	60	160,33	1125
Non-nuclear energy	61,57	161	42,37	241	12,25	125	9,11	67	18,06	89	0,00	0	0,62	12	143,98	695
Transport	12,58	101	17,69	193	8,26	91	9,87	112	8,68	98	0,24	2	2,63	46	59,95	643
Targeted socio-economic research	0,02	1	0,64	9	4,43	64	13,75	198	1,58	21	0,00	0	0,99	15	21,41	308
International cooperation	0,67	9	0,87	21	11,58	144	17,47	197	0,78	15	0,10	1	30,50	454	61,97	841
Dissemination and utilization of the results	0,77	19	13,74	159	2,07	35	3,62	59	5,98	79	0,17	8	0,25	3	26,60	362
Training and mobility of researchers	2,87	18	1,96	12	71,14	479	165,59	1237	3,45	20	5,24	28	4,05	60	254,30	1854
Nuclear fission safety	2,43	37	3,00	28	33,21	224	16,97	121	0,95	10	0,36	2	0,57	12	57,49	434
Controlled thermonuclear fusion	27,21	15	0,24	3	62,71	80	1,25	5	7,96	48	68,01	3	10,92	9	178,30	163
TOTAL (9)	514,42	2.344	352,76	3.273	669,55	4.338	815,01	5.661	104,53	1.022	82,90	100	95,91	1.333	2.635,08	18071

(1) On account of their nature, some special measures are attached to the shared-cost actions

(2) LE: Large enterprises

(3) SME: enterprises which have fewer than 500 employees, not more than a third of whose capital is controlled by a large enterprise and with a turnover not exceeding ECU 38 million (ECU 50 million for information technologies).

(4) RB: Research bodies, including the JRC. The Community contribution for TSMEs is ECU 28.5 million; the full amount goes indirectly to SMEs (intellectual property rights and research results), even if it is initially paid to research centres.

(5) HEI: Higher education institutes

(6) Other: EIG, EEIG, non-profit-making bodies, etc.

(7) Int. Org.: International organizations

(8) Third countries: countries not belonging to the European Union

(9) Not including "competition in science and technology support activities", which have not been analysed in terms of contracts signed.

RTD activities in 1996:
Specific programmes under FP4 + Euratom FP
Shared-cost actions (SCA) (1) New projects (contracts signed in 1996)

Access to European research for Objective 1 regions

Names of specific programmes (FP4 + Euratom FP)	Number of projects (2)		Number of participations (3)		Total Community contribution to the projects (million ECU) (4)				
	Total	Objective 1	Total	Objective 1	Total	Objective 1			
Telematics	112	55	1146	154	66,72	39,88			
Communication technologies	36	21	414	64	30,70	22,60			
Information technologies	323	128	1996	227	444,01	198,70			
Industrial and materials technologies	547	179	2805	352	445,00	216,27			
Standards, measurements and testing	137	46	741	69	58,49	24,05			
Environment and climate	316	146	2042	253	222,78	109,12			
Marine science and technology	63	34	617	81	111,11	73,10			
Biotechnology	157	64	1063	98	213,29	108,57			
Biomedicine and health	150	60	822	80	78,65	35,73			
Agriculture and fisheries (5)	112	221	58	569	1125	95	71,45	160,33	48,54
Non-nuclear energy	149	50	695	112	143,98	52,83			
Transport (5)	63	n/a	643	n/a	59,95	n/a			
Targeted socio-economic research	40	25	308	42	21,41	15,53			
International cooperation (5)	118	155	32	636	841	109	50,84	61,97	14,09
Dissemination and utilization of the results	61	30	362	83	26,60	12,83			
Training and mobility of researchers	1160	218	1854	259	254,30	122,69			
Nuclear fission safety	77	12	434	14	57,49	15,40			
Controlled thermonuclear fusion	151	5	163	6	178,30	4,40			
TOTAL DISTRIBUTED	3709	1163	16667	2098	2475,12	1114,33			
TOTAL RESEARCH (6)	3918		18071		2635,08				

(1) On account of their nature, some special measures are attached to the shared-cost actions.

(2) Total number of projects, and number of projects with at least one participant based in an "Objective 1" region.

(3) Total number of participations, and number of participations based in "Objective 1" regions.

(4) Total Community contribution to all projects, and to projects with at least one participant in an "Objective 1" region.

(5) The "Objective 1" projects are not known for the "Transport" programme. For the "Agriculture and fisheries" and "International cooperation" programmes they are known only for the part disbursed by DG XII: for these two programmes, the figures for DG XII are given in the left of the "Total" columns. Thus the total distributed does not include the "Transport" programme and includes only the DG XII figures for the "Agriculture and fisheries" and "International cooperation" programmes.

(6) Not including "competition in science and technology support activities", which have not been analysed in terms of contracts signed.

RTD activities in 1996:
Specific programmes under FP4 + Euratom FP
Shared-cost actions (SCA) (1); New projects (contracts signed in 1996)

Intra and inter-country collaboration links (2) for all types of participant (3)

	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxemb.	Netherlands	Austria	Portugal	Finland	Sweden	United Kingdom	TOTAL EUR 15	Liechtenstein	Iceland	Norway	Israel	Switzerland	Rest of the world	TOTAL
Belgium	236	136	860	194	414	954	122	553	32	471	122	162	154	201	790	5401	0	7	79	7	131	155	5780
Denmark	136	171	551	171	230	404	87	342	14	343	75	117	176	319	642	3778	0	23	154	0	71	153	4179
Germany	860	551	1773	700	1220	2966	286	2001	43	1440	581	394	563	1011	2847	17236	0	48	311	32	464	462	18553
Greece	194	171	700	281	452	758	105	690	22	290	116	180	167	215	789	5130	0	14	86	3	96	123	5452
Spain	414	230	1220	452	793	1730	180	1258	16	575	168	372	214	347	1362	9331	0	15	138	20	144	180	9828
France	954	404	2966	758	1730	1935	367	2150	41	1070	268	455	375	751	2838	17062	0	47	301	27	373	358	18168
Ireland	122	87	286	105	180	367	97	219	10	174	58	94	60	108	570	2537	0	11	45	3	38	40	2674
Italy	553	342	2001	690	1258	2150	219	1285	22	748	313	327	318	517	1879	12622	0	40	212	17	278	291	13460
Luxembourg	32	14	43	22	16	41	10	22	3	20	11	11	11	7	36	299	0	1	7	0	4	1	312
Netherlands	471	343	1440	290	575	1070	174	748	20	568	162	191	244	446	1480	8222	0	16	130	18	180	183	8749
Austria	122	75	581	116	168	268	58	313	11	162	101	55	87	128	311	2559	0	11	47	2	98	64	2781
Portugal	162	117	394	180	372	455	94	327	11	191	55	148	69	140	493	3208	0	12	54	4	57	63	3398
Finland	154	176	563	167	214	375	60	318	11	244	87	69	180	329	506	3453	0	7	133	4	68	131	3796
Sweden	201	319	1011	215	347	751	108	517	7	446	128	140	329	349	887	5755	0	26	156	3	114	222	6276
United Kingdom	790	642	2847	789	1362	2838	570	1879	36	1480	314	493	506	887	1964	17397	0	51	422	39	366	422	18697
Total EUR15	5401	3778	17236	5130	9331	17062	2537	12622	299	8222	2559	3208	3453	5755	17397	(2)	0	329	2275	179	2482	2848	(2)
Liechtenstein	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iceland	7	23	48	14	15	47	11	40	1	16	11	12	7	26	51	329	0	11	32	0	8	0	380
Norway	79	154	311	86	138	301	45	212	7	130	47	54	133	156	422	2275	0	32	155	2	61	88	2613
Israel	7	0	32	3	20	27	3	17	0	18	2	4	4	3	39	179	0	0	2	6	9	2	198
Switzerland	131	71	464	96	144	373	38	278	4	180	98	57	68	114	366	2482	0	8	61	9	116	64	2740
Rest of the world	155	153	462	123	180	358	40	291	1	183	64	63	131	222	422	2848	0	0	88	2	64	1076	4878
GRAND TOTAL	5780	4179	18553	5452	9828	18168	2674	13460	312	8749	2781	3398	3796	6276	18697	(2)	0	380	2613	198	2740	4878	(2)

(1) On account of their nature, some special measures are attached to the shared-cost actions.

(2) A collaboration link between 2 participants from the same country is counted once only. A collaboration link between 2 different countries is counted twice, once for each country. For the whole of the European Union, the total number of European collaboration links corresponds to the sum of the unshaded cells in the EUR15 part, i.e. 61 937; the total number of links between teams, including links with teams in third countries, is 71 680, and there are 64 739 links between teams from the European Economic Area. The total number of links for EU teams is 70 050.

(3) Contracts signed in 1996. All types of participant (LE, SME, RB, HEI, Other, Int. Org.) are broken down by country. For international organizations, the address of the centre carrying out the research is used, as the country benefits indirectly from the organization being based there. All programmes (except competition in scientific and technology support activities) have provided data on collaboration links, and data is missing for only a small proportion of links.

Table 8

**RTD activities in 1997:
Specific programmes under FP4 + Euratom FP**

Timetable for calls for proposals and the selection procedure; Budget

Names of specific programmes (FP4 + Euratom FP) and areas of work programme	Dates and OJ references of calls for proposals (or expressions of interest)	Deadlines/dates for receipt of proposals	Evaluation period	Contract negotiation period	Anticipated date of initial contract signature	Total 1997 Budget (million ECU)
Telematics applications						
4th call covering all areas of the programme, except telematics engineering	17/12/96 C 381	15/04/97	May	September	October	151,5
Open call: support actions (technology watch, dissemination of results and promotion of telematics, international cooperation, training)	15/9/95 C 240	15/04/97	May	September	October	1,0
Integrated applications for digital sites (IADS)	17/12/96 C 381	12/06/97	June	September	October	50,0
Telematics section of the call concerning "educational and multimedia software task force"	17/12/96 C 381	16/06/97	June	September	October	12,0
Communications technologies (ACTS)						
3rd call: all areas (interactive digital multimedia services, photonic technologies, high-speed networking, personal communication, intelligence in networks, quality, security and reliability, horizontal measures)	15/06/97	16/09/97	October	October-December	February	0 (commitment in 98)
Information technology (ESPRIT)						
Call in 2 stages concerning various tasks in the following areas: technologies for components and subsystems (TCS), long-term research (LTR), high performance computing and networking (HPCN)	15/03/1997 C 84	15/4/97 (1st stage); 2/07/97 (TCS); 30/07/97 (LTR and HPCN)	July-September	October	November-January	192,0
Call concerning various tasks in the following areas: Open Microprocessor Initiative (OMI), technologies for business processes (TBP), integration in manufacturing, IT for mobility (TIM), electronic commerce (EC)		17/06/97 (1st stage)	July	September-October	December-January	
ESSI call	15/06/97	15/09/97	October	November	December-January	40,0
Call in 2 stages	16/09/97	15/10/97 15/12/97				300,0
Industrial and materials technologies (Brite-EuRam)						
Basic research, transport technologies	17/12/96 C 381	30/04/97	May	September-October	December	233,0
Production technologies, materials and product innovation technologies	17/12/96 C 381	15/09/97	September-October	January-February	April	254,0
Thematic networks	15/12/94 C 357	30/04/97	May	September	December	20,0
Technology stimulation measures for SMEs (exploratory bonuses): open call for cooperative research	15/12/94 C 357	11/06/97	June-July	September	December	70

RTD activities in 1997:
Specific programmes under FP4 + Euratom FP

Timetable for calls for proposals and the selection procedure; Budget

Names of specific programmes (FP4 + Euratom FP) and areas of work programme	Dates and OJ references of calls for proposals (or expressions of interest)	Deadlines/dates for receipt of proposals	Evaluation period	Contract negotiation period	Anticipated date of initial contract signature	Total 1997 Budget (million ECU)
Thematic networks	15/12/94 C 357	30/09/97	October	January	March	20,0
Standards, measurements and testing						
Targeted call (CEN, ETSI, CENELEC) for support for Union policies	17/12/96 C 381	15/05/97				
Technology stimulation measures for SMEs (exploratory bonuses); open call for cooperative research	15/12/94 C 357	11/06/97				
Targeted call (CEN, ETSI, CENELEC) for support for Union policies	17/06/97	27/11/97				
Open call for thematic network projects	15/12/94 C 357	17/12/97				
Environment & Climate						
Environmental technologies; research into the natural environment, environmental quality and global change; space techniques applied to environmental monitoring and research; human dimensions of environmental change	17/9/96 C 271	15/01/97	February-May 97	May-December 97	October 97	104,0
Enrich	15/10/96 C306	15/01/97	February-May 97	May-October 97	September 97	1,5
Technology stimulation measures for SMEs (exploratory bonuses); open call for cooperative research	17/01/95 C 12	11/06/97				4,0
Marie Curie training grants	15/12/95 C 337	20/08/97				2,6
Enrich	September 97	December 97	January-March 98		1998	
Advanced courses	17/12/96 C381	17/03/97	May-September 97	September-December 97	1997	0,8
Centre for Earth Observation (CEO)	June 97	October 97	February 98		1998	
Research and development for potential future operational activities	June 97	October 97	November 97-February 98	February 98	1998	
Marine science and technology (MAST)						
Structure and dynamics of coastal ecosystems	16/04/96 C 110	15/01/97				
Technology stimulation measures for SMEs (exploratory bonuses); open call for cooperative research	15/12/94 C 357	11/06/97				
Concerted actions	15/03/96 C 75	27/06/97				

RTD activities in 1997:
Specific programmes under FP4 + Euratom FP

Timetable for calls for proposals and the selection procedure; Budget

Names of specific programmes (FP4 + Euratom FP) and areas of work programme	Dates and OJ references of calls for proposals (or expressions of interest)	Deadlines/dates for receipt of proposals	Evaluation period	Contract negotiation period	Anticipated date of initial contract signature	Total 1997 Budget (million ECU)
Raising of public awareness of research and technology	15/09/97	15/12/97	January 98	March 98	April 98	3,0
Training and mobility of researchers						
Research networks	17/09/96	3/02/97	February	July-November	October	190,0
Access to large-scale facilities	15/03/97	16/06/97	December	February 98	March 98	35-40
Training through research	17/03/97	16/06/97	July		October	34,0
Accompanying measures	15/12/96	1/04/97	September		November-December	4,7

RTD activities in 1997:
Specific programmes under FP4 + Euratom FP

Timetable for calls for proposals and the selection procedure; Budget

Names of specific programmes (FP4 + Euratom FP) and areas of work programme	Dates and OJ references of calls for proposals (or expressions of interest)	Deadlines/dates for receipt of proposals	Evaluation period	Contract negotiation period	Anticipated date of initial contract signature	Total 1997 Budget (million ECU)
JOULE: Technology stimulation measures for SMEs (exploratory bonuses restricted to cooperative research projects)	15/12/94	11/06/97	June	September-October	December	5,0
JOULE: preparatory, accompanying and support measures	15/12/94 C 357	17/12/97	Appel ouvert	En continu	En continu	3,3
THERMIE: call for specific demonstration projects in the following areas: rational use of energy; fossil fuels; renewable sources of energy	17/9/96 C 271	31/01/97	March-April	June	July	114,0
THERMIE: preparatory, accompanying and support measures (development and implementation of specific energy RTD strategies; dissemination of energy technologies; concerted actions and concerted networks; measures for SMEs)	15/12/94 C 357	17/12/97	February-March	April-June	May	20,0
Nuclear fission safety						
Concerted actions	17/1/95 C 12	15/02/97	March-June	July-October	November	1,7
Concerted actions	17/1/95 C 12	1/11/97	December-March 98	April-June 98	Jul-98	
Transport						
Strategic research, railways, integrated transport chains, air transport, urban transport, maritime transport and inland waterways, road transport	17/12/96 C 381	17/03/97	April	May-August	September	65,0
Targeted socio-economic research						
Science and technology policy options, research on education and training, research into social integration and social exclusion (only certain sub-areas)	15/10/96 C 306	15/01/97	February-March	June-July	September-November	30-35
International cooperation (INCO)						
Fellowships Japan, Korea (DG XII)	15/2/95 C 38	1/03/97	April-July	September	October	4,7
Developing countries (DGs III and XII)	15/04/97	11/09/97	October-December	January-May 98	March 98	
INCO-COPERNICUS: Cooperation with the countries of Central and Eastern Europe and the new Independent States (DGs III, XII, XIII, XVII)	15/04/97	26/09/97	October-December	April-May 98	June-September 98	
Dissemination and optimization of results						
European Observatory of Innovation system	15/06/97	15/09/97	October	November	March	5,0
European networks and services	15/06/97	15/09/97	October	November	March	7,0
Regional actions	15/06/97	15/09/97	October	November	March	13,0
Technology transfer and technological validation projects	15/06/97	6/10/97	November	November	March	18,0

Table 9

Funding of the 4th framework programme and of the Euratom framework programme (million ECU)

	4th framework programme Decisions 1110/94/EC, 616/96/EC			Euratom framework programme Decisions 94/268, 96/253/Euratom		TOTAL	
	Indirect actions	JRC	Support for DGs	Indirect actions	JRC		
FIRST ACTIVITY Research, technological development and demonstration programmes							
Information and communication technologies	3 604	11,5	10,5				3626
1. Telematics	898					898	
2. Communications technologies	671					671	
3. Information technologies	2 035	11,5	10,5			2 057	
Industrial technologies	1906	208,5	10,5				2 125
4. Industrial and materials technologies	1 722	96				1 818	
5. Measurements and testing	184	112,5	10,5			307	
Environment	809,5	313	27,5				1 150
6. Environment and climate	566,5	313	27,5			907	
7. Marine science and technology	243					243	
Life sciences and technologies	1 592,5	50	31,5				1 674
8. Biotechnology	588					588	
9. Biomedicine and health	358					358	
10. Agriculture and fisheries	646,5	50	31,5			728	
Energy	1 030	21	16	1 016,5	319,5		2 403
11. Non-nuclear energy	1 030	21	16			1 067	
12. Nuclear fission safety				170,5	270,5	441	
13. Controlled thermonuclear fusion				846	49	895	
14. Transport	256						256
15. Targeted socio-economic research	112	35					147
SECOND ACTIVITY Cooperation with third countries and international organizations	575						575
THIRD ACTIVITY Dissemination and utilization of results	312		40				352
FOURTH ACTIVITY Stimulation of the training and mobility of researchers	792						792
TOTAL	10 989	639	136	1 016,5	319,5		
MAXIMUM OVERALL AMOUNT		11 764			1 336		13 100

Development of Community research commitments

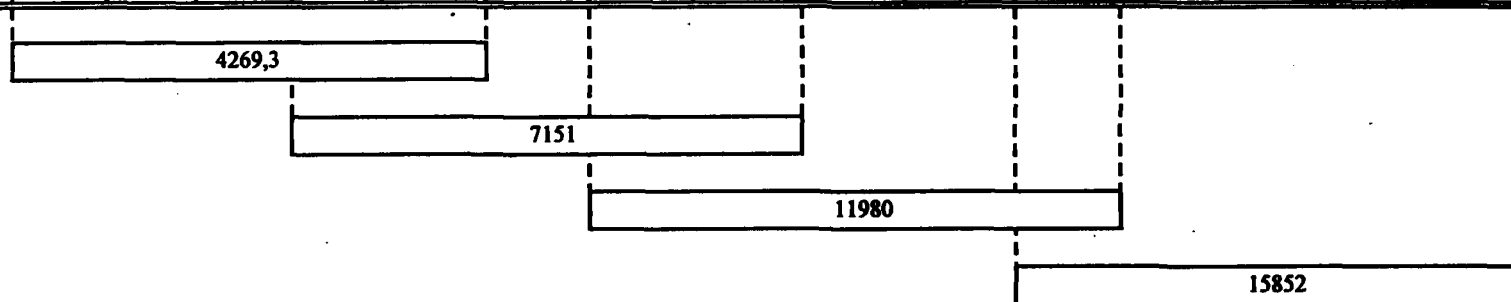
Table 10

Period 1984 - 1998

(million ECU, current prices)

Situation at 13.05.97

YEARS	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997 (2)	1998 (3)	TOTAL
1984-87 FP	593,0	735,0	874,0	701,8	260,8	101,1	4,9									3270,6
1987-91 FP				188,1	810,6	1241,3	1596,9	1270,7	230,9	14,8	3,9	0,2				5357,4
1990-94 FP								296,0	2160,5	1929,5	1264,7	1,0				5651,7
Supp. finance 90-94 FP										150,0	750,0					900,0
1994-98 FP (*)											0,0	3017,5	3201,5	3400,0	3476,0	13095,0
RTD PROGRAMMES	593,0	735,0	874,0	889,9	1071,4	1342,4	1601,8	1566,7	2391,4	2094,3	2018,6	3018,7	3201,5	3400,0	3476,0	28274,7
APAS				49,4	56,6	69,8	113,1	168,8	308,4	440,2	571,8	2,1				1780,2
RTD+APAS	593,0	735,0	874,0	939,3	1128,0	1412,2	1714,9	1735,5	2699,8	2534,5	2590,4	3020,8	3201,5	3400,0	3476,0	30054,9
SPRINT							16,0	16,0	17,0							49,0
ECSC							17,5	17,5	17,5	17,5	17,5					87,5
80% of THERMIE							36,0	118,4	128,9	139,2	145,6					568,1
Total for all research (1)	593,0	735,0	874,0	939,3	1128,0	1412,2	1784,4	1887,4	2863,2	2691,2	2753,5	3020,8	3201,5	3400,0	3476,0	30759,5



EC BUDGET (current prices)	28905	29925	35842	38392	43080	42569	45057	56111	61232	67760	65929	75355	85094	87651	91811
Total research as % of budget	2,1	2,5	2,4	2,4	2,6	3,3	4,0	3,4	4,7	4,0	4,2	4,0	3,8	3,9	3,8

(*) The amounts of the 1994-1998 FP are those adopted following EU enlargement.

(1) RTD + THERMIE + ECSC + SPRINT + APAS.

(2) Budget for 1997.

(3) Estimate for 1998.

Development of Community research commitments Period 1984 - 1998

Table 11

(million ECU - 1992 prices)

Situation at 13.05.97

YEARS	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997 (2)	1998 (3)	TOTAL
1984-87 FP	848,4	991,9	1139,5	886,1	317,7	117,1	5,4									4306,1
1987-91 FP				237,5	987,3	1438,4	1770,4	1339,0	230,9	14,6	3,8	0,2				6022,1
1990-94 FP								311,9	2160,5	1901,0	1224,3	1,0				5598,7
Supp. finance 90-94 FP										147,8	726,0					873,8
1994-98 FP (*)											0,0	2887,6	2958,9	3074,1	3087,0	12007,6
RTD PROGRAMMES	848,4	991,9	1139,5	1123,6	1305,0	1555,5	1775,8	1650,9	2391,4	2063,4	1954,1	2888,8	2958,9	3074,1	3087,0	28808,3
APAS				62,4	68,9	80,9	125,4	177,9	308,4	433,7	553,5	2,0				1813,1
RTD+APAS	848,4	991,9	1139,5	1186,0	1373,9	1636,4	1901,2	1828,8	2699,8	2497,1	2507,6	2890,8	2958,9	3074,1	3087,0	30621,4
SPRINT							17,7	16,9	17,0							51,6
ECSC							19,4	18,4	17,5	17,2	16,9					89,4
80% of THERMIE							39,9	124,8	128,9	137,1	140,9					571,6
Total for all research (1)	848,4	991,9	1139,5	1186,0	1373,9	1636,4	1978,2	1988,9	2863,2	2651,4	2665,4	2890,8	2958,9	3074,1	3087,0	31334,0

5539,7

8163

12147

14676

EC BUDGET (1992 prices)	41352	40385	46730	48475	52473	49327	49952	59126	61232	66759	63823	72110	78645	79250	81537
Total research as % of budget	2,1	2,5	2,4	2,4	2,6	3,3	4,0	3,4	4,7	4,0	4,2	4,0	3,8	3,9	3,8
Deflators (**)	0,699	0,741	0,767	0,792	0,821	0,863	0,902	0,949	1,000	1,015	1,033	1,045	1,082	1,106	1,126
Annual inflation (%)		6,0	3,5	3,3	3,6	5,1	4,5	5,2	3,5	1,5	1,8	1,2	3,5	2,2	1,8

(*) The amounts of the 1994-1998 FP are those adopted following EU enlargement.

(**) The deflators used from 1995 take account of enlargement from 12 to 15 Member States (COM(96)65).

(1) RTD + THERMIE + ECSC + SPRINT + APAS

(2) Budget for 1997.

(3) Estimate for 1998.

Main acronyms and abbreviations used

ACP	African, Caribbean and Pacific countries
ACTS	Advanced Communications Technologies and Services
AIDS	Acquired Immuno-Deficiency Syndrome
APAS	Accompanying, Preparatory And Support measures
ATM	Asynchronous Transfer Mode (communication)
BIOMED	BIOMEDicine and health (specific RTD programme)
BRITE-EURAM	Basic Research in Industrial Technologies for Europe - European Research in Advanced Materials (specific RTD programme under FP3)
BSE	Bovine Spongiform Encephalopathies
CAD	Computer Assisted Design
CAM	Computer Assisted Manufacturing
CAP	Common Agricultural Policy
CCFP	Consultative Committee for the Fusion Programme
CEECs	Central and Eastern European countries
CEN	European Committee for Standardization
CENELEC	European Committee for Electrotechnical Standardization
CERN	European Centre for Nuclear Research
CIS	Commonwealth of Independent States of the former Soviet Union
CNES	Centre National des Etudes Spatiales (France)
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
CRAFT	Cooperative Research Action for Technology
CREST	Scientific and Technical Research Committee (advises the Commission)
DCs	Developing Countries
EAEC	European Atomic Energy Community
EBRD	European Bank for Reconstruction and Development
EC	European Community
ECHO	European Community Humanitarian Office
ECSC	European Coal and Steel Community
EEA	European Economic Area
EFTA	European Free Trade Association
ESTA	European Science and Technology Assembly
EMBL	European Molecular Biology Laboratory

ESA	European Space Agency
ESF	European Science Foundation
ESPRIT	European Strategic Programme for Research and Development in Information Technologies (specific RTD programme)
ETSI	European Telecommunications Standards Institute
EU	European Union
EUREKA	Framework for European technological cooperation
EURATOM	European Atomic Energy Community
EURET	European REsearch for Transport (specific RTD programme under FP2)
FP	Framework Programme
G7	Canada, France, Germany, Italy, Japan, UK, USA, European Commission
GSM	Global System for Mobile communications
HCM	Human Capital and Mobility (specific RTD programme under FP3)
HIV	Human Immuno-deficiency Virus
IEA	International Energy Agency
IMS	Intelligent Manufacturing Systems
IMT	Industrial and Materials Technologies
INCO	Cooperation with third countries and international organizations (2nd activity of FP4)
INCO-DC	"Developing Countries" component of INCO Programme
INTAS	International Association for the Promotion of Cooperation with Scientists from the New Independent States of the former Soviet Union
IPR	Intellectual Property Rights
IPTS	Institute for Prospective Technological Studies (JRC, Seville)
IRDAC	Industrial Research and Development Advisory Committee
ISPU	Information Society Project Office
ISC	International Scientific Cooperation
ISTC	International Science and Technology Centre (Moscow)
IT	Information Technologies
ITER	International Thermonuclear Experimental Reactor
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)
MEDA	Measures accompanying the economic and social reforms in the Mediterranean countries
MERCOSUR	Southern Common Market (South America)
NAFTA	North American Free Trade Agreement
NIS	New Independent States of the former Soviet Union
OECD	Organization for Economic Cooperation and Development
OJ	Official Journal
PHARE	Aid for economic reconstruction of the CEECs
R&D	Research and Development
RTD	Research and Technological Development
SAVE	Special Action Programme for Vigorous Energy Efficiency
SCA	Shared-Cost Actions
SMEs	Small and Medium-sized Enterprises
SPRINT	Strategic PRogramme for INnovation and Technology Transfer
STD/STD-3	Science and Technology for Development/STD under FP3
TACIS	Technical assistance to the New Independent States of the former Soviet Union
TASK FORCE	Research-industry coordination structure in a field of RTD
TELEMAN	TELEMANipulation (remote handling) in dangerous and disturbed nuclear environments
THERMIE	Demonstration programme in the field of non-nuclear energy
TMR	Training and Mobility of Researchers (specific RTD programme)
TSER	Targeted Socio-Economic Research (specific RTD programme)
TSME	Technology Stimulation Measures for SMEs
WMO	World Meteorological Office
WTO	World Trade Organization = ex.: GATT

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