

COUNCIL DECISION

of 15 December 1994

adopting a specific programme for research and technological development, including demonstration, to be carried out for the European Community, on the one hand, by the JRC and, on the other, by means of activities within the framework of a competitive approach and intended for scientific and technical support to Community policies (1995 to 1998)

(94/918/EC)

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 130i (4) thereof,

Having regard to the proposal from the Commission (1),

Having regard to the opinion of the European Parliament (2),

Having regard to the opinion of the Economic and Social Committee (3),

Whereas, by Decision No 1110/94/EC (4), the European Parliament and the Council adopted a fourth framework programme of Community activities in the field of research, technological development and demonstration (RTD) for the period 1994 to 1998, specifying *inter alia* the activities to be carried out by means of direct action, on the one hand, and, on the other hand, by means of activities within the framework of a competitive approach and intended for scientific and technical support to Community policies; whereas this Decision takes account of the grounds set out in the preamble to that Decision;

Whereas Article 130i (3) of the Treaty stipulates that the framework programme shall be implemented through specific programmes developed within each activity under the framework programme and that each specific programme shall define the detailed rules for its implementation, fix its duration and provide for the means deemed necessary.

Whereas the RTD activities carried out by means of direct action are conducted by the Joint Research Centre (JRC); whereas these activities consist of institutional research activities for which the JRC has expertise and special, if not unique, facilities in the Community and institutional, scientific and technical support activities which necessitate the neutrality of the JRC;

Whereas other scientific and technical support activities necessary for the formulation and implementation of Community policies and which do not necessitate the neutrality of the JRC will be implemented by the Commission within the framework of a competitive approach and in the context of a customer/contractor relationship;

Whereas the amount deemed necessary for carrying out the direct action is ECU 600 million and the amount deemed necessary for the scientific and technical support activities within the framework of a competitive approach is ECU 128 million; whereas the appropriations for each financial year shall be laid down by the budgetary authority, subject to the availability of resources within the financial perspectives and the conditions set out in Article 1 (3) of Decision No 1110/94/EC;

Whereas the content of the fourth framework programme for Community RTD activities was established in accordance with the subsidiarity principle; whereas the specific programme specifies the content of the activities to be carried out in accordance with this principle by way of direct actions and of activities within the framework of a competitive approach and intended for scientific and technical support to Community policies;

Whereas Decision No 1110/94/EC lays down that a Community action is justified if, *inter alia*, research contributes to the strengthening of the economic and social cohesion of the Community and to the promotion of its overall harmonious development, while being consistent with the pursuit of scientific and technical quality; whereas this programme is intended to help meet these objectives;

Whereas this programme may make a significant contribution to the stimulation of growth, to the strengthening of competitiveness and to the development of employment in the Community, as indicated in the White Paper on Growth, competitiveness and employment; whereas it is therefore necessary to promote the prenormative research activities considered to be necessary under other Community policies;

Whereas, as part of the direct action, the scientific and technical activities to support Community policies should

(1) OJ No C 228, 17. 8. 1994, p. 219 and OJ No C 262, 20. 9. 1994, p. 30.

(2) OJ No C 205, 25. 7. 1994, p. 316.

(3) Opinion delivered on 14 September 1994 (not yet published in the Official Journal).

(4) OJ No L 126, 18. 5. 1994, p.1.

remain consistent with the requirements of these policies for the duration of the implementation of this programme;

Whereas the JRC may also take part in the indirect action carried out under the other specific programmes in the same way as third parties situated in a Member State or an associated State;

Whereas the Commission must ensure that research activities carried out as part of the direct and the indirect actions respectively are complementary;

Whereas the JRC may also take part, on a competitive basis, in any other activity implemented by the Community and carry out research on behalf of third parties;

Whereas exploratory research should be encouraged;

Whereas the JRC may contribute to the implementation of Community activities, in particular in the fields of information technologies, industrial and materials technologies, standards, measurement and testing, agriculture and fisheries, environment and climate, non-nuclear energy, targeted socio-economic research, the dissemination and utilization of the results of the research activities, and technology transfer;

Whereas the JRC, with its laboratories and installation, can make an effective contribution to the training and mobility of researchers, and whereas, to this end, cooperation should be encouraged in all the Member States between laboratories and public and private scientific institutes;

Whereas the JRC may contribute to other European research activities, including Eureka; whereas the JRC should be better integrated into networks or consortia with partners in all the Member States, in both its institutional and its competitive activities; whereas it should, in particular, be a driving force in improving links between research laboratories and institutes in all regions of the Community;

Whereas account should be taken of the fact that the EFTA Member States which are parties to the EEA Agreement may participate fully in this specific programme;

Whereas it may be appropriate to engage in international cooperation activities with international organizations and third countries for the purpose of implementing this programme;

Whereas an analysis should be made of possible socio-economic consequences and technological risks associated with the programme;

Whereas progress with this programme should be continuously and systematically monitored with a view to adapting it, where appropriate, to scientific and technological developments in this area; whereas in due course there should be an independent evaluation of progress with the programme so as to provide all the background information needed in order to determine the objectives of the fifth RTD framework programme; whereas at the end of this programme there should be a final evaluation of the results obtained with the objectives set out in this Decision; and whereas the conclusions of these evaluations should be submitted to the European Parliament, the Council and the Economic and Social Committee;

Whereas the Board of Governors of the JRC plays an important role in the operation of the Centre and in the implementation of its activities;

Whereas the objective of the competitive support activities is to meet requirements which arise during the implementation of Community policies; whereas, therefore, to ensure maximum flexibility, the Commission must be able to take the action needed to adapt these activities;

Whereas the Commission will determine the responsibilities, in particular as regards the grant of the financial resources provided for in these activities, according to the field of activity concerned; whereas the resources will be granted on a competitive basis;

Whereas the Scientific and Technical Research Committee (Crest) has been consulted,

HAS ADOPTED THIS DECISION:

Article 1

A specific programme of research and technological development activities to be carried out:

- on the one hand by the JRC, mainly through direct action, and
- on the other, by means of activities suited to a competitive approach and intended for scientific and technical support to Community policies

is hereby adopted for the period from 1 January 1995 to 31 December 1998.

Section I:

Direct action (JRC)

Article 2

1. The direct action consists of institutional research activities and institutional scientific and technical support activities.

2. The institutional research activities, as described in Annex IA, are those for which the JRC has expertise and special, if not unique, facilities in the Community which contribute to the implementation of the RTD policy of the Community. They shall be carried out in such a way as to ensure their complementarity with the corresponding indirect action contained in the other specific programmes of the fourth framework programme.

3. The institutional scientific and technical support activities, as described in Annex IB, are the activities necessary for the formulation and implementation of Community policies and the tasks assigned to the Commission under the Treaty which necessitate the neutrality of the JRC.

Article 3

1. The JRC shall participate in the implementation of Community action on research, technological development and demonstration in the fields of information technologies, industrial and materials technologies; standards, measurement and testing; environment and climate; agriculture and fisheries, non-nuclear energy; and targeted socio-economic research and through its exploratory research activities.

2. It shall also participate in the implementation of Community action on the dissemination and optimization of the results of Community research, technological development and demonstration activities.

Article 4

1. The operational budget of the JRC under this programme is ECU 600 million.

2. An initiative breakdown of this amount is given in Annex II.

3. The budgetary authority shall lay down the appropriations for each financial year, subject to the availability of resources within the financial perspectives and in accordance with the conditions set out in Article 1 (3) of Decision No 1110/94/EC, taking into account the principles of sound management referred to in Article 2 of the Financial Regulation applicable to the general budget of the European Communities.

If additional funding is approved in accordance with Article 1 (3) of the decision on the framework programme, the JRC will receive a share proportional to its share of the present overall amount for the fourth framework programme, provided that, after evaluation, the European Parliament and the Council consider that the JRC is making satisfactory progress towards increased openness to competition.

Article 5

1. The general rules for the Community's financial contribution are laid down in Annex IV to Decision No 1110/94/EC.

2. Annex III sets out the specific rules for implementing this programme, supplementary to those referred to in paragraph 1.

Article 6

The Commission shall be responsible for the implementation of the direct action and, to this end, shall call upon the services of the JRC. The Commission shall be assisted by the Board of Governors of the JRC (hereinafter referred to as the Board of Governors) in this task.

Article 7

1. In order to help ensure, *inter alia*, the cost effective implementation of the activities, the Commission, assisted by the Board of Governors, shall continually and systematically monitor progress on the implementation of the direct action in relation to the objectives set out in Annex I. It shall assess in particular whether the objectives, priorities and financial resources are still appropriate to the changing situation. It shall, if necessary in the light of results of the monitoring process, submit proposals to Council to adapt or supplement the institutional research activities. With regard to the institutional scientific and technical support activities, the Commission will, if necessary, make adaptations to ensure that they are consistent with the requirements of the relevant Community policies.

2. The Commission shall each year before 15 April submit to the European Parliament, the Council and the Economic and Social Committee a report on the implementation of the activities of the JRC. This report shall be accompanied by the comments of the Board of Governors as contained in its annual report. The latter may also submit, through the Commission, to the European Parliament, the Council and the Economic and Social Committee a separate report on any aspect of the implementation of the JRC's activities.

3. In order to contribute towards the evaluation of Community activities, as required by Article 4 (2) of Decision No 1110/94/EC and in compliance with the timetable laid down in that paragraph, the Commission, after consulting the Board of Governors, shall have an external assessment conducted by independent experts of the activities carried out by the JRC within the areas covered by this programme and their management during the five years preceding this assessment. The results of this assessment shall be submitted to the Council, the European Parliament and the Economic and Social Committee.

4. At the end of this programme, the Commission, after consulting the Board of Governors, shall have an

independent final evaluation carried out of the results achieved compared with the objectives set out in Annex III to the fourth framework programme and Annex I to this Decision. The final evaluation report shall be forwarded to the European Parliament, the Council and the Economic and Social Committee.

Article 8

In order to ensure effective coordination between the JRC's institutional research activities and the other activities provided for in the fourth framework programme, systematic exchanges of views will be held between the JRC, including the Board of Governors, and the committees for the specific programmes with due regard to their respective responsibilities.

Article 9

The Commission, assisted by the Board of Governors, may, on the basis of the criterion of mutual benefit, request the JRC to execute projects with legal entities established in third countries where this contributes effectively to the implementation of the JRC's institutional activities. Participation of legal entities from third countries shall not benefit from Community financing under this programme.

Section II:

Activities within the framework of a competitive approach and intended for scientific and technical support to Community policies

Article 10

The scientific and technical support activities necessary for the formulation and implementation of Community policies and which do not necessitate the neutrality of the JRC will be implemented by the Commission within the framework of a competitive approach and in the context of a customer/contractor relationship. These activities are described in Annex IV.

Article 11

1. The amount deemed necessary for the implementation of the activities covered by this section is ECU 128 million.
2. An indicative breakdown of this amount is given at Annex V.

3. The budgetary authority shall lay down the appropriations for each financial year, subject to the availability of resources within the financial perspectives and in accordance with the conditions set out in Article 1 (3) of Decision No 1110/94/EC, taking into account the principles of sound management referred to in Article 2 of the Financial Regulation applicable to the general budget of the European Communities.

Article 12

1. The general rules for the Community's financial contribution are laid down in Annex IV to Decision No 1110/94/EC.
2. The rules for the participation of undertakings, research centres and universities, and for the dissemination of results are specified in the measures envisaged in Article 130j of the Treaty.
3. Annex VI sets out the specific rules for implementing this programme, supplementary to those referred to in paragraphs 1 and 2.

Article 13

1. The Commission shall continuously and systematically monitor progress with this section of the programme in relation to the requirements of Community policies. It shall in particular assess whether the objectives, priorities and financial resources are still appropriate. It shall, where appropriate, take action to adapt these activities depending on the results of this monitoring process.
2. At the beginning of each year the Commission shall submit a report to the European Parliament and the Council with information on the activities carried out during the previous year, and the work programme for the current year.

Article 14

This Decision is addressed to the Member States.

Done at Brussels, 15 December 1994.

For the Council
The President
A. MERKEL

ANNEX I

SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES AND CONTENT

This specific programme fully reflects the orientations of the fourth framework programme, in applying the selection criteria and in specifying its scientific and technological objectives.

Sections 1C, 2B, 3A, 3B, 4C, 5 and 7A of Annex III (first activity of the framework programme are the basis of the objectives of this programme.

The Joint Research Centre (JRC) will conduct strategic and applied research. It will therefore be an integral part of European science and technology. The JRC will also contribute to the establishment of the scientific and technical basis needed for the formulation and implementation of various Community policies.

In line with the priorities defined in the White Paper 'Growth, competitiveness and employment' in the research field, the scientific and technical activities carried out by the JRC should meet the needs of the Community as a whole, its institutions and Member States with the objectives of:

- helping to strengthen the scientific and technological basis of European industry and to encourage the development of its international competitiveness,
- providing the independent scientific expertise necessary for the implementation of Community policies and the tasks which the Treaty assigns to the Commission,
- providing scientific and technical services to Community institutions and making JRC capabilities and scientific and technical installations available to public and private bodies,
- contributing to the improvement of public safety aspects of new and applied technologies,
- contributing to the improvement of environmental impact assessment and protection,
- contributing to the reduction of scientific and technological disparities between Member States.

The European dimension of its research must remain one of the fundamental strengths of the JRC. Its activity should be characterized by a multidisciplinary approach based on the broad span of its capabilities. This multidisciplinary is reflected in the choice of subjects covered by its institutes, thus ensuring its ability to meet new challenges as they arise.

Thanks to its capabilities and its involvement in the formulation and implementation of Community policies, the JRC will contribute to the integration of national, Community and European activities. It shall endeavour in particular to improve links between the research laboratories and institutes in all parts of the Community, and may be the focal point of such networks in its areas of expertise. It will furthermore participate in relevant Eureka projects.

This large exposure should not, however, lead to an excessive dispersion of the activities undertaken. Without ignoring the expectations of its customers the Centre and its management must have clear views on the proper scientific and technical policy for the JRC and be able to maintain a balance in order to ensure that the activities and contracts which are accepted can be executed at all times with the requisite level of competence, both qualitatively and quantitatively.

Against this background, it should also be pointed out that some activities are horizontal: those concerning environmental protection may appear in fields other than that headed 'Environment'. The same applies, for example, to activities concerning the working environment.

The work to be carried out by the JRC falls into two categories:

- institutional research activities,
- institutional scientific and technical activities in support of Community policies.

A. INSTITUTIONAL RESEARCH ACTIVITIES

These research, technological development and demonstration activities for which the JRC has special, if not unique, expertise and installations in the Community will contribute to the Community research policy.

Industrial technologies

The contribution of the JRC to this sector is aimed at improving the competitiveness of European industry, conducted in close coordination with the corresponding shared-cost action programmes. It will focus on prenormative research which, save exceptions, will be undertaken within the framework of networks of European bodies with interests and capabilities in this type of research and in association with standards organizations, in particular the European Committee for Standardization (CEN). This will guarantee that the overall requirements of industry are taken into account from the start.

Line 4: Industrial technologies and materials technologies

Research into materials will be directed mainly at the following sectors, which have a prenormative dimension and good potential as enabling technologies, with an emphasis on clean technologies:

- ceramics, metals and composite materials: process development, study of interfaces and joints, improvement of technological properties, characterization and demonstration,
- surface modification and characterization technology: ion implantation and laser beam, protective coating, non-destructive evaluation methods,
- prenormative research leading to standards on material recyclability, including the development of a database on recyclable materials (ecological characteristics and estimation of useful life).

This research is aimed at acquiring, in close cooperation with the national laboratories concerned, the scientific knowledge necessary for these materials to be used industrially, and to provide the standards bodies with knowledge which is essential for standardization in this field.

Furthermore, the development of non-destructive evaluation techniques to study the reliability and useful life of mechanical constructions will continue with a view to the development of component inspection techniques and the harmonization of qualification procedures. This research will continue to be conducted in the framework of the laboratory networks which have existed for a number of years, which will be gradually enlarged in line with needs.

Line 5: Measurements and testing

These activities are directly related to standardization and include:

- (a) Prenormative research on reference materials and prenormative and normative research on reference measurements, in particular in the following sectors:
 - preparation, characterization and certification of high-quality reference materials. International intercomparison exercises will be used to ensure adequate quality assurance and to facilitate harmonization,
 - establishment of a common scientific basis for the chemical reference measurements,
 - measurements and evaluation of basic data, improvement of their quality and accuracy using the experimental installations available and by making use of European and international collaboration, in particular through networks.

The distribution of reference materials produced within a Community framework is assured by the Institute for Reference Materials and Measurements (IRMM). The results achieved by IRMM in establishing extremely accurate measurements have won it recognition as a reference centre. Intercalibration campaigns conducted by the IRMM among the network of all interested laboratories in the Community will provide each laboratory with an impartial and reliable evaluation of the quality of its own measurements. This activity will be extended on request to any third country laboratory, on payment of a fair fee.

- (b) Prenormative research in the field of structural safety and reliability to improve the design specifications of civil engineering works for the development of standards (Eurocodes), in particular, by taking into account earthquakes, and the construction technologies of European industry. This research will continue to be conducted with the organizations in the Member States which have been grouped together since 1989 in the European Association of Structural Mechanics Laboratories.

In order to carry out destructive dynamic tests on civil engineering works and industrial structures made of steel, concrete, brickwork and composite materials, the JRC has constructed the ELSA ('European Laboratory for Structural Assessment') test wall and the LDTF ('Large Dynamic Test Facility', which are unique in Europe.

Environment

Line 6: Environment and climate

In order to optimize the complementary role of JRC direct action with respect to specific programme Environment and Climate, close cooperation will be ensured between JRC programme managers, other DG XII programme managers, in the preparation and updating of the Work programme and in the management of projects. The objectives for these research areas are listed below alongside the relevant section headings set out in the shared-cost action specific programme 1994 to 1998.

Thema A. Natural environment; environmental quality and global change

The European Community should make a major contribution to international research into global change, in particular by participating in major activities undertaken by the scientific community, such as the International Geosphere Biosphere programme (IGBP) — the activities of the European IGAC (International Global Atmosphere Chemistry) Project Office (EIPO) will be continued at Ispra for IGBP — the World Climate Research programme (WCRP) and the Human Dimension programme (HDP).

The JRC will also contribute to the Enrich network by making its scientific research on global change available.

This network should also contribute to the development of the research capacities of the developing countries, mainly — but not solely — in Africa and the Mediterranean area; it should also provide support for the central and eastern European countries. Enrich should be implemented by means of the JRC's own contributions, of shared-cost projects and using other Community mechanisms.

Thema A, Area I. Climate change and impact on natural resources

The JRC activities on the application of remote sensing techniques listed under theme C below are also relevant to this area, in particular, the impact on agriculture, forests natural environment, land resources and desertification in Europe.

Thema A, Area II: Atmospheric physics and chemistry, interaction with the biosphere and mechanism of environmental change impacts

Research area: Atmospheric processes

The objective is to contribute to the assessment of climate perturbations in the troposphere and lower stratosphere due to atmospheric chemistry of anthropogenic and natural emissions in Europe. The JRC's activities on the application of remote sensing techniques listed under theme C would also contribute to this objective.

The work is in the frame of international collaborative programmes, such as IGBP (International Geosphere Biosphere programme) and GAW (Global Atmosphere Watch). Important topics in the field of stratospheric chemistry and ozone depletion are the total ozone column and UV radiation and their evolution. Special attention is also given to tropospheric ozone and the oxidative efficiency of the atmosphere (BEMA — Biogenic Emissions in the Mediterranean Area, and Ozone projects) and to the role of aerosol precursors and aerosol/cloud interactions (Sulphur and Climate project). The JRC has a twofold role, i. e. execution of a part of the research work and improving the coherence between the contributions of the national laboratories to the projects.

Thema B, Area III: Technologies and methods for assessing risks to the environment and for its protection and rehabilitation

Research area: Environmental quality

Research on selected aspects of the total chemical pollution — taking into consideration the subsidiarity principle — based on European collaboration and in support to prenormative research for the single European Market. Lines of research:

- (a) chemical pollution in soil and water; contaminant transport acid accumulation, biological processes and related monitoring;
- (b) total human exposure to chemicals; environmental compartments, exposure routes and health effects for trace metals and selected classes of organics;
- (c) processing and management of data e. g. adaptation of geographic information systems.

Research area: Industrial reliability

The aim is to elaborate together with industry, public authorities and national laboratories a sound scientific basis for improving safety and environmental impact of technology, e.g. development of multicriteria methods for the definition of aggregate indicators of the state of the environment; development of new methodologies for assessing the safety and reliability of industrial systems; to provide novel design methodologies and experimentally verified calculation tools for safe operation of chemical reactors.

Thema B, Area IV: Technologies to forecast, prevent and reduce natural risks

JRS activities on the application of remote sensing techniques reported under theme C are relevant to this area too.

Thema C, Area I: Methodological research and pilot project

Research area: Remote sensing for the terrestrial and marine biosphere

The objective of this work is to document and understand the functioning of the terrestrial and marine biosphere at a global scale. The associated actions will hinge on the development and combined application of remote sensing techniques and models, and will directly support the efforts of the scientific community in the exploration of the ecosystem from space.

Particular emphasis will be given to the monitoring and understanding of the biosphere and its interactions with the other components of the global climate system, in particular the atmosphere. The extent of the tasks (data management and model exploitation) will require a coherent joint European approach. In those fields the JRC acts as the counterpart of the European Space Agency from the user side of the scientific community.

The existing facilities of the JRC may also be used for participating in the collection and evaluation of seismic data.

Research area: Advanced earth observation techniques

The overall objective of the work is to evaluate and develop possible applications of remote sensing techniques taking into account the European Microwave Signature Laboratory and the common project with the European Space agency called Earsec. This effort will be directed to the preparation of the scientific community for the utilization of data from earth observation sensors, the development of methods to interpret satellite derived data and the evaluation of advanced techniques of earth observation.

In particular advanced earth observation techniques will be developed to monitor global change. This will include research into the development of techniques for using data derived from spaceborne sensors for the surveillance of the marine environment and of changes in the terrestrial ecosystem. In so doing the work follows the requirements of subsidiarity in that, in general, projects are undertaken that are of overall European interest, and that require a coherent European approach.

Theme C: Area II: Research and development work for potential future operational activities

Research area: Remote sensing monitoring

Research will be carried out into the development of remote sensing based methods that could in the future lead to applications projects for the benefit of Community policies, such as External Affairs Development and Environment. The work undertaken within this framework involves input from institutes and organizations in the Member States. However, much of this work requires an impartial analysis that can only be provided by a laboratory at the European level:

- (a) Tropical Forest Information System: to provide, at regular intervals, relevant information on the state of the tropical forests.
- (b) Ecosystem Monitoring in the African Savanna: evaluation of plant primary productivity in the Sudanese zone of the sub-Saharan Africa.
- (c) Biomass Burning Monitoring and Impact Assessment: impact of land fires upon the ecosystem for regional resource management. Use of satellite data to map and monitor fires on continental to sub-continental scales.
- (d) European Environmental Monitoring: emphasis on land degradation and soil erosion in Mediterranean environments; forest and natural grassland ecosystem mapping in central and northern Europe; Corine land cover updating; Geographical Information System on soil information.
- (e) Remote Sensing Data and Marine Information System: research on understanding the marine environment and the impact of environmental changes on available fish stock.
- (f) Ocean colour: development of a new programme, the Ocean Colour Techniques for Observation Processing and Utilization System (Octopus) to assure the full processing and utilization of data from the new ocean colour sensor, the Sea Viewing Wide Field of View Sensor (SeaWiFS).
- (g) Atmospheric monitoring: monitoring of atmospheric (tropospheric and stratospheric) changes and of biosphere/atmosphere interaction, in connection to research carried out under theme A, Area II.
- (h) Development of methods aimed at improving the detection of dangerous objects for the protection of the population, using the European Microwave Signature laboratory, following its validation for this purpose.

Theme C, Area III: Centre for Earth Observation

Research area: Centre for Earth Observation (CEO)

The JRC is participating with other services of the Commission, the European Environment Agency, the European Space Agency (ESA) and within national organizations in the creation of the European Earth Observation System (EEOS), an end to end service which will provide users with continuous and long-term availability and use of consistent data relating to earth observation. As a contribution to the EEOS the JRC is developing the CEO — Centre for Earth Observation — a decentralized European data management and information system which will assure value added data services. It will address scientific users, policy makers and commercial operators.

Line 11: Non-nuclear energy

Special efforts will be made in the area of renewable energy sources; prenormative research will be intensified in the areas of photovoltaic energy, solar energy, energy conservation, the development of materials for clean technologies, and analysis of systems and standardization procedures from the energy point of view. Cross-border research of this kind should facilitate the dissemination of these technologies, which are approaching some degree of maturity. The JRC will contribute to the development of technologies for cleaner and more efficient use of energy, with the emphasis on environmental aspects, in the following sectors and in close cooperation with the corresponding shared-cost action programme:

- photovoltaic energy: the activities will include component tests and studies on the design and control of large-capacity systems. The research will be based on the use of the ESTI ('European Solar Testing Installation') of the JRC and on networks with partners in the Member States. Basic scientific research into energy savings will be continued,
- materials for clean technologies: research will cover the development of materials for clean technologies such as long-lived catalyst supports for emission control, nanoporous ceramic membranes for advanced ceramic filters, ceramic alloys and composite materials for high-temperature applications (turbines and heat exchangers).

Line 13: Targeted socio-economic research

The European science and Technology Observatory (ESTO) of the JRC's Institute for Prospective Technologies will provide the European Parliament, the Commission and any other interested public or private bodies with an information service on progress in science and technology, and ensure surveillance of scientific developments and technological innovation. This service may contribute to an analysis of the situation in the Community and the rest of Europe in a global context, as well as to an analysis of the technological strategies of economic operators (industry, public authorities, etc.) and their social impact.

An independent comparative study of the Community's expectations with regard to new scientific, technological and technical developments will contribute to decision-making, whether by the Commission, the public authorities or businesses.

In order to improve communications and to avoid duplication of effort, the Observatory will work in close cooperation with Eurostat and establish close links with European organizations and the OECD, but also with ESA, CERN, Eureka etc. Its activities will be conducted in close cooperation with those foreseen under the targeted socio-economic research specific programme.

It should act within ETAN (European Technology Assessment Network), to be established under the abovementioned specific programme, as part of a network consisting of various similar observatories in the Member States, in cooperation with university and industrial experts responsible for evaluating the relevance, development and impact of scientific technological breakthroughs.

In a Community perspective, it will contribute by gathering information for the regular evaluation of the state of RTD in Europe and comparing it with the situation in other developed countries.

The aim of the technological watch system will be to detect new scientific breakthroughs and technological innovation at an early stage and to alert those responsible in the Community to the implications and consequences, notably for technological research and for the industrial world.

B. INSTITUTIONAL SCIENTIFIC AND TECHNICAL SUPPORT ACTIVITIES

These activities are necessary for the formulation and implementation of Community policies and the tasks assigned to the Commission under the Treaty.

The following description, which is based on current Community policy requirements, is given for guidance only and may be modified in accordance with the relevant provisions of Article 7 (1).

Information and communications technologies

Line 3: Information technologies

The JRC will make its contribution to this field, notably in contributing to the improvement safety and systems reliability. This will include safety-critical computer systems, computer systems, robots and safety-relevant computer systems. The main prenormative areas will cover, in particular, the drawing-up of design guidelines to ensure that safety and reliability are taken into account. Tools for the analysis and validation of the safety and reliability of systems will be developed.

Furthermore, the JRC will make a contribution in the area of high-performance computing and its applications, in association with a network of national centres, in defining methods for comparing such systems.

The Centre could also be called on to become a conformity testing site for specialized software and make other contributions in the information technology area, such as the development of testing methodologies, and contribute to the organization of workshops and training activities.

Environment

Line 6: Environment and climate

In order to optimize the role of the JRC in support of the regulatory work of the Commission (fifth Community programme of Policy and Action on the Environment) close cooperation will be ensured between JRC programme managers and managers of the relevant Directorates-General. For clarity, the objectives for these support activities are listed below alongside the same relevant headings set out in institutional research (section A).

Theme B, area II: Instruments, techniques and methods for monitoring the environment***Research area: European reference laboratory for air pollution (Erlap)***

Scientific and technical support to the regulatory action of the Commission for:

- the preparation and implementation of EC Directives on ambient air quality, with special regard to the urban environment and industrial emissions. The neutral and central coordinating role of the JRC will be further enhanced by the Commission's decision to create the European Reference Laboratory of Air Pollution (Erlap) Commission communication to the Council and to the European Parliament: in preparation). The establishment of harmonization procedures designed to ensure absolute coherence of information coming from the different Member States will be a priority. Such procedures should make for much more effective application of the framework directive on air quality and enhance awareness of the impact of regulations on air quality in the areas of transport, energy, industry and urban development. Initially, particular attention will be paid to the last two sectors,
- the implementation of EC Directives on environmental radioactivity, particularly on those related to information exchange with Member States, both under normal conditions and following an accident.

Research area: Support to European Environment Agency (EEA)

The major role of the European Environment Agency (EEA), as indicated in the Council Regulation which created the EEA (Regulation (EEC) No 1210/90 of 7 May 1990) ⁽¹⁾, is to establish and coordinate, in cooperation with the Member States, the European Environment Information and Observation Network.

The Network will comprise of the main components of the national information networks, the National Focal Points and the Topic Centres.

The Agency will collect process and analyse the information available from the National Focal Points and the Topic Centres. It will be then of paramount importance that the Agency be provided with calibrated data, in comparable and consistent formats in order to be able to furnish the Member States, the Commission and other users with data and information on the environment.

The Council Regulation foresees in Article 15 and Annex A an important role of cooperation for the JRC which had to provide scientific and technical support to the Agency with the following priority tasks:

- harmonization of environmental measurement methods,
- intercalibration of instruments,
- standardization of data formats,
- development of new environmental measurement methods and instruments,
- other tasks as agreed between the Executive Director of the Agency and the Director-General of the JRC.

The JRC work is initiated on request of the Agency and will be conducted in close cooperation with the relevant Topic Centres.

Theme B, Area III: Technologies and methods for assessing risks to the environment and for its protection and rehabilitation***Research Area: Europe Centre for the Validation of Alternative Methods (ECVAM)***

Ecvam is intended to scientifically and technically support the regulatory work of the Community. In particular to coordinate efforts designed to promote the orderly scientific and regulatory acceptance of alternative methods (alternative to vivisection) which are of importance to the biosciences and which can reduce, refine or replace the use of laboratory animal procedures. To this end, discussions between government, companies, scientists, consumers and animal protection associations are being conducted. The

⁽¹⁾ OJ No L 120, 11. 5. 1990, p. 1.

reinforcement of this dialogue is essential if the Community is to achieve the objective laid down in the Community programme of Policy and Action in relation to the Environment and Sustainable Development ⁽¹⁾, concerning a reduction in the number of vertebrates used in laboratory experiments.

Ecvam was formally created in 1991 by a Commission decision and communication to the Council and European Parliament (SEC(91) 1794).

Research area: Industrial reliability

To support the implementation of environmental directives on Major Hazards, Biotechnology Hazards, Environmental Impact Assessment and Safety at Work.

To analyse the safe handling of dangerous products during the complete product-life cycle, in particular in transit and storage.

Research area: European Chemicals Bureau (ECB)

Technical focal point for research based work for the implementation of Community regulations and directives in the field of chemicals control. The JRC has been formally entrusted with a central role by the creation of the European Chemicals Bureau (Commission communication to the Council and to the European Parliament, OJ No C1, 5. 11. 1993, p. 3).

Research area: Foodstuff and European Community Pharmaceutical Information Network (Ecphin)

- Technical and scientific support to Directorate-General Internal Market and Industrial Affairs (DG III) concerning the harmonization of analytical methods applied to foods and consumer goods.
- Integrated information and communication services to support DG III and the European Agency for the Evaluation of Medicinal Products (EAMP) (Council Regulation EC No 2309/93), in monitoring market transparency (scientific information and prices) for medicinal products and in the electronic interchange of documents/data with national authorities.

Research area: Quality control of consumer products

To provide an impartial service by making available scientific and technical means to the Consumer Policy Service (CPS) for the control of trace contaminations in industrial products offered for public use.

To assist the CPS in the definition and verification of products safety and provide methods for quality control.

Life sciences and technologies

Line 10: Agriculture and fisheries (including agro-industry, food technologies, forestry, fish farming and rural development):

- Research and development on new technologies using remote sensing to improve the methods of monitoring the Common Agricultural Policy (CAP) will include:

- (a) the second phase (1995 to 1998) to the pilot project for the application of remote sensing to agricultural statistics (MARS-STAT):

The first phase (1989 to 1993) of MARS-STAT, which was the subject of the Council Decision of 23 September 1988, is now completed. As planned, certain specific activities now no longer come under the RTD phase but may be operationally used by the Member States or the Commission. Nevertheless, other actions are still in development and require continued work before becoming operational.

The second phase aims, in particular, to continue the work with regard to vegetation evolution and forecast models with the aim of obtaining an integrated agricultural information system at Community level. Studies on the applications of methods or new sensors should also be followed up.

⁽¹⁾ OJ No C 138, 17. 5. 1993, p. 1.

Finally, it could prove useful to extend these applications to the needs of other countries, notably the central and eastern European countries,

(b) techniques for surveillance and control of the implementation of the CAP (MARS-CAP):

For some time, remote sensing techniques have been applied for the production of citrus fruits, vineyard and olive tree registers and the inspection of the use of CAP subsidies at regional and local level. The new CAP rules, which have been extended to all the main crops, need scientific and technical support using remote sensing for the development of an integrated system for the management and control of declared agricultural land and the registers of the various crops:

- The European Office for Wine, Alcohol and Spirit Drinks, as described in the Commission communication to the Council and the European Parliament (COM(93) 60 final of 16 September 1993), provides the Commission with scientific and technical support to enable it to verify the proper application of Community provisions. Focusing mainly on control of the alteration and the origin of wines, and intended for use in the choice of arbitration procedures between two Member States, this activity makes use of nuclear magnetic resonance and mass spectrometry and also calls for the development of new analytical techniques.
- The elaboration of methodologies for reference measurements and the preparation of reference materials necessary for the quality control of food products are another impartial contribution of the JRC to the European agricultural policy.

Line 13: Targeted socio-economic research

The aim of this activity is to gather, for the formulation and implementation of Community policies by the Community, basic information and analyses on scientific and technological developments and innovations, and their prospects and consequences, in particular their impact on industrial competitiveness. Through its impartiality, the JRC is in a position to provide independent opinions, in particular by taking account of the results of studies carried out by European and non-European public or private bodies in the fields in which it has acquired competencies, such as energy, transport and the environment.

ANNEX II

INDICATIVE BREAKDOWN OF THE AMOUNT DEEMED NECESSARY FOR SECTION I OF THIS
PROGRAMME (JRC DIRECT ACTION)

	(ECU million)
FIRST ACTIVITY	
Information and communications technologies	
— Information technologies	11
Industrial technologies	
— Industrial and materials technologies	90
— Measurements and testing	105
Environment	
— Environment and climate	294
Life sciences and technologies	
— Agriculture and fisheries	47
Energy	
— Non-nuclear energy	20
Targeted socio-economic research	33
Total	600 (1) (2)

(1) Of which:

- an amount of ECU 199 million is estimated necessary for institutional support activities,
- approximately 6 % may be allocated to exploratory research.

(2) This total includes the JRC's budget contribution necessary for its participation in shared-cost actions.

ANNEX III

SPECIFIC RULES FOR IMPLEMENTING THE DIRECT ACTION

1. The Commission, assisted by the Board of Governors of the JRC, shall implement the direct action on the basis of the scientific objectives and contents described in Annex I. The activities relating to this action shall be performed in the relevant institutes of the Joint Research Centre (JRC).
2. In the implementation of institutional activities, the JRC will, whenever appropriate and feasible, participate in or organize networks of public and private laboratories in the Member States or European research consortia. Particular attention shall be paid to cooperation with industry, especially with small and medium-sized enterprises. Research bodies established in third countries may also cooperate on projects, in accordance with the relevant provisions of Article 9 and, where applicable, of agreements for S&T cooperation between the Community and the third countries concerned. Particular attention will be paid to cooperation with research laboratories and institutes in the countries of central and eastern Europe and the former Soviet Union.

The knowledge gained through implementation of the projects will be disseminated by the JRC itself and under activities carried out within the third activity of the framework programme.

3. The accompanying measures shall include:
 - the organization of visits to JRC institutes of grant holders, visiting scientists and seconded experts,
 - organization of the secondment of JRC staff to national laboratories, industrial laboratories and universities,
 - systematic exchange of information, through *inter alia* the organization of scientific seminars, workshops and colloquiums and scientific publications,
 - specialized training with the emphasis on multidisciplinary,
 - the independent scientific and strategic evaluation of the performance of the projects and programmes.
-

ANNEX IV

SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES AND CONTENTS OF THE COMPETITIVE SUPPORT ACTIVITIES

This section of the specific programme fully reflects the orientations of the fourth framework programme in applying the selection criteria and in specifying its scientific and technological objectives.

The scientific and technical support activities which come within the framework of a competitive approach are described below on the basis of Annex III (first activity and paragraph D of the third activity) of the fourth framework programme.

The following description is given for guidance only on the basis of the current requirements of Community policies. It refers in particular to paragraphs 1C, 2D, 3A, 3B, 4C and 5 of the first activity.

In order to ensure that the activities are fully in line with the actual requirements of Community policies throughout the fourth framework programme, these objectives may be modified in accordance with the provisions of Article 13 (1) of this Decision.

The scientific and technological objectives may cover the following:

FIRST ACTIVITY**Information and communications technologies***Line 3: Information technology*

This support is intended to enable the Commission to pursue the Community information technology policy, notably in fields such as software technology, components and systems, or multimedia technology, as well as in other priority fields such as, for example, high-performance computing systems, microprocessing systems and the integration of such technologies into a professional environment.

Industrial technologies*Line 5: Measurements and testing*

The activities in this sector may be aimed at the development of non-destructive test methods for mechanical structures and the software needed for the development of Community standards in the field of structural mechanics, in particular for structure used in construction or, more broadly, civil engineering.

Environment*Line 6: Environment and climate*

The aim of these activities is to support the Commission's regulatory activities in the general framework of environmental policy, including the development of analytical methods and the implementation, through a network of analytical laboratories, of test series on atmospheric pollution, water quality, waste and land-based pollution.

One particular activity will be the use of aerospace remote sensing methods for the surveillance of tropical forest, desertification and marine productivity.

Some subjects concerning the regulation of industrial hazards and some measures relating to industrial safety, including biotechnology, may be the subject of a support activity.

Life sciences and technologies*Line 8: Agriculture and fisheries (including agro-industry, food technologies, forestry, fish farming and rural development)*

Support activities in this field may include contributions to:

- the application of remote sensing techniques to agriculture by the gathering of images, the handling and treatment of data,
- a series of tests for quality control in food products,
- control of dairy products,
- the evaluation of phytopharmaceutical products, notably with regard to those aspects linked to their launch on the market.

Energy

Line 11: Non-nuclear energy

Support activities in this field will include:

- the handling and processing of information from projects carried out under Community programmes, in particular demonstration projects,
- certification procedures for energy conservation in buildings, industry and transport as well as the application of energy modelling methodologies (relationships between energy production, consumption and environmental impact) to particular energy scenarios.

THIRD ACTIVITY

These generally short activities may concern any field, their aim being to meet specific requirements which appear during the implementation of various Community policies.

By their nature, such requirements will only appear during the implementation of this programme and the activities concerned will aim to provide an immediate response.

ANNEX V

INDICATIVE BREAKDOWN OF THE AMOUNT DEEMED NECESSARY FOR SECTION II OF THIS PROGRAMME (COMPETITIVE SUPPORT ACTIVITIES)

	<i>ECU million</i>
FIRST ACTIVITY	91
Information and communications technologies	
— Information technologies	10
Industrial technologies	
— Measurement and testing	10
Environment	
— Environment and climate	26
Life sciences and technologies	
— Agriculture and fisheries	30
Energy	
— Non-nuclear energy	15
THIRD ACTIVITY	37
Total	128

ANNEX VI

SPECIFIC RULES FOR IMPLEMENTING THE COMPETITIVE SUPPORT ACTIVITIES

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

The Commission will determine the responsibilities, in particular as regards the grant of the financial resources provided for in these activities, according to the field of activity concerned. The resources will be granted on a competitive basis.