COUNCIL DECISION

of 23 November 1994

adopting a specific programme of research, technological development and demonstration in the field of agriculture and fisheries (including agro-industry, food technologies, forestry, aquaculture and rural development (1994 to 1998)

(94/805/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 for 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 in the field of agriculture and fisheries (including agro-industry, food technologies, forestry, aquaculture and rural development); 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 amount deemed necessary for carrying out this programme is ECU 607 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, in order to attain the objectives and meet the challenges in the field of agriculture and fisheries (including agro-industry, food technologies, forestry, aquaculture and rural development), a programme of RTD should support:

— the competitiveness, efficiency and sustainable development of the agricultural sector (agriculture, horticulture, forestry and fisheries) and the agro-industrial sector (food and non-food),

— the evolution of Community policies (especially agriculture and fisheries),

— societal needs to provide a wide range of healthy and nutritional food products and non-food products compatible with the environment,

— sustainable development, the preservation and the improvement of rural and coastal environment;

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 the content of the fourth framework programme for Community RTD activities was established in accordance with the subsidiarity principle; whereas this specific programme specifies the content of the activities to be carried out in accordance with this principle in the field of agriculture and fisheries (including agro-industry, food technologies, forestry, aquaculture and rural development);

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 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 the Community should support only RTD activities of high quality;

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[1] OJ No C 228, 17. 8. 1994, p. 131 and OJ No C 262, 20. 9. 1994, p. 18.
[2] OJ No C 205, 25. 7. 1994.
[3] Opinion delivered on 14 and 15 September (not yet published in the Official Journal).
[4] OJ No L 126, 18. 5. 1994, p. 1.

Whereas the Community contribution to fisheries research can be more effective if specific final arrangements are made for the collection of data and the maintenance and development of appropriate data bases in cooperation with the corresponding authorities in the Member States;

Whereas the rules for the participation of undertakings, research centres (including the Joint Research Centre (JRC)) and universities and the rules governing the dissemination of research results specified in the measures provided for in Article 130j of the Treaty apply to this specific programme;

Whereas provision should be made for measures to encourage the involvement of small and medium-sized enterprises (SMEs) in this programme, in particular through technology stimulation measures;

Whereas the Commission's efforts to simplify and accelerate the application and selection procedures and make them more transparent must be continued in order to support the implementation of the programme and to facilitate the action which firms, and particularly SMEs, research centres and universities have to undertake in order to participate in a Community RTD activity;

Whereas this programme will help to strengthen synergy between the RTD activities carried out in the field of agriculture and fisheries (including agro-industry, food technologies, forestry, aquaculture and rural development) by research centres, universities and enterprises, in particular SMEs, in the Member States and between these and the corresponding Community RTD activities;

Whereas the nature of the activities to be undertaken in this programme requires close coordination with activities undertaken under other specific programmes;

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 this programme should also comprise support activities for the dissemination and exploitation of RTD results, in particular towards SMEs, notably those in the Member States and regions which participate least in the programme, and activities to stimulate the mobility and training of researchers within this programme to the extent necessary for proper implementation of the 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 said 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 results obtained compared with the objectives set out in this Decision;

Whereas the JRC may participate in indirect actions covered by this programme;

Whereas the JRC will also contribute, through its won programme, to the attainment of the Community RTD objectives in the areas covered by this programme;

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

HAS ADOPTED THIS DECISION:

Article 1

A specific programme for research and technological development, including demonstration, in the field of agriculture and fisheries (including agro-industry, food technologies, forestry, aquaculture and rural development) as set out in Annex I, is hereby adopted for the period from the date of adoption of this Decision to 31 December 1998.

Article 2

1. The amount deemed necessary for carrying out the programme is ECU 607 million, including a maximum of 7,3 % for staff and administrative expenditure.

2. An indicative 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.

Article 3

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 pursuant to Article 130j of the Treaty.

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

Article 4

1. In order to help ensure, *inter alia*, the cost-effective implementation of this programme, the Commission shall continually and systematically monitor, with appropriate assistance from indepedent, external experts, the progress within the programme in relation to the objectives set out in Annex I, as amplified in the work programme. It shall in particular examine whether the objectives, priorities and financial resources are still appropriate to the changing situation. It shall, if necessary, in the light of the results of this monitoring process, submit proposals to adapt or supplement this programme.

2. 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 shall have an external assessment conducted by independent qualified experts of the activities carried out within the areas covered by this programme and their management during the five years preceding this assessment.

3. At the end of this programme, the Commission shall have an independent final evaluation carried out of the results achieved compared with the objectives set out in Annex III to Decision No 1110/94/EC 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 5

1. A work programme shall be drawn up by the Commission in accordance with the objectives set out in Annex I and the indicative financial breakdown set out in Annex II, and shall be updated where appropriate. It shall set out in detail:

— the scientific and technological objectives and research tasks,

— the implementation schedule, including dates for calls for proposals,

— the proposed financial and managerial arrangements, including specific modalities for implementing technology stimulation measures for SMEs and other measures, including preparatory, accompanying and support measures,

— arrangements for coordination with other RTD activities carried out in this area, in particular under other specific programmes, and, where appropriate, for ensuring improved interaction with acitvities carried out in other frameworks, such as Eureka and COST,

— arrangements for the dissemination, protection and exploitation of the results of RTD activities carried out under the programme.

2. The Commission shall issue calls for proposals for projects on the basis of the work programme.

Article 6

1. The Commission shall be responsible for the implementation of the programme.

2. In the cases provided for in Article 7 (1), the Commission shall be assisted by a committee composed of representatives of the Member States and chaired by the representative of the Commission.

3. The representative of the Commission shall submit to the Committee a draft of the measures to be taken. The Committee shall deliver its opinion within a time limit which the chairman may lay down according to the urgency of the matter. The opinion shall be delivered by the majority laid down in Article 148 (2) of the Treaty in the case of decisions which the Council is required to adopt on a proposal from the Commission. The votes of the representatives of the Member States within the Committee shall be weighted in the manner set out in that Article. The chairman shall not vote.

4. The Commission shall adopt the measures if they are in accordance with the opinion of the Committee.

5. If the measures envisaged are not in accordance with the opinion of the Committee or if no opinion is delivered, the Commission shall, without delay, submit to the Council a proposal relating to the measures to be taken. The Council shall act by a qualified majority.

6. If, on the expiry of a period of three months from referral of the matter to the Council, the Council has not acted, the proposed measures shall be adopted by the Commission.

Article 7

1. The procedure laid down in Article 6 (2) to 6 (6) above shall apply to:

— the preparation and updating of the work programme referred to in Article 5 (1),

— the content of the calls for proposals, and establishment of criteria and mechanisms for project approval and selection,

— the assessment of the RTD activities proposed for Community funding and the estimated amount of the Community contribution for each activity where this is equal to, or more than, ECU 0,5 million,

— any adjustment to the indicative breakdown of the amount as set out in Annex II,

— specific modalities for the financial participation of the Community in the different activities envisaged,

— the measures and terms of reference for programme evaluation,

— any departure from the rules set out in Annex III,

— participation in any project by legal entities from third countries and international organizations.

2. Where, pursuant to the third indent of paragraph 1, the amount of the Community contribution is less than ECU 0,5 million, the Commission shall inform the Committee of the activities and of the outcome of their assessment.

3. The Commission shall regularly inform the Committee of progress with the implementation of the programme as a whole.

Article 8

This Decision is addressed to the Member States.

Done at Brussels, 23 November 1994.

For the Council

The President

J. BORCHERT

ANNEX I

SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES AND CONTENT

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

Paragraph 4.C of Annex III, first activity of the fourth framework programme, is an integral part of this programme.

Introduction

The economic sectors encompassed by this programme can be divided into four groups: the primary sector (agriculture, horticulture, forestry, fisheries, aquaculture), the 'input' industries (e. g. seeds and juveniles, machinery, fishing technology, chemicals, fertilizers, feeds, biocides and medicines and the processing industries (food; sugar and starch; protein, fibre and other biological derivatives; wood and paper; pharmaceuticals; biomass for energy, etc.), together with the rural (including mountain and coastal) activities that are dependent on the activities of the primary, input and processing sectors, These large sectors include large comapanies and numerous SMEs developing and producing both niche and bulk products which would benefit from the programme as well as the cooperatives, the 10 million farmers and fishermen and 380 million consumers of the Community (1).

Activities in these sectors, including primary production, transformation industries and final product utilization are directly affected by the major Community policies on agriculture, rural development, and fisheries, as well as those on the environment, and the internal market.

A major challenge is to contribute to a better match between the production and utilization of biological raw materials in Europe. New markets and products of greater added value will have to be developed for raw materials produced by agriculture, forestry and fisheries which meet the demands and requirements of the end-users, in particular through the improvement of their original quality.

Models of rural development will be needed to help to integrate, at an enterprise level, the production of food and non-food materials, and the provision and utilization of services (ranging, for example, from landscape conservation, to water supplies and agri-tourism).

Research in this area will provide a strong scientific basis for a competitive, efficient and sustainable primary production and agro-industrial sector; to support the development, assessment and implementation of Community policies (including those concerning agriculture, rural development, fisheries, environment and the internal market); and to respond to societal needs for a good quality of life, including a wide range of healthy and nutritious food, the organoleptic properties of which shall be one of the criteria for determining quality, and new non-food products and modes of production which are compatible with the environment.

General objectives of the programme

The objectives of this programme are to increase competitiveness, efficiency and sustainability of the agricultural, fishery and related industry sectors, and to promote rural development. Research should help to remove bottlenecks which are hindering the wider use of agricultural, forestry and fishery raw materials for new and improved food and non-food products, and to stimulate the emergence of new products, outlets and processes within the agricultural, forestry, agro-industrial and fisheries sectors. Therefore research must respond to socio-economic issues of rural and coastal communities, to safety, quality and health and environmental implications of new food and non-food products for which it is clear that there is a demand from the public.

(1) In the rest of this text, 'agriculture' includes all on-farm activities including crop production, livestock production, horticulture and farm forestry; 'forestry' is also used in a broad sense to include all tree production and utilization activities, including agro-forestry; 'fisheries' covers all aquatic organisms and includes aquaculture, and 'rural' includes also mountain and coastal communities or activities.

Prenormative research will be initiated and supported in order to provide a sound scientific base for the setting of standards and regulations relating to production, transformation and use of biological resources.

Demonstration activities will have the objective to prove, in a phase consecutive to that of experimental research and small-scale technological development, the technical viability of systems and methods of production, of new technologies or products together with, as appropriate, their economic advantage. These projects will be pre-competitive, and should as such focus particularly on the application of new technologies and involve participation by both producers and users. Platforms or 'extended audiences' may be established if appropriate, to maximize technology transfer and uptake by the widest possible range of users. In order to reduce project costs, the scale of operations for demonstration projects will be the minimum scale required to obtain reliable practical information on the performance of new sytems and methods of production and of the particular new technologies. These demonstration operations can be implemented in any of the areas covered by this specific programme. A bottom-up approach will be applied to identify the best demonstration opportunities.

The association in interdisciplinary projects of technology producers, technology users, and producers and users of agricultural raw materials, will be pursued in order to ensure an efficient transfer of new technological knowledge for the benefit of potential users.

Measures of technological stimulation based on the experience of the Craft action and feasibility awards will be implemented in order to encourage and facilitate the participation of SMEs, taking account of the needs of those from less advanced regions.

An integrated approach in biomass-bioenergy could be used covering the whole bioenergy chain including production and combined processing of agricultural and forestry raw materials, conversion, and use of these materials for energy purposes. There are questions about the viability of bioenergy options in current economic conditions, so it is important that issues of energy efficiency and market orientation should be taken into account in close cooperation with the NNE programme.

In order to improve dialogue and understanding between the main national and socio-political bioethical view-points, whilst recognizing the cultural differences which exist in Member States, research will be undertaken to investigate factors affecting public response to ethical, legal and social aspects of the sectors included in this programme.

The agriculture and fisheries programme has important links with the other life sciences programmes, and to those on environment, marine science, non-nuclear energy, and industrial and materials technology, as well as actions under activity 4. It will be essential to ensure good means of coordination, including the development of projects that address the issues of more than one programme.

OBJECTIVES REQUIRING CONCENTRATED MEANS

Area 1: Integrated production and processing chains

There is potential in the agro-industrial (including small-scale regional processing units) and forestry/wood sectors to extend current opportunities or to create significant new markets which will utilize biological raw materials from Europe. These non-food biological products will often have to compete with established products and so the objective is to develop efficient, economic production chains and exploit economically feasible opportunities, to meet market quality requirements, and to optimize environmental compatibility.

To this end, all necessary skills and technologies, particularly biotechnologies, related to the individual links in the production chains will be combined in integrated food and non-food projects addressing those chains for which Europe has a competitive advantage. In terms of participants, strong emphasis will be put on the participation of producers and users of biological raw materials in joint projects, closely cooperating with scientists. The wood and biomass production and processing chains, where overall efficiency is most likely to generate significant impact on e. g. rural economies, will be addressed.

Considerable efforts will also be devoted to developing opportunities for higher value-added novel biobased intermediate and end-products. Synergistic effects of combining different food and non-food production will be sought, e.g. by optimizing the conversion of by-products to energy and other non-food products.

It is the intention to create large projects and networks to focus on complete production chains, These coordinated networks of projects will encompass primary production and processing to food and/or non-food end-use products. Integrating the projects into networks should bring together the necessary critical mass so as to create a significant impact, within the short- to medium-term, on the development and implementation of new technologies and products within each chain, including optimization of utilization of waste and by-products.

The greatest opportunities for early advance lie in the industrial use of agricultural products in the five lines of: Cereal crops, vegetable oil crops and leguminous crops; the forestry-wood-chain; and biomass for energy and non-food uses. The same approach may subsequently lend itself to other production chains, such as animal and fish production and other crops such as fibre, forage, and horticultural and speciality pharmaceutical crops.

In establishing projects, emphasis will be given to an integrated approach both in biomass-bioenergy and in industrial use of biomass for non-food products to ensure consistency and relevance of Community RTD activities covering the whole bioenergy chain in its technical and non-technical aspect (including e.g. energy balance, environmental impact analysis, the transport factor cost-effectiveness, macro-economic policy aspects, etc.): production and combined processing of agricultural and forestry raw materials, conversion and use of these materials for energy purposes and industrial use. Research in the area of wood and fibre biomass and processing chains should strengthen the scientific base relating to diversification and reorientation of production of quality products as well as development of environmentally-friendly, market-led and renewable products.

This strategic approach will be jointly elaborated by this programme and the energy programmes. Whereas this research programme will focus on raw material production, logistics and processing, the activities in the energy programme will focus on work linked to conversion and use of solid biomass.

Area 2: Scaling-up and processing methodologies

The transfer from laboratory to industrial scale is characterized by major problems and bottlenecks, such as homogeneity and quality of raw material supply, and understanding the basic physical and chemical characteristics, of the bio-materials, e.g. their fluid dynamics, heat transfer, flocculation, product recovery, equipment, etc. Carrying forward, amongst others, the fundamental advances derived from the Eclair and Biotechnology programmes, improved methodologies will be developed for designing and testing innovative agro-industrial processes and for the application of biotechnology, while taking account of the economic feasibility of investing in new technology, including small scale off- and on-farm technologies.

In multidisciplinary projects, scientists and engineers will be brought together in order to understand the specific problems directly resulting from increasing the scale from laboratory to industrial levels. Fundamental and strategic studies are necessary to unravel the basic physical and chemical characteristics of biological materials. In particular, the development and improvement of technologies (e.g. specialized instrumentation, robotics, structured models, and simulation methods) used for scale-up, design and testing of agro-industrial processes will be jointly undertaken. New process technologies and technology transfer from other industrial sectors will be considered.

The upstream 'green' biobased chemistry, and applied biotechnologies involving enzymatic and fermentative biosynthesis, and the downstream activities of fractionation, separation and product development, are typical examples of processes which pose technological difficulties in scaling up to the industrial operational scale, and where synergy between chemical engineering in design, instrumentation and equipment, and the life scientist will be most effective. Research on upgrading of products and by-products from fermentations and other processing industries will be undertaken, including the treatment of agricultural and agro-industrial wastes, but excluding urban waste, to obtain for example by-products or agricultural fertilizers.

One of the positive effects of research in this field may also be the lowering of the cost and environmental impact of industrial processes. These activities will be complementary to, and synergistic with, the fundamentally oriented bioprocess engineering activities within the Biotechnology programme and the more applied activities within the Industrial Technologies Programme.

Area 3: Generic science and advanced technologies for nutritious foods

The food and drink industry, including fish processing, ranks second in terms of output in Europe. Research should improve the industry's competitive position but also provide consumers with a safer and higher quality including organoleptic quality, more nutritious and health promoting diet. A further focus of research is the development of environmentally-friendly technology for low-waste food production; food-packaging/storage/transport/distribution interactions and other environmental aspects of food production.

Generic technologies including biotechnology will be applied in the food sector to produce commercial crops with enhanced performance and improved nutritional and organoleptic qualities, again complementing fundamentally oriented research within the Biotechnology programme.

Other research will concentrate on generic scientific phenomena involved in the conversion of biological raw materials into food, and its metabolism. The emphasis will be on multidisciplinary, molecular, biochemical, microbiological and cellular physiological approaches which will support new advanced technologies for improving food quality, safety and wholesomeness, including freshness and spoilage of seafood and other foods.

Community activities will concentrate on methods for the quantification and control of quality and safety; origin identification; wholesomeness attributes; basic food and nutrition science (structures, interactions); food functionality, metabolism and safety *in-vivo* and *in-vitro*; novel processing technologies (as well as improvements to traditional technologies to improve product quality); equipment and products (emphasizing biotransformation/biotechnology and avoidance of unwanted substances); and interactions between these and consumer behaviour, including attitudes to new food technologies and impediments to the choice of a healthy diet, with the aim of helping consumers to improve their understanding of consumer choice in relation to diet, health and novel foods. This work will also encompass research on upgrading of fishery products and better utilization of under-used species and by-products.

Nutritional diseases and disorders are an increasing aspect of modern lifestyles. Multidisciplinary research combining production, processing and health aspects, will focus on the relationship between dietary components and health status, particularly food absorption and metabolism, the role of intestinal flora and immunology, and the tailoring of foods for specific nutritional requirements and functions.

Area 4: Agriculture, forestry and rural Development

The objective of the research in this area is to support the development and evaluation of the Community policies as well as identification of problems and their solutions in the rural world. The need is to develop new production systems which are economically viable, which are both compatible with the environment and maintain an adequate level of employment. An improvement in the economic situation of agriculture will be also sought by means of quality products, diversification of food (such as regional specialties) and non-food products and farming activities, and by cost-reductions that pre-suppose the introduction of new technologies and more efficient and better used inputs.

Following the United Nations Conference on the Environment and Development at Rio de Janeiro in 1992, the Community is resolutely committed to the conservation, characterization, and utilization of genetic resources in agriculture and the protection and sustainable management of forests. At the Ministerial conferences on the protection of forests in Europe (Strasbourg 1990 and Helsinki 1993) a commitment was given actively to contribute to a series of coordinated activities at European level leading to improved protection and an ecologically viable management of forest resources. Research is needed to address these objectives.

Research should improve the scientific base which underpins the development and implementation of rural development policy.

Optimization of methods, systems and primary production chains: In the new scenario, as a result of the reform of the common agricultural policy (CAP), it is necessary to develop the scientific bases which will identify and develop the means, techniques, systems and chains of production which will lead progressively

towards a less intensive, but still competitive, agriculture, compatible with the protection of the environment and natural resources, economically viable, while maintaining a sufficient employment level. New positive uses for set-aside lands for farmers and the Community should be developed and evaluated.

As a prerequisite for the necessary changes in agriculture, research is needed on the identification, isolation and exploitation of the genetic variability of cultivated crops (including those varieties no longer in use) and their wild relatives and of the diversity of animals.

Research will be undertaken in areas related to the preservation of the genetic heritage and biodiversity in seeds of indigenous species, which have proved their ability to adapt to adverse climatic effects, such as drought, or have shown their resistance to specific pests. At the same time, efforts will be made to develop varieties more resistant to these adverse effects to assist in extensive crops for dry farming.

In this context the priorities should be: evaluation of environmental impact of agricultural practices, reduction and optimal use of inputs, sustainable management of soil and water resources, uses for set-aside lands, and adaptation of production chains to changing market, economic and environmental needs.

Water management models will be developed for preserving crops when precipitation is rare or irregular, so that lowering of the water table through excessive irrigation from subterranean water can be prevented, and for modifying the procedures which prevent the salinization of water and surface layers. Under the same heading, special attention will be paid to management of soil resources and specifically to the promotion of methods of combating erosion.

The utilization of biotechnology, combined with traditional methods, should lead to the creation of new genotypes in the area of animal production, of new plant varieties and hybrids, including forest trees, more resistant and/or giving improved yield (especially for non-food uses) and better quality raw material for ultimate processing and end-use.

These activities will be complementary to those of a more fundamental character within the 'Biotechnology' programme and also to those of commerical application within the area above of Generic Science. Emphasis will be placed on enhancing the value of products and by-products of agriculture, implementation of new methods of biological protection of crops, creation of new genotypes or varieties leading to a reduction in use of inputs, resulting in reduced costs of production and to more sound use of natural resources as well as to minimize environmental impact. This aspect is of particular importance in the area of competitiveness of agricultural products and their eventual non-food utilization.

In support of the management of the CAP, research work will also be directed towards the methods of controlling the implementation of regulations, improvement of means of following and managing markets and multidisciplinary analysis of the ex-ante and ex-post impact of instruments of the CAP, the elaboration of trans-sectoral economic forecasting models or other instruments of quantitative analysis, and information systems and decision support for farmers and decision makers.

Quality policy: In the area of quality products, including traditional products, and the support of new Community regulation instruments (labels of origin, geographical indications and specific product types, biological agriculture) research should identify and characterize the criteria, the products and quality chains, define and diffuse the conditions which assure a viable income for primary producers. Community research is needed on conservation, hygiene and storage of fresh and processed food and feed on-farm.

Work will be carried out particularly on the improvement of methods of quality control of primary products, increasing the value added, and its benefit to all operators of the chains; on the primary concept of 'total quality'; on analyses of consumer behaviour; and on the scientific bases for the promotion of agricultural primary products.

Diversification of production, land use and farming sector activities require a research effort for the identification and analyses of economically, viable possibilities (food and non-food) as well as the development of complementary activities for farmers (e. g. agri-tourism, farm crafts, agro-forestry, etc.). In selecting priorities, equal weight will be given to economic and technical factors, and a multidisciplinary

approach will be favoured. Particular attention will be given to the economic viability and the compatibility of these new primary productions and activities with regard to respect for the environment.

Animal and plant health, animal welfare: Research should provide scienitific and technical support for the development and management of Community norms and regulations especially in the context of the large Internal Market and the reponsibilities of the Commission in the areas of plant and animal health as well as disease control and agricultural pests.

Of particular importance will be scientific support for hygiene, detection, diagnosis, evaluation of risks, epidemiology of diseases and prevention and control measures, the analysis of aspects relating to animal well-being, optimization of factors relating to animal feed, as well as research in support of approval relating to phytosanitary and animal health products so as to improve the safety of the users of these products and of consumers. Research in the field of farm animal behaviour (ethology) and into the development of husbandry systems consistent with the welfare needs of the animals should be included.

Utilization of biotechnology should also contribute to the detection (diagnostics), the prevention (e. g. vaccines) and the eradication (e. g. drugs) of animal and plant diseases.

Multifunctional management of forests: Research should contribute to an overall achievement of the objectives for the protection and the long-term development of forests adopted in Strasbourg in 1990, at Rio de Janeiro in 1992 and in Helsinki in 1993. In this context but also in keeping with the implementation of agriculture and forestry measures agreed as part of the reform of the CAP, the priorities for forestry research should be improvement of the knowledge base leading to implementation of sustainable management of forests, functioning of forest eco-systems, development and improvement of agro-forestry systems, integration of the multiple functions of forests, (including production, conservation, recreation/amenity and climate protection). There continues to be a need for economic, environmentally friendly and sustainable utilization of forests (including their role in mitigation of climate change) and research on how best to deliver their multipurpose benefits. Finally, research should improve the understanding of the multiple causes of forest decline in different forest ecosystems.

Rural development: Research must provide the scientific support for the implementation of the Community policy of rural development which will evolve significantly during the period 1994 to 1999. Themes which will be important are the following: methodologies for the assessment monitoring and evaluation of rural development programmes and measures, analysis of policies to improve agricultural structures and rural developments, typology of rural zones, identification of key socio-economic indicators, analysis of principal problems, potentials and constraints, introduction of new technologies and diversification of activities in fragile rural areas (especially Objectives 1 and 5b), identification and mobilization of partners and organizations likely to be efficient participants in rural development activities, and models of economic development based on an integrated approach and using local potential.

In a general manner, particular attention will be given to economic viability and its compatibility with the protection of the environment.

Area 5: Fisheries and aquaculture

The overall objective is to provide a sound scientific basis for the balanced, sustainable exploitation of the fisheries resources of the Community, and the further controlled development of Aquaculture. This is to be achieved by a better knowledge and understanding of the aquatic ecosystem, including the interactions between fishing activities, aquaculture and the environment. Socio-economic considerations are recognized as an integral part of the programme, together with the associated requirement to develop appropriate methodologies for evaluating fisheries and aquaculture policies.

An improvement of the economic situation of aquaculture and fisheries will be sought by means of improvements to quality of products, diversification of products (food and non-food) and activities and by a reduction of wastes, both at the point of capture and during processing.

Work in this sector will be targeted on five areas:

Impact of environmental factors on aquatic resources: The objective is to generate a better understanding of the influence of environmental factors (oceanographic, climate, primary production, etc.) on key biological

parameters (recruitment, distribution, natural mortality, etc.). This work, where appropriate, will link with activities within the Marine Science and Technology Programme.

Ecological impact of fisheries and aquaculture: Research will result in a better understanding of the effects that fisheries and aquaculture have on the ecosystem, with the aim of limiting their impact on the aquatic environment particularly reducing the mortality of juveniles and non-target species. Research will include fisheries/top predator relationships, gear selectivity, sea-bed degradation, and fish farm effluents, and will be undertaken against the background of other perturbations in the environment caused by natural (e. g. hydrographic) and anthropogenic factors other than fisheries (e. g. pollution, eutrophication, gravel extraction).

Biology of species for optimization of aquaculture: The work under this heading will contribute to a better knowledge of the biology of aquatic species, with the objective of encouraging the development of an economically profitable industry. Special emphasis will be put on the genetic adaptation of aquaculture species, and pathological issues. Multidisciplinary approaches will be adopted where relevant including the application of biotechnology. Research into new species as a means of diversification will be promoted.

Socio-economic aspects of the fishing industry: The objective is to generate better knowledge and understanding of the operation and management of all sectors of the fishing industry including associated industries. Particular emphasis will be placed on multidisciplinary studies, including evaluating the social and economic consequences of alternative management options.

Improved methodology: The aim is to improve existing methodologies for fish stock assessment (e. g. novel methods of data collection and analysis), and the development of new instruments and techniques for fisheries and aquaculture research.

Area 6: Other activities, mainly implemented by concertation

The programme will concentrate on the five areas identified above using as appropriate, both shared-cost actions and concerted actions. However, where Member States have extensive programmes, this programme will build upon these activities through concerted actions and, if appropriate, through shared-cost actions, with a view to improving coordination and cooperation at a European level (concertation). This concertation will be executed by establishing European networks which will bring together most of the relevant actors in the field. Examples of areas where this is appropriate are:

— primary production in agriculture, forestry, fisheries and aquaculture with main emphasis on competitiveness, sustainability, quality, security of supply and interactions with the environment,

— conservation, development and management of the natural, semi-natural and man-made landscape,

— rural (including mountain and coastal development): The RTD activities at Member State level, which could be relevant to rural and coastal development, are quite diverse. By providing a European forum in the area of research for the exchange of experience, know-how and methods, European concertation activities will help to develop innovative approaches to overcome the problems of these regions. Special attention will be paid to the opportunities offered by new economic activities in rural and coastal regions, training, as well as the assessment of their socio-economic and environmental impact,

— food production and processing: Networks will be created which better integrate research on-going at national level especially bringing together research in food production, quality (including organoleptic quality), safety, health and socio-economic aspects strategies for informing the consumer and incorporating this experience with food processing.

This pooling of experience should create synergistic effects of benefit to primary producers, processors, consumers and the other actors in rural development and should help in defining new research priorities for the sector.

In conclusion, the actions within this programme seek to extend the application of the basic technologies developed in biotechnology and biomedicine and also, as appropriate, in environment, energy and targeted socio-economic research.

ANNEX II

INDICATIVE BREAKDOWN OF THE AMOUNT DEEMED NECESSARY

Area	ECU million
1. Integrated production and processing chains	91
2. Scaling-up and processing methodologies	42
3. Generic sciences and advanced technologies for nutritious foods	97
4. Agriculture, forestry and rural development	225
5. Fisheries and aquaculture	103
6. Other activities, mainly implemented by concertation	49 (1)
Total	607 (2) (3)

(1) Of which: 3 % in agro-industrial research, 3 % in agriculture, 2 % in fisheries.

(2) Of which:
- a maximum of 3,3 % for staff expenditure and 4,0 % for administrative expenditure,
- approximately: 6 % for horizontal demonstration activities, 1 % for horizontal activities on ethical, social and legal aspects and 5 % for training activities,
- up to 10 % for specific measures in respect of SMEs,
- ECU 5,5 million for the dissemination and optimization of results.

(3) A sum of ECU 77 million, the difference between the amount deemed necessary for this programme and the amount envisaged in the fourth RDT framework programme for agriculture and fisheries (including agro-industry, food technologies, forestry, aquaculture and rural development), is earmarked for the specific (RDT) programme 'to be carried out, on the one hand, by means of direct action (JRC) and, on the other, by means of activities within the framework of a competitive approach and intended for S&T support to Community policies (1995 to 1998)'.

This breakdown does not exclude the possibility that a project could relate to several areas.

ANNEX III

SPECIFIC RULES FOR IMPLEMENTING THE PROGRAMME

The programme will be executed through indirect action, whereby the Community makes a financial contribution to RTD activities carried out by third parties or by JRC institutes in association with third parties:

1. Shared-cost actions of the following types:

   (a) RTD (including demonstration projects) carried out by undertakings, research centres and universities, including, where appropriate, basic research of an industrial relevance; consortia for integrated projects with a common objective may be encouraged.

   Demonstration activities, as defined in Annex III of the framework programme, are intended to overcome the obstacles hindering the utilization of new technologies and to build the bridge between technology producers and users. Feasibility studies and awards to those who get involved in these technologies may also be included.

   Community funding will normally not exceed 50 % of the cost of the project, with progressively lower participation the nearer the project is to the market place. Those universities and other institutions which do not have analytical budget accountancy will be reimbursed on the basis of 100 % of the additional costs.

   (b) Thematic networks bringing together primary producers, manufacturers, end-users, universities and research centres on a generic technology, in order to facilitate the incorporation and transfer of knowledge and mobility of researchers, and to ensure that greater account is taken of market needs.

   Community funding will normally not exceed ECU 20 000, in average per partner and per year, covering up to 100 % of the additional costs for the coordination of the action. Members of a network could also apply for research projects under normal procedures.

   (c) Technology stimulation to encourage and facilitate participation of SMEs in RTD activities:

      (i) by granting awards for carrying out the exploratory phase of an RTD activity, including the search for partners, during a period of up to 12 months. The award will be granted following the selection of an outline proposal to be submitted normally by at least two non-affiliated SMEs from two different Member States. The award will cover up to 75 % of the cost of the exploratory phase, without exceeding ECU 45 000 or ECU 22 500 in the exceptional case of a single applicant SME; and

      (ii) by supporting cooperative research projects, whereby SMEs having similar technical problems but not having adequate own research facilities, engage other legal entities to carry out RTD on their behalf. Community funding for cooperative research projects, involving normally at least four non-affiliated SME's from at least two different Member States, will normally cover 50 % of the cost of the research.

   Following an initial call, in both cases proposals may be submitted at any time during the period covered by the work programme being implemented.

2. Preparatory, accompanying and support measures, such as:

   — studies in support of this programme and in preparation for future activities,

   — support for exchanges of information, conferences, seminars, workshops or other scientific or technical meetings, including intersectoral or multidisciplinary coordination meetings,

   — use of external expertise, including access to scientific databases,

   — scientific publications and activities for the dissemination, promotion and exploitation of results, in coordination with the activities carried out under the third activity; the factors liable to encourage use of results will be taken into account from the outset and throughout the duration of RTD projects, the partners in which will constitute a key network for diffusion and exploitation of results,

— analysis of possible socio-economic consequences and technological risks associated with the programme, which will also contribute to the programme 'targeted socio-economic research',

— training actions related to research covered by this programme in order to enhance employment skills and to facilitate technology transfer to industry,

— independent evaluation of the management and execution of the programme and of the implementation of the activities,

— measures in support of the operation of networks for increasing awareness and providing decentralized assistance to SMEs, in coordination with the Euromanagement auditing activity of RDT.

Community funding may cover up to 100 % of the costs of these measures.

3. Concerted actions, consisting of the coordination of RTD projects already funded by public authorities or private bodies. The Member States will help the Commission to identify relevant laboratories or institutes, in order to ensure that no major activities are left out of this concertation process.

The concerted action option can also be used under the programme as a way of establishing the feasibility and defining the content of proposals for shared-cost research activities.

Community funding will cover up to 100 % of the costs of the concertation.