COMMISSION OF THE EUROPEAN COMMUNITIES

SEC(82) 896 final

Brussels, 3rd June 1982

FRAMEWORK PROGRAMME FOR COMMUNITY SCIENTIFIC AND TECHNICAL ACTIVITIES 1984-1987 : FIRST OUTLINE

(Working paper from the Commission)

FRAMEWORK PROGRAMME FOR COMMUNITY SCIENTIFIC AND TECHNICAL ACTIVITIES 1984-1987 : FIRST OUTLINE

At its meetings of 9 November 1981 and 8 March 1982, the Council substantially supported the Commission's proposals relating to the implementation of a common strategy for scientific and technical research for the 1980s and to the elaboration of a framework programme integrating all Community activities in these fields.

Moreover, the Council considered favorably the basic political options as well as the matrix of corresponding scientific and technical objectives put forward by the Commission for the first framework programme.

This first Community framework programme 1984-1987, currently being elaborated, will be submitted to the Council at the end of 1982 for adoption in February/March 1983.

The purpose of this working document is to present a preliminary outline of the framework programme and to specify the national and international information and forecasts required to complete it.

1. Outline of the framework programme 1984-1987

The document presenting the Community framework programme 1984-1987 will contain, in the first part, a general analysis of the major challenges which the Community is facing as well as the contributions which science and technology can make to meet them.

Taking into account these challenges, the stengths and weaknesses of the potential of R,D&D within the Member States will be briefly described :

Strengths :
- considerable potential and one of quality
- large financial resources
- diversity
- the precision with which politicians and scientists make their requirements known
- very high level of training of personnel

Weaknesses :
- ageing of the research workforce
- obsolescence of R&D structures
- insufficient long term planning
- poorly adapted and slow scientific and technical transfers
- very inadequate and sometimes worsening competitiveness
- inadequate grasp of the opportunities for cooperation at a Community level.

The chapters which make up the first part of the framework programme will, in particular, be developed on the basis of the analyses carried out in the context of the "theme plans by policy options or objectives" which are being or will be prepared.

These R&D theme plans - the basis of the framework programme - which are or will be elaborated taking particular account of the existing or anticipated R,D&D policies of the Member States, will call for the collection and examination of information and forecasts (1984-1987) relating to national activities and those of principal non member States.

In effect, each theme plan should specify :

- the needs of the Community and of third countries in relation to the objective sought,

- the available potential and the degree to which work is advanced in the Community and other countries,
- the research themes to be explored,
- the most appropriate methods necessary to meet the objective and resulting from this, the selection of the relevant Community actions to be applied,
- the level of resources required,
- the results anticipated and the expected spin-offs.

The first assembly of qualitative and quantitative national and international data should, if Member States contribute actively to this task, be completed by the end of September 1982.

The first part of this framework programme should end with a brief synthesis which will serve as a basis for political debate. This synthesis will cover :

- the scientific and technological choices to be considered as a function of the potential and policies of Member States, and of the international context,
- the choice to be made between national, international and Community actions.

The second part of the framework programme - briefly outlined below - will propose the orientations, selection and dimension of the Community actions which could be considered for the period 1984-1987. These actions will take into account the present axes of the scientific and technical activities of the EEC, envisaged in their totality.

- The present situation - The choices made to date

  In its document "Framework programme for the scientific and technical activities of the Community : principles and methods of working" which was favourably received by the Council at its meeting of 8 March, the Commission proposed seven major goals for the 1980s :

  - promoting agricultural competitiveness,
  - promoting industrial competitiveness,
  - improving the management of raw materials,

- improving the management of energy resources,
- strengthening aid to developing countries,
- improving living and working conditions (health, safety, the environment ...),
- stimulating the efficacy of the Community's R&D potential.

A series of objectives were , in fact, indicated as a function of these goals[1].

In using this matrix of policy options and objectives to appreciate current scientific and technical activities of the EEC, one can see that the choices made by the Commission can be translated into the following financial terms :

The figures which appear in the table below are taken from the draft Community budget for 1983 recently approved by the Commission. These figures essentially reflect the decisions on successive programmes taken up to 1982 on the basis of the sectoral approach adopted during the period 1974-1982.

(1) Annexed to this document is an attempt to define the content of the scientific and technical objectives which should be considered for the assembly of national information and forecasts for the period 1984-1987.

Options et Objectifs(1)

Credits budgetaires pour 1983: Paiements — Unite: MioECU

		Agric.	Indus.	Mat.pre	Energie	Develop	Trans.	Soci.	Envir.	Ac. gen	TOTAUX	Pourc.	% option
1.1	Prod. ag.	5.20	2.69	0.13	1.16				0.17	0.37	9.73	1.51	
1.2	Pro.agri.	0.11	0.82		1.46				0.17	0.02	2.59	0.40	1.91
2.1	El.entra.	0.54	1.71		3.29					0.36	5.89	0.91	
2.2	Prod.conv	0.04	32.12	2.05	20.06			0.20	0.86	0.88	56.20	8.71	
2.3.1	Tec.info.		22.22		0.11					0.15	22.48	3.49	13.48
2.3.2	Biotechno	0.04	0.81	0.24	1.28					0.02	2.39	0.37	
3.1	Ut.mat.p.	0.09	0.44	4.60	1.68				0.30		7.11	1.10	1.10
4.1	Fission			0.31	140.26					0.20	140.77	21.83	
4.2	Fus.+JET				178.04						178.04	27.61	
4.3	Nouv.ener	0.04		0.07	71.92						72.02	11.17	69.09
4.4	Com.foss.		0.45		26.61				2.18	0.36	29.59	4.59	
4.5	Econ.ener	0.04	3.06	0.52	20.07				0.39	1.07	25.15	3.90	
5.1	P.V.D.	0.04	1.79	0.14	1.27	3.95			0.17	0.36	7.72	1.20	1.20
6.1	Securite			0.04	8.83		0.85	3.00	0.61		13.33	2.07	
6.2	Sante		0.38		4.76			6.34	6.33	0.20	18.00	2.79	9.09
6.3	Milieu	0.04	2.81	0.67	8.49			3.40	11.49	0.38	27.27	4.23	
7	Stimul.									3.00	3.00	0.47	0.47
	Act. hor.		3.11							20.52	23.63	3.66	3.66
	TOTAUX	6.17	72.40	8.77	489.30	3.95	0.85	12.93	22.68	27.87	644.92	100.00	100.00
	Pourcent.	0.96	11.28	1.37	76.23	0.62	0.13	2.01	3.53	4.34	100.00		
	Budget general des Communautes Europeennes										23500.00	est.	
	Budget CECA										300.00	est.	
	Total										23800.00	est.	
	Budget S&T en pourcentage du total										2.71	est.	

(1) Voir en annexe le libellé complet des options et objectifs
The complete wording of the options and objectives will be found in the annexe

The Community choices which have been made and confirmed up till now in the scientific and technical field on the basis of the three Treaties indicate :

- a clear emphasis on the improvement of the management of energy resources : 69 % of Community resources (taking all actions together),
- a limited interest in the promotion of industrial competitiveness (13,5%) the development of new technologies in the framework of this policy option in fact only represents half of the efforts directed to its attainment,
- little concern for the improvement of living and working conditions (health, safety, environment : 9 %),
- a very limited interest in the promotion of agricultural productivity (2 %)
- a first stage in efforts to improve the management of raw materials (1 %) and
- nearly no R&D activities up till now directed towards developing countries.

Can such choices be considered as either sufficient or appropriate in relation to the challenges facing the Community in the 1980s (competitiveness and agricultural and industrial employment, the emergence of new technologies, the necessary strengthening of links with developing countries...) ?

Similarly, are the scientific and technical activities developed at Community level of sufficient scope in the general context of the various activities and policies carried out by the Community ? It should be recalled that they only represent some 645 Mio ECUS (draft 1983 budget, payments), that is 2,7 % of the general budget of the Community and 545 Mio ECUS (2,3 %) if one considers only the R&D activities.

In the Commission's view, it is evident that for the period 1984-1987 the scale of the effort and the choices made will need to be reconsidered. Moreover, the financial means devoted to each policy option and the relative weights given to the achievement of the different Community objectives will need to be reviewed.

- Orientations for Community actions 1984-1987

Taking the view that there will be an increase in the resources which will be devoted to scientific and technical actions[1] in the redeployment of all Community activities, two key ideas could be used to direct the common strategy for the period 1984-1987 :

- the systematic use of an objectives approach (and hence of weighting between objectives) in order to determine : the actions to be undertaken, the relative importance to be given to them, the appropriate modes of implementation to be applied,
- the stimulation of the efficacy of the Community's scientific and technical potential.

a) The objectives approach - Priorities to be considered

Amongst the seven basic policy options proposed by the Commission and generally adopted by the Council, it should be underlined that five out of seven fundamentally aim at the same thing : increasing the competitiveness (scientific, agricultural, industrial ...) of the Community. Rather than resort to direct or disguised forms of economic protectionism or isolationism, the Community will, as the Commission has always argued, be maintaining and reinforcing an open and positive attitude. In this context, the factors of scientific development and technological innovation constitute essential instruments, vital keys for international creativity and dynamism. At the same time, a similar attitude, tempered by fundamental considerations of justice and equilibrium, should be adopted for developing countries .

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(1) See the Commission's Communication "Scientific and technical research and the European Community : proposals for the 1980s", doc. COM/81/574 final, dated 12.10.81.

This is why the implementation of major programmes or large scale long term projects and the reinforcement of certain R,D&D actions in the medium term are of great interest, to improve the relevance of Community efforts and adapt them to emerging socio-economic needs.

Major programmes and large scale, long term projects

As a function of scientific and technical change, of perceived weaknesses in Europe's productive capacity and of the increasing support which needs to be given to developing countries, the Community should consider undertaking major new programmes and large scale projects with a European dimension which will, in time, have a vital dynamo effect at the scientific and economic level.

To date, only the "thermonuclear fusion" programme 1982-1986 displays these characteristics.

Three new major programmes could therefore be examined, bearing on :
- the promotion of industrial and agricultural competitiveness :
  . New information technologies (ESPRIT programme),
  . Development of biotechnology,
- Aid to developing countries.

These notwithstanding it would be advisable to make studies of efforts or activities which might be considered in the long term to improve means of transport (individual, passenger or freight transport, whether at the system or vehicular level), the installation of large scale scientific instruments, or in the sphere of oceanology for example.

Research, development and demonstration activities and medium term coordination

Similarly, in the hope of adjusting and adapting Community scientific and technical activities to the great challenges of the moment, activities linked to the goals of "Improving the management of raw materials" and "Improving living and working conditions : health, safety and the environment" will be reexamined in the framework programme.

But three policy options above all will require particular attention :

. promoting agricultural competitiveness,

. promoting industrial competitiveness (more particularly in respect of the objectives "Eliminating and reducing hindrances" and "Improving the quality and processing of agricultural products"),

. improving the management of energy resources (basically under the aspects of alternative energy sources and nuclear energy).

b) Stimulating the efficacy of the Community's scientific and technical potential

This new line of action, which ought to be taken on as one of the bases for the common R&D strategy over the period 1984-1987, forms the subject of its own document[1]. It is not therefore intended to elaborate on the point in this preliminary sketch of the framework programme.

However, what should be stressed is the way in which the very concept of the framework programme, an overall planning tool for the long and medium term, is directly complementary to "unconstrained" stimulation and pilot project activities, making it possible to keep the flexibility, speed and sharpness which are vital to any R&D strategy. The ability to spot opportunities quickly, to react rapidly without the need for planning over fixed periods, to test or verify hypotheses before embarking upon the preparation of large scale programmes, major projects or activities programmed over the medium term, and to improve the mobility of personnel and facilitate the exchange of ideas, all these are the fundamental motivations to keep in mind, which the adoption of a framework programme will only make more necessary.

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(1) "Stimulating the Community's scientific and technical potential"

2. Diffusion, Exploitation, Evaluation

The second part of the framework programme will briefly show the efforts which will need to be made so far as the dissemination and further development of the knowledge gained at Community level is concerned (special proposals will in fact be put forward before the end of 1982). At the same time this second part of the framework programme will be where the methods for evaluating the results of research undertaken jointly will be specified.

3. Preliminary conclusions

At the present stage of work and lacking adequate national information and forecasts it would seem too early to seek conclusions. Too many elements are missing.

This first attempt, imperfect and incomplete as it is, needs to be considered as a preliminary outline, bringing together the thinking and the results of studies made by the Commission's staff and capable of being widely redrafted and reorientated.

With the aid of Member States, and on the basis of information to be gathered, the Commission must still further specify the range of needs, existing opportunities, and from this point of view clarify those effective possibilities which are conditional not only upon scientific and economic circumstances but, above all, upon the political will of Member States.

The preparation of the framework programme will make it possible to investigate the extent to which needs and possibilities tie up, in other words set out the choices which must be made jointly about the whole range of activities to be developed.

The planning process selected for all this may seem cautious, but the difficult transition from the pragmatic decision taking system pursued up to now towards a system allowing a comprehensive overview and wide ranging decisions does make a step by step approach necessary.

ANNEXE

AN ATTEMPT TO DEFINE THE SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES

Objective 1.1. - Developing agricultural productivity (including fish)

- Soils (development of rural areas; improvement of land and rural amenities; protecting and maintaining land and water resources; pedology, chemical and biological fertilizers;...).
- Crops and forestry (RD activities ranging from soil preparation to harvesting; integrated and biological pest control; improvement of plant resistance to disease and environmental pressure; improvement in production of vegetable proteins; viticulture; improvement of production of biomass and wood; harvesting of biomass and wood;...).
- Domestic and wild animal products (breeding, nutrition, care, shearing, milking, transportation, slaughter of animals; production of raw milk, unprocessed wood, skins, eggs, honey; animal pathology and veterinary medecine; ...).
- Fishing (aquaculture, genetics, restocking, marine biomass;...).
- Agricultural technology (agriculture civil engineering; mechanisation; hydroponic culture; fishing technology;...).

Note : This item excludes activities related to biotechnologies, as they are relevant to the specific objective 2.3.2.

Objective 1.2. - Improving the quality and processing of agricultural products.

(Preliminary preparation of products, packing, transportation, storage, protection, freezing; vinification process; wood protection, storage, transport;...).

Objective 2.1. - Eliminating and reducing hindrances.

- S/T activities upstream and downstream to standardization and legislation; contextual research.
- Metrology and reference materials.
- Methods and techniques of measurement and control; measurement and control equipment and instrumentation.

Note : Medical instrumentation should fall into specific objective 6.2.

Objective 2.2. - Improving and developing new techniques and products for conventional industries.

- Steel (production and processes; properties and utilization; new techniques).
- Non-ferrous metals and alloys (ditto).
- Materials science and technology (high temperature materials; particulate and porous materials;...).
- Chemicals and chemical technologies.
- Pharmaceutical products and technology.
- Food stuffs and food technology.
- Mechanical, electrical, electromechanical equipment, machine-tools...
- Civil transport equipment (aeronautic, road, rail, marine).
- New technologies for conventional branches (e.g. textile, clothing, foot-wear, motorcar, construction, etc...).
- Basic technologies.

Notes : Activities relevant to wood and its by-products and to ceramics should be placed into specific objective 3.1.

Applications of biotechnologies should be placed into specific objective 2.3.2.

Objective 2.3.2. - Information technologies.

This objective includes, in a general way, those S/T activities relevant to electronics, informatics and telecommunications.

- Materials, components and microelectronics.
- Informatics, office machinery, data-processing equipment.
- Telecommunications and teleinformatics

- Remote sensing (part of this activity should fall into specific objectives 1.1, 3.1, 5.1).
- Visualization.
- Information and documentation systems; data bases.
- Audiovisual.
- Automation and robotics
- Automatic translation.
- Artificial intelligence, recognition of forms.
- Standardization (standardization relevant to information technologies should not be placed into the more general objective 2.1.).

Notes : Medical software and instrumentation should be placed into specific objective 6.2.

Socio-cultural aspects, impact on employment and applications to education and training should not be included in this objective.

Objective 2.3.2. - Biotechnologies.

- Enzymatic and genetic engineering.
- Applications to agriculture (improvement to cultivated species, breeding...).
- Applications to food technology.
- Applications to pharmacology.
- Other industrial applications (fine chemicals, xylochemistry, ...).
- Safety and risk assessment.

Objective 3.1. - Optimum use of raw materials, including their recycling and substitution materials.

- Metals and mineral substances, including clay based materials (exploration, remote sensing, geology, geophysical and geochemical methods, drilling techniques, ore processing, mining technology).

- Wood as a renewable raw material (properties, processing, pulp and paper, xylochemicals).
- Recycling of non-ferrous metals (collection and processing of scraps and residues).
- Substitution materials and their technology.
- Recycling of urban and industrial wastes.

Notes : Production, harvesting, transport and storage of wood should fall into objectives 1.1, 1.2.

Exploration and extraction of energy materials (fossil fuels, uranium) should fall into the specific objective 4.1.

Objective 4.1. - Developing nuclear fission energy.

- Nuclear fuel cycle (prospecting for and extraction of ores; refining; enrichment; fabrication; reprocessing and refabrication; storage and management of wastes; safeguards for fissile and fertile materials).
- Reactors (light water, fast breeder, high temperature, other types; reactor physics; nuclear measurements; design and technology; safety, including ergonomic aspects; operation; maintenance; decommissioning; radio protection; operators training).

Objective 4.2. - Controlled thermonuclear fusion.

Plasma physics; closed and open-ended configurations; ignition; very high density plasmas; fusion reactor technology.

Objective 4.3. - Developing alternative energies.

- Solar, tidal, wind, geothermal, hydraulic energies.
- Production, storage, transport, utilization and safety of hydrogen.
- Synthetic fuels from solid fuels and from biomass.

Objective 4.4. - Optimum use of fossile fuels.

- Basic technology
- New mining techniques (automation)
- Liquefaction and gasification in situ of solid fuels.
- Deep drilling (on land and offshore).
- Refining and desulphurisation of products.
- Fuel extraction from oil-bearing shales.

Objective 4.5. - Energy savings.

- Insulation techniques and materials; low-consumption motorvehicles, industrial equipment and processes; high-efficiency thermal engines and generators; reducing losses in distribution grids; energy storage; new design for buildings and habitat.
- Energy system analysis and modelling; strategy studies.

Objective 5.1. - Developing S/T activities of benefit to developing countries.

- Tropical agriculture (improving agricultural production, development of land, including remote sensing; technologies, training).
- Tropical medecine, health, nutrition, pharmacology, training.

Objective 6.1. - Improving safety.

Physical safety at home, and industrial safety, covering more generally work (including ergonomic aspects), public buildings and transportation.

Notes : Nuclear safety should fall into the specific objective 4.1.

Safety related to the biotechnologies should fall into specific objective 2.3.2.

Objective 6.2. - Protecting health.

- Medecine and public health.
- Effects of pollution and noise on human health.

- Hygiene at home, work, public buildings and transportation
- Food hygiene and nutrition
- Radioprotection for all aspects not relevant to objective 4.1.

Note : Applications of biotechnologies should fall into specific objective 2.3.2.

Objective 6.3. - Protecting the surroundings (environment and preventing health hazards)

- Air, water, soil and substratum pollution ; acoustic, thermal and electromagnetic noises
- Ecosystems and human environment
- Clean technologies
- Climatology

Note : Biological contaminations should fall into the specific objective 2.3.2.