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THE COMMON POLICY IN THE FIELD OF SCIENCE AND TECHNOLOGY

(Communication from the Commission to the Council)

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R E S U M E

La présente communication a été élaborée en vue du prochain Conseil Recherche. Elle fournit des informations visant à mettre en lumière l'état actuel du développement de la politique commune dans le domaine de la science et de la technologie et à présenter une vue d'ensemble de toutes les actions de recherche en cours ou prévues pour la période 1977-1980 et de leur place dans une stratégie cohérente. D'autre part, elle esquisse quelques perspectives de développement de la politique commune de R&D pour la période 1981-1985.

Ce document est destiné à faciliter le débat général sur les politiques nationales et communautaire de R&D, débat qui selon la Commission devrait :

- confirmer les grandes lignes de la politique de R&D actuellement poursuivies, ainsi que les priorités retenues,
- fournir des informations utiles à la Commission pour la préparation de la prochaine phase du développement de la politique commune de R&D.

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THE COMMON POLICY IN THE FIELD OF SCIENCE AND TECHNOLOGY

Communication by the Commission to the Council

INTRODUCTION

In its resolution of 14 January 1974, the Council agreed to the progressive development of a common policy in the field of science and technology. The decision resulted from the realization that Europe would only be successful in the future if it recognized the key role of research and technology in creating the conditions for its continued, independent existence and if it could fully develop and utilize this capacity. In the same resolution, the Council specified that during 1976, conclusions should be drawn on the experiences gained during this first phase. Therefore three years following the commitment to a real common policy in the field of science and technology, the Commission presented in June 1977, the guidelines to this policy for the period 1977 - 1980.

The present communication has been elaborated at the request of the Council in the light of the forthcoming Research Council. It provides information which highlights the current state of development of the common policy in the field of science and technology and presents an overview of all the research actions either underway or planned for the period 1977 - 1980 and their role in the development of a coherent strategy. It is particularly intended to facilitate the general discussion on national and community R & D policies which the Commission feels should

- approve the main guidelines of the current R & D policy and the selected priorities;
- provide the Commission with relevant information for the preparation of the next phase of the development of the common R & D policy.

I. GENERAL OBJECTIVES AND SELECTION CRITERIA

1. The Common Policy in Science and Technology is aligned on the Community's sectorial policies.

Its objectives accord with the political aims of the Community and relate to four main areas:

- long term securing and conservation of resources (raw materials, energy, agriculture),
- promotion of the economic development of the EEC so as to make it internationally competitive,
- the improvement of living and working conditions in the EEC,
- protection of the environment and nature.

2. The Member States accord priority to these same broadly based objectives for the definition of national programmes. The Common policy therefore not only gives additional weight to the efforts of the Community countries but also allows to organize the coordination of the national activities in the frame of programmes given priority at Community level.

3. The following criteria have proved reliable for the purpose of selecting common R & D activities:

- the project cannot be undertaken by the individual Member States, since it entails costs which are too high in terms of either money or staff (fusion);
- the implementation of projects at Community level results in greater efficiency or rationalization, e.g., because the research teams are scattered over a wide area in the Member States and are of subcritical size (certain sectors of medical research, town planning, social research);
- there are common requirements at Community level which necessitate common action projects (e.g. in the environmental sector and in the fields of nuclear safety, reference materials and radiation protection);

- activities which the Community has an important role to play in coordinating or stimulating (e.g., in promoting the development of new sources of energy, energy saving and the conservation of raw materials);
- research and technology projects require transnational project structures (e.g., in transport, information and documentation or telecommunications).

II. PROGRAMMES

4. The wide variation of EC-programmes (Tables 1 and 2) derives from this overall strategy. The following sections will explain just how the programmes already adopted by the Council and those which are in preparation, arise out of this overall concept.

FIRST MAIN AREA

5. Long-term securing and conservation of resources
(Approximately 72 % of financial resources in 1978)

This includes:

energy
raw materials
agriculture.

6. The main emphasis is on the energy sector (68,6 % of research funds in 1978). The objectives of R & D policy are linked to the aims of Community energy policy. All possible energy options must be kept open for the future and the exploitation of existing indigenous energy sources must be optimized. This would involve, in particular, greater use of domestic sources of coal. It is necessary to guarantee that nuclear energy can be utilized safely and reliably; in this field, Community research is principally concerned with the transnational areas, reactor safety and the development of safe, common solutions for the fuel cycle. New sources of energy, too, must be developed, particularly fusion energy, solar energy, geothermal energy, but also potential new

energy vectors such as hydrogen. Lastly, energy research lays particular emphasis on energy saving.

Programmes:

- Coal
- operational safety in mining **
 - mining technology **
 - upgrading of coal **

Selection criteria:

COMMON REQUIREMENTS:
Safety at place of work, increase of productivity and conservation of production; better utilization of coal and by products

Nuclear energy

- Plutonium recycling
- Management and storage of radioactive waste
- Reactor safety
- Decommissioning of nuclear installations
- Codes and standards for fast breeders *
- Plutonium fuels and research on actinide
- Management of nuclear materials

COMMON REQUIREMENTS:
The safety of nuclear power plants and fuel cycle facilities are a matter of Community priority; guarantee of ultimate storage for the Community;
COORDINATION

New sources of energy

- Controlled thermonuclear fusion
- JET (Joint Undertaking)
- Solar energy
- Geothermal energy
- Utilization of hydrogen

COSTS, GREATER EFFICIENCY:
Division of labour, common use of test rigs at EEC level (STIMULATION, SUBCRITICAL TEAMS)

Energy saving

- Energy saving
- Energy modelling and systems analysis

STIMULATION, COORDINATION

7. The aim as regards raw materials (2,3 % of financial resources in 1978) is to increase the potential for self-sufficiency and to save raw materials by means of recycling, substitution and product planning. Research makes a medium- and long-term contribution to industrial and economic policy.

* Sent to the Council but not yet approved.

** Research according to art. 55 of the ECSC treaty

Programmes:

- Primary raw materials
- Exploration and extraction of Uranium
- Paper and board recycling
- Recycling of urban and industrial waste (secondary raw materials) *

Selection criteria:

EFFICIENCY: avoidance of duplication of activities,
COMMON REQUIREMENTS: intensification of search for domestic deposits, combination of SUBCRITICAL TEAMS, STIMULATION, COORDINATION

8. Lastly, future research in agriculture (1,1 % of financial resources in 1978) will mainly be concerned with the efficient utilization of land for regional development and a reduction of the use of pesticides and fertilizers (which again must be viewed in the light of energy saving and the environment, the effects of intensive agricultural activity on soil structures and the water balance, the economical use of animal feeding-stuffs and improved animal nutrition. These aspects of common agricultural research are designed to contribute to the achievement of technological progress, although not at the expense of the environment or the consumer. It is certain that future agricultural research programmes in the Community will also have to take account of the problems of the developing countries. In this context teledetection of agricultural resources is of particular interest.

Programmes:

- Coordination of agricultural research
- Food technology **
- Teledetection of agricultural and Water resources

COMMON REQUIREMENTS:
contribution to the solution of the problems of European agricultural policy, GREATER EFFICIENCY, STIMULATION.

SECOND MAIN AREA

Competitive economic development

(14,1 % of financial resources in 1978)

9. The traditional industrial structures are undergoing rapid change. Many industrial sectors are switching production to low-wage countries. The export of European capital goods will further strengthen this development. This situation calls for the development of new technology- and research-intensive industries.

* Sent to the Council but not yet approved.

** A second programme is in preparation.

Preparatory work on imparting to European industry a new driving force for the future must begin today. There is strong pressure from international competition, particularly on the part of the US and Japan, in the field of advanced technology-intensive industries such as data processing and electronics. The only chance for the Community in this area is an intensification of its industrial research efforts. This will require a division of labour for the coordination of which, in certain areas, the Community is the appropriate instrument. The research areas concerned are of a transnational character, requiring a large market for their sales, e.g. electronic data processing, aeroautics and electronic measuring instruments. It is becoming increasingly advisable to take account of research activities resulting from changed conditions of economic growth. The economical utilisation of energy and raw materials and environmentally acceptable manufacturing processes have become a necessity.

Programmes:

Advanced technologies - Data processing
- Aeronautics*

Conventional technologies - Textiles research
- Footwear industry
- Ceramics industry**
- Community Bureau of References

Selection criteria:

COMMON REQUIREMENTS:
competitiveness at international level, introduction of new technological processes, promotion of innovation, services at EEC level,
TRANSNATIONAL PROJECT (market) STRUCTURES

THIRD MAIN AREA

Improvement of living and working conditions

(6,7 % of financial resources in 1978)

10. The present questioning of the role of research policy is closely related to the fact that its development to date has been largely independent of social requirements. R & D policy in the post-war years concentrated on spectacular large-scale projects, social problems came to be neglected. As a subject, society must become an independent area of research.

Concerted-action projects in the field of medical research and town planning are the first relevant actions in this respect. The programme relating to biology and radiation protection must be considered in this context.

* Sent to the Council but not yet approved

** In preparation

11. Many branches of the social sciences are still at the initial stage of their development. Research teams are dispersed and do not collaborate at EC level. Problems, however, do not stop at national frontiers. Empirical material, which is insufficient at the level of individual Member States is however necessary in order to obtain comparable research results. In future, social research can and must contribute to a better assessment of important questions by the politicians in the Community institutions and in the Parliaments and Governments of the Member States. A common social research programme is being prepared.

Programmes:

- Medical research*
- Radiobiology and radiation protection
- Town planning

Selection criteria:

COMMON REQUIREMENTS:
Interests transcending national frontiers,
EFFICIENCY: comparative material from a single country is inadequate, combination of SUBCRITICAL PROJECTS

FOURTH MAIN AREA

Protection and conservation of the environment and nature
(5,2 % of financial resources in 1978)

12. Our future is threatened by the devastation of the environment. Measures must be taken to limit or obviate such dangers. In 1973, the Community adopted a common environmental policy. It is justified by the international nature of the problems posed and the need to avoid effects aimed at on the free movement of goods and free competition in the Community, which could result from isolated uncoordinated measures at national level. This policy must be based on a solid scientific and technical foundation and for this reason the Community has been conducting research activities in the field of environmental protection since 1973. They relate to the investigation of pollution mechanisms and effects of environmental pollution on man and the environment by means of epidemiological studies and ecological and toxicological research, as well as the development of anti-pollution and clean technologies.

* The second medical research programme has been sent to the Council

They include, for example, concerted action in the field of treatment and use of sewage sludge. There is also a proposal for research in the field of climatology aimed at improving the forecasts of the long-term effects of human activities on the climate, and at developing new models.

Programmes:

- Environmental protection
- Atmospheric pollution
- Organic micro-pollution in water
- Pollution in the iron and steel industry
- Treatment and use of sewage sludge
- Climatology *

Selection criteria:

COMMON REQUIREMENTS:
interests transcending
national frontiers;
STIMULATION AND COORDINATION

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o o

13. There are finally to be mentioned horizontal and infrastructure activities (1,3 % of financial resources in 1978). Indeed, typical tasks for common research arise from the general political development of the Community and in the context of science and technology since they either require common infrastructures or derive from a common need:

Programmes:

- Scientific and technical information and documentation (EURONET)
- Automatic translation
- Data processing
- Operation of HFR-reactor
- Training

Selection criteria:

COMMON REQUIREMENTS OF
ALL MEMBER STATES; EFFI-
CIENCY

III. MODALITIES

14. In accordance with its objective, the Community is mainly concerned with applied research. Three modalities, which have proved successful and should be retained, are available for the imple-

* Sent to the Council but not yet approved.

mentation of Community action projects:

- direct action
- indirect action
- concerted action.

Direct action

15. Direct action involves independent Community research conducted by the Community's own research staff in the four research establishments of the Joint Research Centre. The JRC has its own specific role within the Common Policy in Science and Technology. It can be summarized as follows:

- a) The execution of programmes of a "central" nature: the concentration of the JRC on research activities - which justify the establishment of a broad research potential at Community level, - which call for the centralization of facilities or functions (e.g. by the creation of large-scale installations), - in which the JRC can act as a focal point or catalyst for co-ordination at Community level - and finally in which it can promote the application of new technologies throughout the Community.
- b) The performance of a public service role: the JRC is developing this by meeting the needs of Government organizations, universities and industry for specialized equipment, know-how, products and services. A significant factor in this respect is the independent position of the JRC and its impartial judgment.
- c) The provision of services to the Commission: the JRC can act as the Commission's own tool in the provision to it of scientific and technical expertise and support in the formulation and implementation of the sectoral policies of the Communities. An important new development in this respect is the contribution which the JRC can make to scientific and technical co-operation with the developing countries within the development policies of the Community.

Indirect action:

16. Indirect action concerns research on a contract basis at Community level involving public research institutes or private industrial undertakings in all the Member States.

On average, only half the costs of each project are financed from Community resources. Indirect contract research is an important instrument of coordination. Because of the general and specific selection criteria applicable to Community programmes, it makes possible R & D activities which could not always be conducted in such a form in the individual Member States. In particular, it provides the opportunity of employing the existing research groups and laboratories in the Member States and of assembling the most competent research teams at any time.

Concerted action:

17. As regards concerted-action projects, the overall programme is defined at Community level. The individual elements of the programme are introduced and fully financed by the Member States who are responsible for their execution. The Commission coordinates the activities involved and ensures an exchange of information. In suitable cases, concerted action makes it possible to secure effective coordination for a low level of expenditure.
18. There are no firm rules concerning the relationship of the three different modalities of research. They can operate to their reciprocal enrichment. For example, the work performed under a concerted-action project can give rise to indirect-action projects with greater Community involvement. In this way concerted-action projects can provide an effective and inexpensive test for the investigation of new research programmes. The three different forms of action must be coordinated. The setting-up of joint programme committees for direct- and indirect-action projects (where these run concurrently) has proved successful and is to be continued.

19. In regard to these modalities two fundamentally different levels of action must be distinguished. The first level is that of actual research with specific objectives. This involves the JCR, with its research workers and laboratories, and research in national laboratories, whether public or private. Within the scope of general research objectives, every research institute, and particularly the JCR, has a specific role to play. The second level of action involves the organization of cooperation, and the joint planning and coordination of the activities of the individual research teams. This is the appropriate area for indirect and concerted action. It brings together research teams from the various centres and laboratories in the Community countries and from the JCR.

Both levels are necessary, although different, elements of the coherent common R & D policy.

IV. THE EEC PROGRAMMES IN RELATION TO NATIONAL PROGRAMMES

20. The four main aims of common research are largely reflected in the objectives of national research policies and activities. It follows that there are two aspects in the relationship between the Community programmes and national programmes:

- (a) The Community programmes combine parts of the national programmes into a coordinated whole at Community level and the results of this research are of benefit and importance to the Member States and the Community. The proportion of coordination of the R & D activities of the Member States varies with the area in question (fusion 100 %, solar energy 20-20 %, environment 15-20 %).
- (b) Activities with a specific Community objective such as the harmonization of standards at Community level complement the corresponding national research.

In both areas (a) and (b), the Joint Research Centre has tasks corresponding to its specific role.

Community research does not cover the field of basic research, since, in the nature of things, this area is not a Community specific task, moreover, the European Science Foundation assumes responsibilities for coordination on a larger European basis.

V. INTERNATIONAL COOPERATION

21. International cooperation is, and will remain, an important element in Community research. In the first phase of common R & D policy, it was possible to consolidate and develop cooperation with the COST countries (Western European countries which are not members of the EC). Cooperation commenced with the developing countries, particularly the Lomé countries, the Mahgréb and the Mashreq and also with some non-associated countries (India, etc).

Further stimulus was given to cooperation with the major non-European industrial countries, particularly the US and Canada.

The Community maintains close contact with the international organizations: the UN and its subsidiary organizations such as UNESCO, ECE, IAEA, FAO, UNEP, WHO, and the OECD, including the IEA, NEA and ESF. In particular, the Commission has been instrumented in coordinating the contributions of the Member States to UNCSTD⁺⁾ . An action programme on behalf of developing countries at Community level is in course of preparation. Finally should be mentioned the contacts with ESA.

DISSEMINATION OF INFORMATION, UTILIZATION OF RESULTS AND EVALUATION OF R&D

22. In recent years, the Community has taken all necessary steps actively to promote the dissemination and utilization of information. The forthcoming establishment of EURONET is a landmark in this respect. As regards the monitoring of success (evaluation of research activities), investigations have been introduced for the evaluation of the R & D activities at Community level. A first example is the evaluation scheme estab-

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|---------|---|
| UN: | United Nations |
| UNESCO: | United Nations Educational, Scientific and Cultural Organization |
| ECE: | Economic Commission for Europe |
| IAEA: | International Atomic Energy Agency |
| FAO: | Food and Agricultural Organization |
| UNEP: | United Nations Environment Programme |
| WHO: | World Health Organization |
| OECD: | Organization for Economic Cooperation and Development |
| IEA: | International Energy Agency |
| NEA: | Nuclear Energy Agency |
| ESF: | European Science Foundation |
| UNCSTD: | United Nations Conference on Science and Technology for Development |
| ESA: | European Space Administration |

lished for the activities of the Joint Research Centre (JRC); this scheme is based on the establishment of semi-annual reports on the progress of research. As far as the indirect actions are concerned, the services of the Commission are examining with the help of the Advisory Committees for the Management of Programmes (ACPM) the various methods in view of their possible adaption to the characteristics of the individual programmes.

Finally, concerning the evaluation for the decision-maker, the Commission services are studying the various methods applied or envisaged within the Member States in view of their possible adoption at Community level.

VII. FINANCIAL RESOURCES AND RESEARCH STAFF

(Table 3 and 4)

23. In 1974, when the development of actual Community R & D policy commenced, the financial resources available to Community research amounted to 0,9 % of public expenditure for this purpose in the Member States. In 1978, they totalled 1,8 %. The Community's share should increase to roughly 2 % in 1979 and 1980.

This percentage should not obscure the fact that by concentrating its coordinating, stimulating and catalytic effect on a number of sectors, Community research has already become an efficient instrument producing results which are judged favourably (Table 3).

Table 4 gives details of the R & D staff employed by the Community.

VIII. OUTLOOK

THE PRESENT PHASE 1977 - 1980

24. In 1979 and 1980, development will continue in accordance with the guidelines laid down by the Commission in 1977.

The coordination at the level of national research policies is to be continued and intensified. It applies mainly the provision and exchange of information of interest and use to the Member States and the Community (CREST, comparison of national R & D policies).

At project level, coordination is being continued in particular by means of the indirect and concerted action projects themselves.

25. By 1980, as indicated in the guidelines 1977 - 1980, the following new proposals for indirect action projects are to be sent to the Council for the first time:

- biomolecular engineering
- social research
- effects of non-ionizing radiation.

In addition a number of proposals have already been submitted to the Council but have not yet been approved. Some of them are new proposals:

Indirect Action Projects: Climatology
 Secondary raw materials
 Codes and standards for fast reactors

Concerted Action Projects: Medical Research *

others relate to the continuation or revision of existing programmes:

Direct Action: Multiannual programme of the Joint
 Research Centre (1980 - 1983)

Indirect Action: Environmental research (revision)
 Community Bureau of
 References (continuation)
 New sources of energy (continuation)
 Fusion (continuation)
 Radioactive waste (continuation)
 Plutonium cycle and
 its safety (continuation)
 Radiobiology and health
 protection (continuation)

* Second medical research programme and possibly a third proposal later on.

26. In regard to organization and procedures two problems arose: One was the large number of programmes undertaken; the individual programme thus may in some instances appear to constitute independent elements without internal cohesion. In addition, the structure thus created gives rise to internal, administrative and procedural difficulties. On the other hand, even emphasized by the large number of individual programmes, the slowness of Community procedures has often proved to be a serious obstacle.

27. Remedies must be found for these problems:

(a) The Commission will examine the possibility of combining the large number of indirect and concerted action projects into larger programme units.

(b) At the same time, acceptance must be gained for the "rolling programme" principle in order to ensure the continuity of research programmes.

THE NEXT PHASE : 1981 - 1985

28. The Commission is presently preparing the next phase in the development of the common R & D policy. This will take account of the actual economic and technological development of the Community as well as the experience gained since 1974.

29. First, the Commission considers that during this next phase the projects conducted to date or scheduled for 1977-80 will continue to provide one of the bases for the common R & D policy. As a general rule, then, these projects should be intensified and extended while at the same time their effectiveness should be improved in terms of both scientific and technical results and coordination of national activities.

30. Moreover, multisectorial projects should be defined and proposed in order to tackle strategic problems in view of the long term development of the Community - concerning both the needs of society as well as the industrial development.

31. Lastly, the common R & D policy can in general terms help to improve the efficiency of the "European research system" by stimulating scientific creativity in the Community and by aiding the solution of R & D problems common to all the Member States.

In this context it will be appropriate to examine to what extent Community action would contribute to the solution of the problem of mobility of researchers (European Statut, intersectorial mobility, temporary employment ...). One could also envisage the attribution of a "European Label" to certain specialized national research centres (centres who would have the task to stimulate the exchange of scientists and to constitute temporarily european teams).

TABLE 1

EUROPEAN COMMUNITIES
SCIENTIFIC AND
TECHNICAL RESEARCH COMMITTEE
(CREST)

Brussels, 16 March 1979
XII/323/79
CREST/1227/79

**COMMON POLICY
ON SCIENCE AND TECHNOLOGY
R & D PROGRAMMES**

(1. 4. 79)

CREST/1227/79
EEC/EURATOM/ECSC

COMMON POLICY ON SCIENCE AND TECHNOLOGY
R & D Programmes

1-4-1979

- 1. R&D policy
 - 1.1 Guidelines
 - 1.2 FAST
 - 1.3 Education and training

2. Direct actions

2.1 JRC

3. Indirect and concerted actions

3.1 Resources

3.1.1 Energy

- Coal: safety in mines, mining techniques, upgrading of products
- Solar energy
- Geothermal energy
- Use of H₂
- Energy conservation
- Systems analysis
- Plutonium recycling
- Radioactive waste management and storage
- Light-water reactor safety
- Phasing out of nuclear power stations
- Codes and standards for fast breeder reactors
- Controlled thermonuclear fusion I
- Controlled thermonuclear fusion II
- JET

3.1.2 Agriculture

Mariculture

3.1.3 Raw materials

- Primary raw materials
- uranium
- recycling of waste
- paper and board recycling

3.1.4 Water

3.2 Industrial development

Textile industry

Footwear industry

Ceramics industry

Data processing

- 1st set of projects: data bank (organ and blood matching), legal documentation systems, computer-aided design

- 2nd set of projects: software portability, support for the use of data processing, high-speed data transmission techniques, exploratory studies, development programme

Aviation industry (airframes, helicopters)

Community Bureau of References

3.3 Life in society

Town planning (large urban concentrations)

- Medical research: congenital abnormalities, cellular ageing, extracorporeal oxygenation, suicide, thrombosis, hearing, perinatal monitoring, electrocardiography

Foodstuffs I

Foodstuffs II

Radiation protection I

Radiation protection II

Applied molecular biology

Social sciences

Industrial hygiene in mines

Safety and health at work

3.4 Environment

Climatology

Protection of the environment

Sewage sludge

Atmospheric pollutants

Organic micro-pollutants in water

Pollution in the iron and steel industry

4. IT Information and documentation

STID

Computer translation

	1976	1977	1978	1979	1980	1981	1982	1983	1984
1.1 Guidelines			I.A. 4.4 MUA						
1.2 FAST									
1.3 Education and training									
2.1 JRC		390.8 MUA	2300 Staff members		2280 Staff members				
3.1.1 Energy		ECSC 7.5 MUA							
Coal									
Solar energy	I.A. 17.5 MUA	4 Staff members			50 MUA				
Geothermal energy	I.A. 11.3 MUA	3 Staff members			20 MUA				
Use of H ₂	I.A. 11.24 MUA	3 Staff members			20 MUA				
Energy conservation	I.A. 11.8 MUA	3 Staff members			20 MUA				
Systems analysis	I.A. 3.81 MUA	3 Staff members			7 MUA				
Plutonium recycling	I.A. 4.5 MUA	3 Staff members			7 MUA				
Radioactive waste management and storage	I.A. 19.16 MUA	4 Staff members				I.A. 53.5 MUA	15 Staff members		
Light-water reactor safety									
Phasing out of nuclear power stations									
Codes and standards for fast breeder reactors									
Controlled thermonuclear fusion I	I.A. 124 MUA	113 Staff members							
Controlled thermonuclear fusion II									
JET									
3.1.2 Agriculture									
Mariculture	10.3 MUA				18.6 MUA				
3.1.3 Raw materials									
Primary raw materials									
uranium									
recycling of waste									
paper and board recycling									
3.1.4 Water									
3.2 Industrial development									
Textile industry	0.25 MUA								
Footwear industry		0.235 MUA							
Ceramics industry									
Data processing									
1st set of projects									
2nd set of projects									
Aviation industry									
Community Bureau of References	I.A. 2.7 MUA	7 Staff members				I.A. 11.3 MUA	14 Staff members		
3.3 Life in society									
Town planning									
Medical research									
Foodstuffs									
Radiation protection									
Applied molecular biology									
Social sciences									
Industrial hygiene in mines									
Safety and health at work									
3.4 Environment									
Climatology	I.A. 116 MUA	10 Staff members							
Protection of the environment									
Sewage sludge									
Atmospheric pollutants									
Organic micro-pollutants in water									
Pollution in the iron and steel industry	ECSC 10 MUA								
4. IT Information and documentation									
STID	2.1 MUA	1.75 MUA			3.5 MUA				
Computer translation	2.97 MUA								

Programmes decided
Programmes selected by the Commission
Programmes in preparation
(A) Date of revision of the programme
I.A. Indirect action
D.A. Direct action
C.A. Concerted action
ECSC: ECSC action

MUA: Million U.A.
MEUA: Million E.M.U.

PROGRAMME OF THE JOINT RESEARCH CENTRE (1977 - 1980)

AREA	Funds (m EUA)
I Reactor Safety	83.9
II Plutonium fuels and basic on actinides	48.1
III Management of nuclear materials and radio- active waste	22.9
IV Solar energy	15.2
V Hydrogen	16.3
VI Thermonuclear fusion technology	14.7
VII High-temperature materials	10.5
VIII Environment and resources	38.0
IX Measurements, Standards and reference techniques	61.6
X Services and support	34.6
XI HFR operation	44.9
	<hr/>
	Total amount
	390.8
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NEW MULTIANNUAL PROGRAMMES OF THE JOINT RESEARCH CENTRE
sent to the Council (1980 - 83)

AREA	Funds (m EUA)
I Nuclear safety and fuel cycle	260 509
II New forms of energy	85 650
III Environmental research and protection	54 956
IV Nuclear measurements	47 947
V Specific support for the policies of the Commission	39 856
VI High-flux reactor	53 705
	<hr/>
	Total amount
	542 623
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COMMUNITY R&D APPROPRIATIONS BROKEN DOWN BY SECTOR

TABLE 3

Trend in payments 1973 - 78

in 1000 EUA at current prices

Sectors	1973	1974	1975	1976	1977	1978 (*)
1. R&D policy	474	685	855	697	670	1.678
2. Resources	45.082	60.977	87.301	102.353	153.972	183.656
(a) Energy	42.830	58.423	83.271	96.797	147.751	174.884
- fossil	2.160	8.690	24.135	24.987	38.758	37.500
- nuclear	38.785	47.301	55.455	62.000	83.725	105.152
- new sources	1.885	2.432	3.580	9.290	22.173	28.109
- energy saving	-	-	101	520	3.095	4.123
(b) Agriculture	1.534	1.711	2.662	4.074	3.526	2.890
(c) Raw materials	78	126	152	62	5	2.800
(d) Other resources	640	717	1.216	1.420	2.690	3.082
3. Industrial development	14.100	15.936	20.944	25.135	24.891	35.927
(a) Advanced-technology industries	-	-	-	42	99	9.913
(b) Other industries	7.676	7.700	9.505	12.098	14.670	14.891
(c) Services and infrastructure	6.484	8.236	11.439	12.995	10.122	11.123
4. Life in society	6.483	7.450	8.308	9.749	15.137	17.191
5. Environment	3.416	6.431	8.412	7.521	11.841	13.200
6. STID	821	1.028	1.518	1.593	2.887	3.293
TOTAL in 1000 EUA	70.436	92.507	127.338	147.048	209.398	254.945
Total as % of EUR-9 public expenditure	0,8	0,9	1,1	1,2	1,6	1,8
(*) provisional figures						

TABLE 4

STAFF NUMBERS AUTHORIZED UNDER THE BUDGET WITHIN THE FRAMEWORK OF COMMISSION RESEARCH AND INVESTMENT ACTIVITIES (1)

Types of projects	1973	1974	1975	1976	1977	1978	1979
1. <u>Direct action</u>							^A
Administrative posts	363	328	319	473	471	468	461
Scientific and technical posts	1.618	1.582	1.552	1.863	1.859	1.852	1.839
TOTAL	1.981	1.910	1.871	2.336 (2)	2.330 (2)	2.320 (2)	2.300(2)
2. <u>Indirect action</u>							
Administrative posts	28	29	28	41	55	60	76
Scientific and technical posts	268	303	285	281	331	346	395
TOTAL	296	332	313	322	386 (2) (3)	406 (2) (3)	471(2) (3)

(1) Including the staff made available to the Member States pursuant to the provisions of the Euratom Treaty (222 officials for the JRC and 49 officials for the indirect action projects in 1979).

(2) Including, in application of the Council regulation n° 2615/76 of 21.10.76, the regularization of local agents present during previous years.

(3) Including personnel under temporary contract, i.e. during 1979 1044 for the JRC and 139 for the indirect action. The staff covered by temporary regulations under the indirect action projects consist principally of JET officials who have increased in number as follows:

Years	Authorized staff
1977	80
1978	80
1979	125