

# COMMISSION OF THE EUROPEAN COMMUNITIES

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Brussels, 24<sup>th</sup> June 1980

PROPOSAL FOR A COUNCIL DECISION  
ADOPTING A SECTORAL RESEARCH AND DEVELOPMENT PROGRAMME  
IN THE FIELD OF ENVIRONMENT  
(ENVIRONMENTAL PROTECTION AND CLIMATOLOGY)  
(indirect and concerted actions)  
1981-1985

(presented by the Commission to the Council)

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CORRIGENDUM TO  
COM(80) 343 final  
of 24 June 1980

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Brussels, 18 December 1980

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Article 2

The amount of financial resources necessary for the implementation of the whole programme is estimated at 51 millions of European Units of Account, and the staff required is evaluated to be 18 including the means necessary for the coordination of concerted actions n. 1, 2 and 4 under point A of the Annex. The European Unit of Account is defined by the financial regulations in force.

~~These~~ figures are of an indicative nature only.

The indicative internal distribution of funds is shown under point B of the Annex.

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A. INTRODUCTION

The present proposal deals with a new R & D programme in the field of environment (environmental protection and climatology), a sector recognized as of priority interest in the conclusions of the 619th meeting of the Council on 20 December 1979 (Doc. 4230/80/RECH.1). The Council, while recommending the concentration of Community R & D programmes and the examination of the possibility of setting Community indirect and concerted action programmes in the context of an appropriate multiannual framework programme suggested to rationalize structures for the preparation, examination and implementation of Community R & D programmes.

In line with these recommendations the Commission has prepared the present proposal in which an attempt is made to group several concerted and indirect research actions pertaining broadly to the field of environment.

The following R & D actions were on hand at the end of 1979 (in addition to the direct action) :

- second R & D programme in the field of environment (indirect action) (1976-1980), revised on 9 October 1979 ;<sup>1)</sup>
- Community concerted action on the treatment and utilization of sewage sludge and Community-COST concertation agreement (COST 68bis), (27 September 1977-26 September 1980) ;<sup>2)</sup>
- Community concerted action on the analysis of organic micropollutants in water and Community-COST concertation agreement (COST 64b bis) (November 1978-October 1982 ) ;<sup>3)</sup>
- Community concerted action on the physico-chemical behaviour of atmospheric pollutants, and Community-COST concertation agreement (COST 61a bis) (November 1978-October 1982) ;<sup>4)</sup>
- COST action on marine benthic ecosystems with Community participation (COST 47) (April 1979 - April 1984) ;<sup>5)</sup>
- research programme in the field of climatology (indirect action) (1980-1984) ;<sup>6)</sup>

(1) O.J. L 74, 20.3.76  
 O.J. L 258, 13.10.79  
 (2) O.J. L 267, 19.10.77  
 O.J. L 72, 23.3.79  
 (3) O.J. L 311, 4.11.78  
 O.J. L 39, 15.2.80

(4) O.J. L 311, 4.11.78  
 O.J. L 39, 15.2.80  
 (5) O.J. ....  
 (6) O.J. L 12, 17.1.80

The attached draft decision for a R & D programme in the field of environment would group the indirect and concerted actions into two subprogrammes :

- 1) "Environmental protection"
- 2) "climatology "

Here, only the subprogramme "Environmental protection" is discussed in detail, in terms of motivation and contents. It is the follow-up of the on-going indirect action, augmented with the 3 concerted actions usually referred to as COST 61a bis, 68 b bis and 68 bis.

The subprogramme "climatology" to be integrated into this new sectoral research programme, was described in document COM (78) 408 fin.

The subprogramme "Environmental protection" together with the direct action programme (1980-1983)<sup>1)</sup> with which it is closely related, is aimed mainly at providing a scientific and technical support to the environmental policy of the E.C. and its action programmes.

This policy has evolved since its inception in 1973<sup>2)</sup> to adapt to a continuously changing situation with a resulting shift in priorities, and so has the R & D programme, as shown, by the recent revision (9 October 1979) of the second indirect action research programme.

Thus, while initially the emphasis was placed almost exclusively on pollution, its measure, its effects and its abatement, more importance is now granted to the prevention of pollution through the adoption of "clean" technologies, i.e. which pollute less, produce less waste and consume less natural resources. In addition, greater concern is given to the management of waste, including toxic waste, and to resource recovery from waste in order to effect savings in energy and raw materials as well as to alleviate disposal problems.

More attention is also directed to the conservation and protection of the rural environment, to wildlife conservation and to the improvement of the way or "quality" of life, which is influenced by the integrated effect of a whole series of environmental variables and not only pollution.

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(1) O.J. L 72, 18.3.80

(2) O.J. C 112, 20.12.73, and C 139, 13.6.77

With regard to pollution proper, much research remains to be done on such pollutants of early concern as, for instance, lead or cadmium but there is an increasing preoccupation with the health effects of chronic exposure to organic micropollutants, with the problems caused by diffuse sources of pollution, or with the "invisible" effects of air pollution on economic plants. Safety evaluation of new and old chemicals released in the environment has come to the fore, so have the hazards of accidental contaminations either from industrial plants (Seveso) or from oil tankers (Amoco-Cadiz). Last but not least, increased carbon dioxide in the atmosphere has emerged as a major, global pollution problem.

New R. & D programmes of the E.C. must take all this into consideration as they include short-term applied research, as well as strategic research for the mid- to long term environmental problems.

The previous environmental research programmes, including direct, indirect and concerted actions have yielded valuable results which have been published in the open scientific literature (over 500 papers) and in summary reports\*.

Numerous projects have been implemented in laboratories of the member countries and the results obtained have contributed to the attainment of the main objective of the programmes. This main objective as already mentioned, is to provide a scientific and technical basis for the Community policy on the environment while the specific aims of each research project correspond to those indicated by the research areas of the programmes which were: to establish the relationship between exposure and effects (criteria) for pollutants and nuisances ; to manage environmental information ; to reduce and prevent pollution and nuisances ; to protect and improve the natural environment.

Thus a wide range of problems were addressed such as the health effects of atmospheric pollutants, heavy metals and of noise, screening tests for genetic and ecological effects of chemicals, a pilot data bank on environmental chemicals (ECDIN), the analysis of organic micropollutants, the remote sensing of atmospheric pollutants and their physico-chemistry, stratospheric ozone chemistry, the utilisation of sewage sludge, effluent treatment, marine pollution, the management of natural areas, etc...

\* Series Environment and Quality of Life, EUR-5970, 1978 ; EUR-6388, 1980, Office for Official Publications of the EC, B.P. 1003 Luxembourg. See also EUR-6415 and reports on COST projects : EUCO/SP/48/75, EUCO/MDU/74/76 and EUCO/SO<sub>2</sub>/69/77

Some examples of achievements of the previous programmes are listed randomly hereafter :

- the relative importance of leaded petrol with regard to lead environmental contamination and lead body burden has been quantified
- psychological tests performed on lead-exposed workers have revealed memory, concentration ability and psychomotor functions significantly impaired and it was shown in experimental animals that learning performances remain affected even after interruption of lead-feeding
- a list of over 1500 potentially toxic organic chemicals identified in surface waters and other media in the Community has been established and is constantly updated
- the methodology for screening the mutagenic and carcinogenic potential of synthetic organic chemicals has been considerably enriched and improved through the joint effort of the main qualified national laboratories using most genetic systems available (microorganisms, insects, cultured human cells, etc...)
- equipment for the remote sensing of air pollution and of micro-meteorological parameters, developed partly under the programme, has been tested in field campaigns around large fossil-fuel power plants, in France, Italy and the United Kingdom. European teams of specialists have compared, in the course of these campaigns, their techniques for dispersion studies and modelling
- modifications of sleep pattern and psychological performance have been demonstrated in persons living in noisy areas
- some indices of morbidity and mortality were found to be correlated with water quality parameters in five member countries
- new tests systems using, for instance, sewage bacteria and marine molluscs have been developed for testing the ecological effects of inorganic and organic pollutants in the freshwater and marine environment
- methods for monitoring microbiological pollution of water have been improved
- the interaction between various air pollutants (sulfur and nitrogen oxides, ozone) in their effects on crop plants was shown to be a major factor to consider when setting limit values for air quality
- the relative importance of various mechanisms for the photochemical oxidation of sulfur dioxide in the atmosphere has been elucidated

- important data sets on the ecological effects of chemicals have been collected for inputting into the pilot data bank on environmental chemicals (ECDIN)
- the decline in seal population of the Dutch Wadden Sea was shown to be correlated to polychlorinated biphenyls pollution
- a common methodology for the analysis of heavy metals in sewage sludge has been elaborated and calibrated by a number of intercomparison tests
- a common methodology for the execution of field studies and pot trials for the assessment of the favourable and unfavourable effects of sludge application to agricultural land has been developed ; an assessment of the availability of nitrogen in sewage sludge with regard to its fertilizing value has been made.

The results from the second phase of the second programme which are not yet available are expected to confirm some of the results obtained so far and to give useful information on problems which were not tackled before, for example in the areas of clean technologies, oil spill clean up and bird protection.

Of equal interest to the acquisition of results are the achievements of the programmes in the promotion of cooperation among EC environmental scientists in the Member States and at the Joint Research Centre through joint projects, contact groups and research seminars. The close relationship between the Advisory Committee on Programme Management and Commission officials which was evolved over the years has proved fruitful. The process of coordination of national and Community research activities in the environmental field has been initiated and is progressing satisfactorily.

The preparation of the present proposal was greatly helped by the 1979 CREST-confrontation exercise which yielded useful recommendations (\*).

The present programme proposal has evolved from the first two indirect action programme, taking into account new research requirements originating from the results of research already carried out as well as from current trends in the environmental policy of the E.C. and of the Member States. It includes the four research areas already comprised in the second programme but with some internal shifts of emphasis and the addition of new topics plus a new fifth area on the methodological approach to the investigation of overall man-environment interactions.

(\*) Doc. CREST 1233 of 10 May 1979.

B. JUSTIFICATION AND AIMS

The environmental protection research subprogramme has three major aims :

- 1) its basic aim is to provide scientific and technical data to support the programme of action on the environment initially adopted by the Council in 1973 and renewed in 1977 for a 5 year-period. This action programme (O.J. C 139 of 13.6.77) is mainly concerned with the reduction of pollution and nuisance (title II), and the non-damaging use and rational management of land, the environment and natural resources (title III).

The action programme has produced at the date of 1 July 1979 directives, resolutions or other acts, of which 50 have been adopted by the Council so far. A substantial research effort is required to facilitate the implementation and to assess the enforcement of several of these, such as the following:

- a) the Council Directive of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (O.J. L 129 of 18.5.76)
- b) the Council Directive on Bird Protection of 2 April 1979 (O.J. L 103 of 25.4.79)
- c) the Council Directive of 18 September 1979 amending for the 6th time the Directive of June 1967 on dangerous substances (O.J. L 259 of 15.10.79)
- d) the Council Resolution of 26 June 1978 setting up an action programme of the European Communities on the control and reduction of pollution caused by hydrocarbons discharged at sea (O.J. C 612 of 8.7.78)
- e) the Council Resolution of 30 May 1978 on chlorofluorocarbons in the environment (O.J. C 133 of 7.6.78)
- f) the Proposal of 14 May 1979 for a Council Decision on chlorofluorocarbons reduction in the environment (COM (79) 242 Final).

g) The Council Resolution of 3 March 1975 on energy and the environment (O.J. C 168 of 25.7.75)

h) the Council Directive of 19 June 1979 on the protection of ground-water against pollution caused by certain dangerous substances. (O.J. L 20 , 26. January 1980)

2) The research programme must also address less immediate problems and prepare the way for policies to be enacted in the medium- to long term, taking account of foreseeable environmental trends. It should provide, as well, the means to evaluate the consequences for the environment of current policies aimed at protecting it.

3) Last but not least the environmental research programme is also an instrument to further the coordination at Community level of national research activities in the environmental field in order to improve the productivity of the overall effort through the encouragement of joint projects, the elimination of useless duplication as well as of gaps in research coverage.

In this respect it should be noted that while the Community's financial contribution for environmental research constitutes but a small percentage of the aggregate funding in the Member States (estimated at 178 MEUA for the year 1978\*) its action results in the effective coordination of a sizeable part of the overall effort.

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\* Doc. CREST n° 1245/79

The present programme will be carried out in close coordination with other research programmes of the E.C. which include an environmental component. These are :

- the parts of the Joint Research Centre programme (1980-1983)<sup>1)</sup>  
"Protection of the Environment" and "Remote Sensing from Space" in particular the following projects :
  - ECDIN
    - exposure to chemicals, particularly indoor pollution and organic compounds
    - air quality
    - water quality
    - heavy metals and health effects
    - environmental impact of conventional power plants
    - remote sensing : protection of the sea
- the R & D programme on recycling of urban and industrial waste (1979-82)<sup>2)</sup>
- the R & D programme on recycling of paper and board (1978-1981)<sup>3)</sup>
- the Agricultural research programme (1979-1983)<sup>4)</sup>  
in particular its Part A : Socio-structural objectives
  - land use and rural resources
  - effluents and wastes from agriculture
- the European Steel and Coal Community research projects in particular those concerned with environment problems in the steel industry.<sup>5)</sup>

Problems of radioactive contamination of the environment are addressed in two research programmes under the Euratom treaties :

- Biology-health protection (1980-84)<sup>6)</sup>
- Radioactive waste management and storage (1980-84)<sup>7)</sup>

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1) O.J. L 72, 18.3.80  
2) O.J. L 293, 20.11.79  
3) O.J. L 107, 21.4.78  
4) O.J. L 316, 10.11.78  
5) O.J. C 147, 13.6.79  
6) O.J. L 78, 25.3.80  
7) O.J. L 78, 25.3.80

C. PROGRAMME CONTENTS

I. Environmental protection

The subprogramme on environmental protection covers five research areas :

- 1) Research aimed at understanding the overall behaviour of pollutants in the environment, i.e. at investigating sources and pathways in the environment, metabolism in living organisms and effects on human health and on all components of ecosystems, following short and long term exposures. This research will lead to the establishment of criteria (exposure-effects relationships)
- 2) Research and development on the reduction and prevention of pollution and nuisances, with emphasis on "clean" technologies (less pollution and wastes, smaller consumption of energy and resources) in selected industrial branches in relation to the priorities of the action programme
- 3) Research on the protection, conservation and management of the natural environment, including studies on ecosystems and biogeochemical cycles
- 4) Research and development on environmental information management
- 5) Complex interactive systems : man-environment interactions, methodological approach

These five research areas are subdivided into a number of topics and sub-topics ; the classification is somewhat arbitrary, other equally logical schemes might be used.

RESEARCH AREA 1 : SOURCES, PATHWAYS AND EFFECTS OF POLLUTANTS

Beyond the establishment of criteria (exposure-effect relationships), the scope of this part of the programme is broader. It includes research on the whole succession of phenomena associated with pollutants : various sources thereof and their relative importance, pathways in the

environment, effects on man and on the environment following short and long term exposure and methodology of predicting these effects by simple and rapid tests, such as for carcinogenic and mutagenic effects.

Particular attention will be paid to the evaluation of potential risks either to human health or to the environment assessing the significance of factors (duration of exposure, interaction, age, health status...) which may modify the metabolism and toxicity of pollutants. Surveys of populations at risk will be particularly useful in this respect.

### 1.1. Heavy metals

The metals to be studied will be mainly those which are given priority in the E.C. Action Programme on the Environment such as Pb, Cd, Hg, Cr, V, As, Tl. Exposure through air, water, soil and food is considered.

The research needs identified at the Seminar "Trace Metals exposure and health effects" held at Guildford (UK) in July 1978 (Proceedings: EUR-6389, Pergamon Press, 1979) will be taken into consideration keeping in mind that the Community concern for metals is related to all types of environmental exposure.

1.1.1. sources and exposures (improvement of the reliability of analytical methods)

1.1.2. fate and pathways in the environment (including modelling)

1.1.3. ecological effects

1.1.4. metabolism and health effects (interaction and synergism, chronobiology, early biological indicators, groups at risk in the population, specifically exposed persons, toxic action at cellular level).

NB. Heavy metals are also included in topic 1.4 (air quality), topic 1.5. (freshwater quality) and topic 1.7. (marine environmental quality).

1.2. New chemicals and organic micropollutants

Research under this topic is closely linked to Community directives implemented or in preparation relating to toxic and dangerous substances in the environment as well as in foodstuffs.

These regulatory activities require a consolidated methodology for the toxicological and ecotoxicological assessment of organic substances, in particular the development, evaluation and improvement of screening methods. (cf. Report of the European Parliament PE 54100 on hearing held on 22-23 May 1978 on environmental carcinogens). Furthermore, knowledge has to be acquired and consolidated on pathways and fates in the environment of important organic pollutants, and of their effects on human health and on various targets other than man, including ecosystems.

- 1.2.1. Concerted action on "Analysis of organic micropollutants in water" (follow-up of COST 64b) to be extended at least until the end of 1983.
- 1.2.2. Fate and pathways, including biodegradation, in the environment and in food chains.
- 1.2.3. Ecological effects.
- 1.2.4. Metabolism and short and long term health effects (in particular carcinogenic, mutagenic and immunologic effects), including structure-function relationships.
- 1.2.5. Development of screening methodology for chronic and long term effects ,

NB. Organic micropollutants are also included in topics 1.5. and 1.7.

### 1.3. Asbestos and other fibrous materials

Public concern about the risks to human health from asbestos and other fibrous material is continuously increasing (cf. European Parliament Resolution on health hazards of asbestos of 9.1.78).

A substantial research effort is needed aiming, in particular, at the improvement of detection and measurement of asbestos and the assessment of health effects for low concentrations. The research proposed will also include the study of health effects of potential replacement products for asbestos.

- 1.3.1. Improvement of detection in air, water, biological and other materials.
- 1.3.2. Health effects (including epidemiological surveys) of asbestos and potential replacement products.

### 1.4. Air quality

While topics 1.1. to 1.3. are concerned with specific classes of pollutants in the environment, this topic addresses the general problems of pollution of one medium (the atmosphere) by gases, liquids and particulate matter. This is a complementary approach, focussing on problems common to many pollutants in air, depending on their physical form and on the reactions which can occur between them. Such research includes detection methods and their use in studying dispersion from various sources, the physico-chemical behaviour of pollutants, and their effects singularly or in combination on human health, on vegetation, and ecosystems.

The pollutants of main concern in this topic are sulphur compounds, nitrogen oxides, photochemical oxidants and suspended particulates. The physicochemical reactions between these different pollutants are the subject of a concerted action decided by the Council on 1978 for a 4-year period and integrated in the present programme proposal.

With regard to effects on plants, emphasis should be given to

experimental field determination of the effects of ambient loads of pollutants on plant growth, including yield of economically important plants.

- 1.4.1. Remote sensing techniques for air pollution measurements (combined with other techniques).
- 1.4.2. Dispersion and transport of air pollution (including modelling).
- 1.4.3. Concerted action on "physico-chemical behaviour of atmospheric pollutants" (follow-up of COST 61a), to be extended at least until the end of 1983
- 1.4.4. Health effects including epidemiological surveys.
- 1.4.5. Effects on plants and ecosystems.

1.5. Freshwater quality (surface and ground waters)

As for air quality, this topic includes research on general problems of pollution in inland water ecosystems considering the total sum of pollutants which can be found, epidemiological surveys on the health of selected population groups in relation to drinking water quality and characterization of water quality. This research topic is also linked to topic 1.2. and especially to the concerted action on "Analysis of organic micropollutants in water".

There are several EC directives or draft directives related to the quality of waters for different use (drinking water, ground water, bathing water, water for shellfish and fishlife) which are raising research requirements covered under this topic.

- 1.5.1. Improvement of water quality assessment (chemical parameters and bioindicators).
- 1.5.2. Typology of inland waters.
- 1.5.3. Ground water pollution; sources, transport, consequences.
- 1.5.4. Health effects of drinking water, including epidemiological surveys following or completing the surveys carried out during the 2nd Environmental Research Programme on the relationship

between water quality and health parameters.

1.5.5. Effects on animals and plants.

1.5.6. Microbiological pollution.

See also 1.2.1. and 1.2.5.

1.6. Waste heat

In view of the large amount of on-going national research on this topic carried out mainly by the electricity utilities, the major contribution might be in coordination activities including some cost-sharing contracts.

1.7. Marine environmental quality

This topic deals with various aspects of organic and heavy metal pollution of the seas and estuaries.

Special emphasis will be placed on hydrocarbon pollution in view of the recent accidents and threats to coastal waters, and the relevant Council Resolution of 26 June 1978. (\*)

Links will be ensured with other international programmes, such as the UNEP Mediterranean programme. A concerted action (COST 47), on baseline coastal ecosystem studies, is also related to this broad topic.

1.7.1. Development of methodology for monitoring marine water quality including remote sensing techniques.

1.7.2. Research in situ and under controlled conditions on the fate and effects of pollutants (excluding hydrocarbons).

1.7.3. Fate and effects of hydrocarbons particularly in relation to exploitable resources, taking a whole ecosystem approach.

1.7.4. Pathobiology of marine organisms in relation to pollution.

1.7.5. Base-line studies of coastal benthic ecosystems (particularly relating to COST project 47).

1.8. Noise pollution

With regard to this topic, the second programme concentrated on the effects of noise on sleep and psychological performance. From the results obtained as well as from other data presented

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(\*) O.J. C 612, 8.7.78 /

recently (3rd International Congress on Noise as a public health problem, Freiburg 1978) it becomes necessary to study long term health effects which would include epidemiological surveys and interactions of noise with other pollutants. Physiological and psychological effects of particular types of sounds (e.g. impulsive sounds of very short duration) should also be examined to assess if special standards are necessary, or if they can be considered jointly with other noise types on the basis of energy equivalence.

- 1.8.1. Health effects (especially on the cardiovascular system) of long term noise exposure, including epidemiological surveys and noise personal dosimetry.
- 1.8.2. Interactions of noise and other nuisances (e.g. vibrations) on health.
- 1.8.3. Effects of particular types of sounds, including impulsive sounds, infrasounds and vibrations, ultra-sounds.

RESEARCH AREA 2 TECHNIQUES AIMED AT THE REDUCTION AND PREVENTION OF POLLUTION

This broad field is concerned with pollution abatement or prevention. At the Environment Council meeting of 9 April 1979, the importance of less polluting production processes and reusing of wastes was emphasised. The Council asked the Commission to submit proposals for encouraging research in this field.

Other on-going research programmes are closely linked to this area (e.g. indirect action in the field of paper and board recycling, the concerted action on sewage sludge treatment and utilisation, R & D programme and demonstration projects in energy savings). So is the R & D programme in the field of recycling of urban and industrial waste recently adopted by the Council (O.J. L 293 of 20.11.79), because of the obvious environmental benefits of actions aimed at resource recovery from waste.

Under this research area attempts should be made to select economically sound techniques as well as new products and to develop technologies and processes to the pilot stage or to produce new chemicals which could reduce and/or prevent pollution.

Research would also be concerned with the development of clean-up techniques in case of accidental release of huge amounts of pollutants (e.g. oil spills at sea).

2.1. Concerted action on treatment and use of sewage sludges  
(follow-up of COST 68bis) to be extended at least until the end of 1983.

2.2. Pollution abatement in air, water and soil and noise reduction

This topic is aimed at developing up to the pilot stage advance techniques for reducing the pollution of present industrial processes and other sources of pollution. Also development of new products reducing the pollution in discharges would be considered.

2.3. "Clean technologies"

A special effort will be made in line with the declaration of the Environmental Council of 9 April 1979 which urged the Commission to develop its research activities and to disseminate technical information in this sector. These new technologies attempt either to avoid producing a particular type of pollution or to reduce significantly the energy and materials consumed as well as the amount of waste produced. The research would be limited to feasibility or pilot stage development in selected processes and industrial branches, to be identified on the basis of the priorities of the Action Programmes.

2.4. Consequences of waste management plans

This deals with the consequences for the environment of different ways of disposing of waste including pollution of soil, of groundwater and modification of the landscape (note that the problems of organic wastes from livestock breeding are covered in the agricultural research programme.)

2.5. Clean-up techniques for hydrocarbon pollution

These are mainly concerned with chemical dispersion of spilt oil or mechanical recovery from surface waters after accidental release, as for instance in off-shore drilling or wreckage of large

tankers. Bacterial degradation of oil should also be considered. This topic is linked to topic 1.7.3. (fate and effects of hydrocarbon pollution). R & D in this topic is recommended by the Council Resolution of 26 June 1978, mentioned on page 14.

#### 2.6. Impact of new technologies

Environmental consequences of new technologies should be considered as early as possible to foresee necessary modifications at the pilot stage, rather than after full development. This topic is related to topic 2.3.

### RESEARCH AREA 3 PROTECTION, CONSERVATION AND MANAGEMENT OF THE NATURAL ENVIRONMENT

This research area is concerned mainly with natural ecosystems as well as with the global effects of man-caused disturbances of the environment. In this content, the problems posed by particularly fragile or threatened regions (soils and slopes subject to erosion, forests, protected zones, etc.) should be considered. One should be able to evaluate the risks involved in their further deterioration as well as the possibilities of their restoration. The effects of modern agricultural management on ecosystems and the ways to prevent their deleterious consequences are included in this research area. Research on the protection of birds belongs to this area.

#### 3.1. Ecosystems studies

It is necessary to develop oriented basic research on the structure, functioning and development of ecosystems to better predict the consequences of anthropogenic influences, including those of modern agriculture. The population ecology of threatened or vulnerable species would be included.

#### 3.2. Biogeochemical cycles

The study of biogeochemical cycles (carbon, oxygen and ozone, sulphur, nitrogen, phosphorus, metals, etc...) is essential to our understanding of the environment, especially for a more precise assessment of pollution levels, transport, accumulation and sinks.

Of particular importance is the carbon cycle, in view of the problems raised by carbon dioxide accumulation within the atmosphere, due to fossil-fuel burning and deforestation. This is linked to the research programme on climatology, which considers also possible climate changes resulting from carbon dioxide accumulation and their impact.

### 3.3. Conservation of ecosystems

This is related to topic 3.1. extending the research to the development of management practices for the conservation of wild species and ecosystems on a sound scientific basis.

### 3.4. Protection of bird species

The Council Directive on 1979 on Bird Protection mentioned earlier prescribes a coordination of research on this topic. It will be concerned with population dynamics, habitat surveys and preservation.

### 3.5. Reclamation of damaged ecosystems

Studies should be undertaken to find ways of restoring those areas of man's environment, including estuaries and coastal seas damaged by activities such as mining, toxic waste disposal and effluent discharges. Soil recovery including the use of low cost organic wastes should be envisaged.

## RESEARCH AREA 4 ENVIRONMENTAL INFORMATION MANAGEMENT

Although the emphasis should remain on ECDIN (Environmental Chemicals Data and Information Network) as an extension of the second programme, this research area would be enlarged to other technical aspects of environmental information management, such as the evaluation of data prior to storage and the exploitation of the many environmental data bases in existence in the EC, for their use in the implementation of Community directives and other regulatory measures.

Close cooperation will be maintained with the relevant activities of the Environment and Consumer Protection Service and those of the General

Directorate Scientific and Technical Information and Information Management.

4.1. ECDIN (Data Bank on chemical products potentially hazardous to the environment)

The data bank initiated as a pilot project at the JRC, Ispra, will be managed by the JRC as a system to fulfill the needs and requests of the Commission in application of the various directives and draft directives concerning chemicals released into the environment. This preoperational phase still needs research and development essentially on software and data validation, part of which will be carried out, as in the past, under the indirect action programme.

4.2. Evaluation, selection and exploitation of data

This involves methodological research on the possible means to assess the practical value of data, their relevance for the purposes of the banks and for the users, and their possible application to a variety of environment problems. Close cooperation is needed between suppliers and users of research results to improve ways by which these results can be expressed, stored, interpreted and exploited by authorities responsible for environmental protection.

4.3. Ecological cartography

As a back-up to the Action programme some research is still needed on data acquisition, storage, display and utilization by decision makers.

RESEARCH AREA 5 OVERALL MAN ENVIRONMENT INTERACTIONS : METHODOLOGICAL  
APPROACH

This new research area deals with the methodology of investigation into the overall interactions between man and his environment.

The answers to questions asked to research by decision-makers very often require an integration of many sectorial research activities. The weight of every factor varies as a function of scientific, technical, economical, social and political considerations.

While a sectorial approach may suffice to understand the elementary mechanisms and to provide the basis for recommendations and standards setting, an integrated approach taking account of a large number of components is needed to understand and assess the overall effects of man on the environment and of the environment on man.

The sectorial methodology has much progressed during the last years; important mathematical tools have been developed which, at present, still need to be improved. On the other hand, the assessment of the overall consequences of multiple interactions requires the solution of problems which are rather difficult from a methodological point of view.

In a complex system, the study of the relationship between components and the search for interface mechanisms is very important. The theoretical aspect of the problems can be developed only on the basis of real cases, i.e. theory and practice cannot be separated.

Thus, within this research area an attempt will be made to explain how man, through his needs, demands, behaviour, work and leisure activities affects, and is affected by, the environment.

Two main topics could be considered in a first phase :

- the effects on health (in the broad meaning of the word) of both natural and man-caused environmental perturbations - research will deal with biometeorology, synergism between biological, physical, chemical, psychological and psycho-socio-economic factors, risk perception, evaluation of quality of life (by means of epidemiological surveys)
- mid-and long-term overall consequences on the environment of modern agricultural practices, energy production, industrial activities, transportation systems etc...

It is planned to start work in this interdisciplinary area on a small scale with one or more pilot projects.

## II. Climatology

The subprogramme on climatology is described in detail in COM (78) 408 fin.

#### D. STRUCTURE, IMPLEMENTATION AND MANAGEMENT OF THE PROGRAMME

The grouping of a number of indirect and concerted actions in the present programme has various implications with regard to its structure, management and implementation.

##### 1. STRUCTURE

The programme is subdivided into two subprogrammes: "Environment Protection" and "Climatology".

##### A) Environment Protection

Research on the topics described in the preceding section will be carried out by means of indirect actions and concerted actions. The indirect action is the follow-up of the second indirect action (1976-1980).

The concerted actions at the outset of the programme will be those which were initiated earlier and which are the basis for the Community-COST agreements:

- a) physico-chemical behaviour of atmospheric pollutants (COST 61a bis)
- b) analysis of organic micropollutants in water (COST 64b bis)
- c) treatment and utilization of sewage sludge (COST 68 bis)

The programme decision includes these three actions which are extended to 31 December 1983 i.e. a 14-month extension for a) and b) and a 3-year extension for c). It also provides for the repeal as of 1 January 1981 of the decisions which established the Community concerted actions in 1978 (\*). The relevant Community-COST concertation agreements are unaffected by the new programme decision.

New concerted actions may be launched during the duration of the programme.

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(\* ) O. J. L 311 of 4.11.78

## B. Climatology

The on-going climatology programme (indirect action) initiated in 1980 (\*) is integrated in the present programme and the relevant decision would be repealed.

## 2. IMPLEMENTATION AND MANAGEMENT

The rationalization and simplification of procedures which is the main aim of the present attempt at grouping R & D actions in the environment sector should also allow greater flexibility in implementation and management of the programme.

Thus it is foreseen that the Commission with the help and active participation of two Advisory Committees on Programme Management (1- Environment Protection, 2- Climatology) will decide on the detailed implementation of the programme, in particular the distribution of work among indirect and concerted actions, the launching of new concerted actions and to a certain extent, the transfer of funds within the programme.

With regard to indirect actions, in addition to the usual cost-sharing contracts (50-50% in principle), it is envisaged to stimulate the voluntary coordination of research funded at national levels on specific topics. This would be done through low level (5-10% of the total expenditure) funding of projects which are part of national programmes.

In order to avoid dispersion over what is a very broad subject-matter, the research proposals submitted for funding will be selected (in addition to their merits on the basis of scientific quality, prospect of success, cost, etc.), in order to ensure also a concentration of effort on high priority topics so as to enable coordination, avoid unnecessary duplication as well as any gaps.

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(\*)O.J. L 12 of 17.1.80

It is proposed that the sliding programme concept be applied to the present programme. Thus the programme will be reviewed at the end of the third year. The review may lead to a new programme proposal based on the evaluation of results obtained and on an updated assessment of research needs. The new programme would then supersede the on-going programme at the end of its fourth year, in order to ensure greater continuity in the research effort and prevent any gap in funding the contractors.

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Scientific cooperation and coordination among the participants to the programme will be encouraged and facilitated by the proven techniques of contact groups and research seminars, the latter to be sponsored jointly by the Commission and the relevant authorities in a Member State.

Provisions are made in the draft programme decision to extend the cooperation with non Member States.

## E. WAYS AND MEANS

### 1. Funding

Total funding required for the 1981-1985 period is estimated at 51 MEUA, subdivided as follows:

#### Environment Protection

- Indirect action : 42 MEUA

#### Tentative distribution

Research area	1	50 - 55%
	2	20 - 25%
	3	15 - 20%
	4	5 - 10%
	5	5%

- Concerted actions : 1 MEUA

Climatology : 8 MEUA (already budgeted)

The amount requested takes into account the sizeable increase in scope of the environment protection subprogramme (e.g. clean technologies, oil spills, natural environment) as well as the increased costs of carrying out and managing research.

### 2. Staff

Staff requested for managing the programme is estimated at 18, i.e. 2 additional staff.

At present, staff distribution is as follows :

- indirect action environment	10
- concerted actions	3
. COST 61a bis	
. COST 64b bis	
. COST 68 bis	
- climatology	3

The 2 additional staff are requested in view of the competence necessary to cope with the new research topics proposed.

It is also planned to trust the coordination of some scientific projects to national experts.

RESEARCH AREAS AND TOPICS FOR THE ENVIRONMENTAL PROTECTION  
SUBPROGRAMME : distribution of work among indirect and  
concerted actions, links with other programmes.

Research area 1

Sources, pathways and effects of pollutants

Objectives: To study the whole behaviour of pollutants in the environment in order to provide the scientific basis for regulations and other measures to be decided at Community level (criteria, standards, directives, recommendations ...) for reducing health and ecological risks due to pollution.

Topics	Subtopics	Conc. action	Con-tract & co-ordi.	Direct Action (p.m.)
1.1 Heavy metals	- sources and analysis		X	)
1.2 Organic micro-pollutants and new chemicals	- fate and pathways - ecological effects - health effects - analysis of org. micropol. in water (1978-83) (COST 64 bis)	X	X X X	) ) ) x
1.3 Asbestos and other fibres	- detection and analysis - health effects		X X	
1.4 Air quality	- detection and dispersion of pollutants - health effects - effects on plants - physicochemical behaviour of air pollutants (1978-83) (COST 61a bis)	X	X X X	X  X
1.5 Freshwater quality (surface and ground water)	- water quality analysis - typology of inland water - ground water - health effects - effects on animals and plants - microbiological pollution		X X X X X	X
1.6 Waste heat	- ecological effects		X	
1.7 Marine environment quality	- monitoring marine water quality - fate and effects of pollutants (excluding hydrocarbons) - fate and effects of hydrocarbons - pathobiology of marine organisms	X (Cost47)	X X X X	X  X
1.8 Noise pollution	- health effects of long term exposure - interaction of noise and other pollutants - particular types of sounds (infrasounds and vibrations, impulsive sounds, ultrasounds)		X X X	

Research area 2    Reduction and prevention of pollution and nuisances

Objectives: Develop techniques to improve the quality of air, soil and water by reducing or abating emissions of polluting wastes and for cleaning up after accidents.

Topics	Sub topics	Concentrated Action	Contract & co-ordi.	Direct Action (p.m.)
2.1 Sewage Sludge	- Treatment and use of sewage sludge (1977-83) (COST 68bis)	X		
2.2. Pollution-abatement. Reduction in a particular medium (air, soil, water) and noise reduction.	- in air: reduction of emission sources (fixed and mobile) - in soil: waste disposal - in water: effluent treatment, leaching of solid wastes (for hydrocarbons see below 2.6) - reduction of noise from various sources		X X X X	
2.3 Prevention of pollution (Clean Technologies)	- "clean" technologies (reduced pollution and wastes) in selected industrial branches - "soft" technologies (using fewer resources and energy) in selected industrial branches		X	
2.4 Ecological effects of solid waste disposal	- surface and ground water pollution by waste disposal		X	
2.5 Clean up techniques for hydrocarbon pollution	- physical methods - chemical methods - biological methods	X X X	X X X	
2.6 Impact of new technologies	- environmental consequences - pollution transfer	X X	X	

Related programmes

- Paper and Board Recycling
- Recycling of Urban and Industrial Waste (Secondary Raw Materials)
- Energy savings (including demonstration projects)
- European Coal and Steel Community projects (Steel industry)
- Agricultural Research Programme : agricultural waste

Research area 3

Protection, conservation and management at the natural environment

Objectives: To understand the role and functions of ecosystems and biogeochemical cycles to foresee the consequences of different policies in the management of environment

Topics	Sub topics	Concer- ted Action	Con- tract & co- ordi.	Direct action (p.m.)
3.1 Ecosystems studies	- fragile ecosystems - structure of ecosystems - functioning of ecosystems		X X X	
3.2 Biogeo-chemical studies	- oxygen and ozone - nitrogen - carbon - sulphur - phosphorous - metals		) ) ) X ) ) )	
3.3 Conser- vation of eco- systems	- protection of ecosystems - land use management - natural areas management		) ) X )	X
3.4 Bird protection	- hazards to bird life and reproduction - bird population studies - protection of habitats	) ) X ) )	) ) X ) )	
3.5 Recla- mation of damaged eco- systems	- estuaries and coastal seas recovery - soil recovery		) ) X )	

Related programme :

- Agriculture Research Programme : Land use

Research area 4

Environmental Information Management

Objectives: To improve the use of scientific data related to the environment for the decision makers and for environmental impact studies

Topics	Sub topics	Concer- ted Action	Con- tract & co- ordi.	Direct action (p.m.)
4.1 Data bank on environmental che- micals ECDIN	<ul style="list-style-type: none"> <li>- research on software systems</li> <li>- (management of the 3 first years of ECDIN bank for EC users)</li> <li>- linking of more specialized data banks</li> </ul>		X   X	X  X  X
4.2 Evaluation, storage and exploitation of data	<ul style="list-style-type: none"> <li>- methodology</li> <li>- sectors</li> </ul>		X X	
4.3 Cartography	<ul style="list-style-type: none"> <li>- methodology of ecological mapping</li> <li>- use for environmental impact studies</li> </ul>	) ) ) )	with Environment and Consumers Protection Service	

Research area 5

Overall man-environment interactions:  
methodological approach

Objective : Integration of the results of multidisciplinary environmental research to estimate the overall interactions between man- and his environment.

Concer- ted Action	Contracts and Co-ordina- tion	Direct action (p.m.)
X	X  (With Environment and Consumer Protection Service)	

Proposal for a Council Decision

adopting a sectoral research and development programme  
in the field of environment (Environmental Protection and  
Climatology), indirect and concerted actions

1981 - 1985

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community and in particular  
article 235 thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament,

Having regard to the opinion of the Economic and Social Committee,

Whereas Article 2 of the Treaty assigns to the Community the task inter alia  
of promoting throughout the Community a harmonious development of economic  
activities, a continuous and balanced expansion and an accelerated raising  
of the standard of living;

Whereas research in the field of environment contributes to the attainment  
of these objectives, and has been identified as a sector of priority interest  
by the Council in its conclusions of 20 December 1979,

Whereas in its declaration of 17 May 1977, the Council has approved the  
objectives and principles of a policy for the environment in the Community  
as well as a general description of the projects to be undertaken at Community  
level (\*).

Whereas, therefore, the research projects dealt with by this Decision seem  
necessary to attain certain objectives of the Community within the framework  
of the common market;

(\*) O.J. C 139, 13.6.77.

Whereas by its resolution of 14 January 1974, the Council adopted an initial outline programme of the European Communities in the field of science and technology, and stressed that the whole range of available ways and means of action should be used (1).

Whereas the Community is responsible for the conclusion of agreements with third countries in the areas covered by this decision; whereas it is advisable as soon as this decision is adopted to open negotiations with the States concerned so that such agreements can be rapidly concluded.

Whereas the Council has adopted Community concerted actions in the fields of:

- treatment and utilisation of sewage sludge on 27 September 1977 (2)
- the analysis of organic micro-pollutants on 9 October 1978 (3)
- the physico-chemical behaviour of atmospheric pollutants, on 9 October 1978 (4).

Whereas the Council has concluded Community-COST concertation agreements on concerted action projects in the fields of:

- treatment and utilisation of sewage sludge on 19 March 1979 (5)
- the analysis of organic micro-pollutants on 27 March 1980 (6)
- the physico-chemical behaviour of atmospheric pollutants, on 27 March 1980 (7).

Whereas the Member States intend, as part of the rules and procedures applicable to their national programmes, to carry out the research described in tables 1, 2 and 3, point C of the Annex, and are prepared to integrate such research into a process of coordination at Community level until 31 December 1983.

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- (1) O.J. C 7, 29.1.74
  - (2) O.J. L 267, 19.10.77
  - (3) O.J. L 311, 4.11.78
  - (4) O.J. L 311, 4.11.78
  - (5) O.J. L 72, 23.3.79
  - (6) O.J. L 39, 15.2.80
  - (7) O.J. L 39, 15.2.80

Whereas a joint Memorandum of understanding for the implementation of action COST 47 (Benthic Coastal Ecology) has been signed (1).

Whereas the Council has adopted on 18 December 1979 a multi-annual research programme of the European Economic Community in the field of Climatology (2).

Whereas the Council has adopted on 13 March 1980 (3) a multi-annual programme for the Joint Research Centre which includes research activities in the field of the environment.

Whereas in its conclusions of 20 December 1979, the Council has invited the Commission to submit proposals aimed at the rationalization of structures for the preparation, examination and implementation of Community research and development programmes; that a grouping of indirect and concerted actions in the field of the environment would constitute a first contribution towards meeting these objectives.

Whereas the Treaty does not foresee the powers of action required to these ends; Whereas the Committee of Scientific and Technological Research (CREST) has given its opinion on the Commission's proposal,

HAS DECIDED AS FOLLOWS:

Article 1

A programme of research and development of the European Economic Community in the field of the Environment (Environmental protection, climatology) is adopted for a period of 5 years commencing on 1 January 1981, as described in the annex, being an integral part of the present decision.

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(1) O.J. . . . .

(2) O.J. L 12, 17.1.80

(3) O.J. L 72, 18.3.80

The programme includes indirect and concerted actions.

The indirect actions are carried out particularly by means of contracts. The concerted actions consist of the coordination at Community level of research activities which are part of the national research programmes of the Member States and, where applicable, of the Community.

Concerted actions n° 1, 2 and 4 under point A of the Annex will end on 31 December 1983 unless they are extended under the terms of Article 3.

#### Article 2

The maximum appropriations necessary for the implementation of the programme are estimated at 51 millions of European Units of Account, and the staff at 18 including the means necessary for the coordination of concerted actions n° 1, 2 and 4 under point A of the Annex. The European Unit of Account is defined by the financial regulations in force.

The indicative internal distribution of funds is shown under point B of the Annex.

#### Article 3

The programme shall be reviewed at the end of the third year. This review, in accordance with the appropriate procedures, may lead to a Council decision for a new five-year programme which would supersede the current programme at the end of the fourth year.

#### Article 4

The Commission is responsible for the execution of the programme with regard to the indirect actions and is responsible for the coordination with regard to the concerted actions.

It will decide on the detailed implementation, particularly concerning the breakdown of the work between indirect and concerted actions, and the launching of concerted and coordination actions, as described in the annex, in the framework of the programme.

Article 5

The Commission will be assisted in the tasks listed in article 4 by the following committees:

- a) the Advisory Committee on Programme Management in the field of Environmental Protection
- b) the Advisory Committee on Programme Management in the field of Climatology.

As far as the indirect actions are concerned the terms of reference and composition of these committees will be in accordance with the Council Resolution of 18 July 1977 on advisory committees for research programme management ( 1)

For the concerted actions the terms of reference of the Committee under a) above are defined in part C of the Annex.

Article 6

With regard to indirect actions, the dissemination of the information arising from their implementation shall be in accordance with Council Regulation (EEC) No 2380/74 of 17 September 1974 adopting provisions for the dissemination of information relating to research programmes for the European Economic Community (2).

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Article 7

With regard to the concerted actions in accordance with a procedure to be laid down by the Commission in agreement with the Committee a) in article 5 the participating Member States and the Community shall regularly exchange all useful information concerning the execution of the research covered by such activities. The participating Member States shall provide the Commission with all information relevant for coordination purposes. They shall also endeavour to provide the Commission with information on similar research planned or carried out by bodies which are not under their authority. Any information shall be treated as confidential if so requested by the Member State which provides it.

At the completion of the programme, the Commission in agreement with committee a) shall send to the Member States and the Parliament a summary report on the implementation and results of the concerted actions. It shall publish this report six months after the latter has been sent to the Member States, unless a Member State objects. In the latter case, the report shall be distributed, in agreement with committee a), only to those institutions and enterprises that request it and whose research or production activities justify access to the results of research arising from the concerted actions. The Commission shall make the necessary arrangements for the report to remain confidential and not to be divulged to third parties.

Article 8

1. In accordance with Article 228 of the Treaty, the Community may conclude agreements with non Member States, in particular those involved in European collaboration in the field of Scientific and Technical Research (COST) with a view to associating them wholly or partly with this programme.

2. The Commission is hereby authorized to negotiate the agreements referred to in paragraph 1.

The agreements with non-Member States participating in COST shall be negotiated in accordance with the conclusions of the Council of 18 July 1978

concerning European cooperation in the field of Science and Technology (COST) (1).

Article 9

The following decisions of the Council:

- of 9 October 1978 (2) adopting a concerted action in the field of the analysis of organic micropollutants in water
- of 9 October 1978 (3) adopting a concerted action in the field of physico-chemical behaviour of atmospheric pollutants
- of 18 December 1979 (4) adopting a multi-annual research programme in the field of Climatology

are repealed with effect on 1 January 1981..

Done at Brussels,

For the Council,

The President

A. SCIENTIFIC AND TECHNICAL CONTENT

SUBPROGRAMME I - ENVIRONMENT PROTECTION

Research Area 1: Sources, Pathways and effects of pollutants

	<u>Indirect action: (Contracts and coordination)</u>	<u>Concerted Actions</u>
1.1 heavy metals	x	-
1.2 organic micropollutants and new chemical products	x	1) Analysis of organic micropollutants in water (COST 64b bis) until 31/12/1983)  Research topics and distribution of work among Member States are shown in table 1, point C
1.3 asbestos and other fibres	x	-
1.4 air quality	x	2) Physico-chemical behaviour of atmospheric pollutants (COST 61a bis) (until 31/12/1983)  Research topics and distribution of work among Member States are shown in table 2, point C
1.5 surface and underground freshwater quality	x	-
1.6 thermal pollution	x	-
1.7 marine environment quality	x	3) Benthic coastal ecosystems (COST 47)  1. Sedimentary bottoms 2. Rocky bottoms - intertidal 3. Rocky bottoms - subtidal
1.8 noise pollution	x	-

Research Area 2: Reduction and prevention of pollution and nuisances

Indirect Action:  
 (contracts and  
 coordination )

Concerted action

4) Treatment and use of sewage sludge (COST 68 bis) (until 31/12/1983)  
 Research topics and distribution amongst Member States are shown in table 3, point C

- 2.1 Sewage sludge
- 2.2 Pollution abatement technologies
- 2.3 Clean technologies
- 2.4 Ecological effects of solid waste disposal
- 2.5 Oil pollution cleaning techniques
- 2.6 Impact of new technologies

x  
 x  
 x  
 x  
 x

-  
 -  
 -  
 x  
 x

Concerted Actions

Indirect Action:  
contracts and  
coordination

Research Area 3: Protection, conservation and management of natural environments

- 3.1 Ecosystems studies
- 3.2 Biogeochemical cycles
- 3.3 Ecosystems conservation
- 3.4 Bird protection
- 3.5 Reclamation of damaged ecosystems

Research Area 4: Environment Information Management

- 4.1 Data bank on environmental chemicals
- 4.2 Evaluation, storage and exploration of data
- 4.3 Ecological cartography

Research Area 5: Complex interactive systems : man-environment interactions

	x	-
	x	-
	x	-
	x	x
	x	-
	x	-
	x	-
	x	x

SUPPROGRAMME II CLIMATOLOGY (indirect action)

Research Area 1: Understanding climate

- 1.1 Reconstruction of past climates
- 1.2 Climate modelling and prediction

Research Area 2 : Man - climate interactions

- 2.1 Climatic variability and European resources
- 2.2 Man's influence on climate

Support Activities

- 3.1 Interdisciplinary studies
- 3.2 Inventory, coordination, enrichment of European climate data sets

**B. INDICATIVE DISTRIBUTION OF FUNDS**

**(1981 -1985)**

**Sector I: Environment Protection: 43 MEUA - indirect actions 42 MEUA  
- concerted actions 1 MEUA**

Research area 1: 50-55% including 0.8 MEUA<sup>1)</sup> for concerted  
actions N° 1 (COST 64b bis): (0.4 MEUA)  
N° 2 (COST 61a bis): (0.4 MEUA)  
until 31 December 1985

Research area 2: 20-25% including 0.2<sup>(\*)</sup> MEUA for concerted  
action N° 4 (COST 68 bis)

Research area 3: 15-20%

Research area 4: 5-10%

Research area 5: 5%

**Sector II: Climatology: 8 MEUA**

Research area 1: 45-50%

Research area 2: 45-50%

Support  
activities: 5-10%

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(\*) These amounts are not indicative as they are earmarked for  
funding the Community contribution to the Community-COST  
concertation agreements.



C. CONCERTED ACTIONS

Table 2

"Physico-chemical behaviour of atmospheric pollutants"

**CONTRIBUTIONS BY THE MEMBER STATES AND THE JOINT RESEARCH CENTRE (JRC)  
TO THE CONCERTED PROJECT BY RESEARCH TOPICS**

Research topics	Division of research work								
	B	D	DK	F	I	IRL	NL	UK	JRC
<b>1. Studies on the conversion and transport of atmospheric pollutants:</b>									
(a) laboratory studies		X		X	X	X	X	X	X
(b) field studies	X	X	X	X	X		X	X	X
(c) modelling		X			X		X		X
<b>2. Studies on the elimination and absorption of atmospheric pollutants</b>	X			X	X			X	

**C. CONCERTED ACTIONS**

**Table 3**  
**"Treatment and use of sewage sludge"**

Contribution by the Member States, by research topics

Research topics	Division of research work among Member States							
	B Lux.	D	DK	F	I	IRL	NL	UK
<b>1. Sludge stabilization and odour problems:</b>								
— Definition and determination of 'degree of stability' and relation to odour nuisance			X	X				X
— Comparative evaluation of stabilization procedures		X	X		X			
<b>2. Problems related to sludge dewatering:</b>								
— Research on water binding forces							X	
— Development and standardization of methods for the assessment of dewatering properties	X	X		X	X			X
— Problems related to the use of flocculants		X		X				X
— Comparative evaluation of thickening and dewatering equipment					X		X	
<b>3. Analytical problems related to sludge treatment and use:</b>								
— Characterization of pathogens and evaluation of disinfection procedures	X	X	X					
— Characterization and determination of pollutants (heavy metals, persistent organic compounds) in sludge and development of standardized analytical methods	X			X				X
<b>4. Environmental problems related to sludge use:</b>								
— Special processing of sludge for agricultural use (e.g. composting) including the improvement of disinfection procedures and pollutant removal		X		X	X		X	
— Transfer of pollutants to plants and harmful effects on vegetation			X	X			X	X
— Effects of long range sludge application on soil quality and ground water	X	X		X		X		X
— Optimum land use of sludge, including sludge from dephosphatation plants		X		X			X	X

C. CONCERTED ACTIONS

TERMS OF REFERENCE OF COMMITTEE a) IN ARTICLE 5

1. For each concerted action, the Committee shall :
  - 1.1. contribute to the optimum execution of the programme by giving its opinion on all of its aspects ;
  - 1.2. evaluate the results of the project and draw conclusions as to their application ;
  - 1.3. be responsible for the exchange of information referred to in Article 7 ;
  - 1.4. keep abreast of national research being done in the fields covered by the project, and more especially of scientific and technical developments likely to affect the execution of the project ;
  
2. The Committee's reports and opinions shall be forwarded to the Commission and the Member States participating in the project. The Commission shall forward these opinions to the CREST.

ANNEX III

FINANCIAL DATA  
CONCERNING THE SECTORAL R&D PROGRAMME  
IN THE FIELD OF ENVIRONMENT

(Indirect and concerted actions)  
 1981-1985

BUDGET HEADING : Quality of life

Article 336

TITLE : " Environment"

Item 3360

	<u>Heading</u>	<u>(in MEUA)</u> <u>Budget</u>	<u>Staff</u>
Protection of the environment	3360/1	42	12
Climatology	3360/2	8	3
Analysis of organic micro-pollutants in water	3360/3		
Physico-chemical behaviour of atmospheric pollutants	3360/4	1	3
Treatment and utilisation of sewage sludge	3360/5		
<b>Total:</b>		<b>51</b>	<b>18</b>

ANNEX III

FINANCIAL RECORD

1. Relevant budget heading: 3360/1
2. Title of the budgetary heading: Environmental Protection (indirect action)
3. Legal basis:
  - Implementation of Article 235 of the Treaty establishing the European Economic Communities;
  - Decision of .....

4. Description, objective and justification of the project:

4.1 Description

Continuation of a coordinated research programme on the environment carried out essentially by means of shared-cost contracts concluded with research bodies in the Member States and relating to:

1. Sources, pathways and effects of pollutants
2. Reduction and prevention of pollution and nuisances, including clean technologies
3. Protection, conservation and management of the natural environment
4. Management of the information concerning the environment (Data banks)
5. Overall man-environment interaction

4.2 Objective

To ensure a scientific and technical support to the Community policy on the environment

4.3 Justification

The execution of coordinated research in the Member States permits to avoid duplication of efforts and to optimise the results through the mobilisation of specialised laboratories in order to solve problems of common interest.

ANNEX III

5. FINANCIAL IMPLICATIONS IN RESPECT OF INTERVENTION APPROPRIATIONS  
(including expenditure on staff and administrative and technical expenditure)

5.1 Total cost for the expected duration EUA

5.2 Proportion financed from:

- the Community budget 42.000.000 EUA
- national budgets EUA
- other sectors at national level

5.3 Multi-annual timetable

5.3.1.1 Appropriations for commitment IN EUA

Type of expenditure	1981*	1982 **	1983	1984	1985	TOTAL
Staff	517.800	644.000	696.000	752.000	813.000	3.422.800
Administration	204.200	244.000	263.000	284.000	307.000	1.302.200
Contracts	4.600.000	12.000.000	4.000.000	15000.000	1.675.000	37.275.000
<b>Total</b>	<b>5.322.000</b>	<b>12.888.000</b>	<b>4.959.000</b>	<b>16036.000</b>	<b>2.795.000</b>	<b>42.000.000</b>

5.3.1.2 Appropriations for payment IN EUA

Type of expenditure	1981*	1982 **	1983	1984	1985	-	TOTAL
Staff	517.800	644.000	695.000	752.000	813.000	-	3.422.800
Administration	204.200	244.000	263.000	284.000	307.000	-	1.302.200
Contracts	800.000	7.000.000	10.000.000	6.750.000	11050.000	1.675.000	37.275.000
<b>Total</b>	<b>1.522.000</b>	<b>7.888.000</b>	<b>10.959.000</b>	<b>7.786.000</b>	<b>12170.000</b>	<b>1.675.000</b>	<b>42.000.000</b>

\*1981 staff: 6 category A, 1 category B, 3 category C  
 \*\*1982 staff: 7 category A, 1 category B, 4 category C.

5.3.2 Method of calculation

a) Staff expenditure

Requirements have been calculated on the basis of a staff complement of 12\*persons, i.e.:

7 category A staff

1 category B member of staff

4 category C staff

Apart from the actual staff complement, the calculations also take account of the rates of salary increases of Commission staff used to estimate the appropriations entered in the 1981 budget; the estimated overall increases for subsequent years are based on the rate of change in the general Community price index used in drawing up the triennial estimates, i.e. 8.1% per annum.

b) Administrative and/or technical expenditure

This expenditure specifically covers the cost of missions and the organization of meetings. It has been estimated on the basis of average requirements.

c) Expenditure on contracts

This expenditure covers the financial participation of the Community in research carried out under shared-cost contracts (studies, research etc) to be concluded with research institutions in the Member States specialized in the environmental field. Since the specific nature of the various topics and the qualifications of the contracting parties are likely to vary, it has not been possible to devise a uniform method of calculation. Consequently, the estimate of requirements is a hypothetical one based on the number of contracts to be negotiated and on average financial participation by the Community approximating to 50% of total costs. At all events, the Advisory Committee on Programme Management will be consulted over the allocation of the appropriations.

\* For 1981, the staff complement requested in the budget is as follows:

6 category A, 1 category B, 3 category C.

ANNEX III

6. FINANCIAL IMPLICATION IN RESPECT OF APPROPRIATIONS FOR STAFF AND CURRENT ADMINISTRATIVE EXPENDITURE:

(see point 5 above)

7. FINANCING OF EXPENDITURE:

7.4 The requisite appropriations to cover the Community's participation in this project are to be entered under future budgets.

8. IMPLICATIONS IN RESPECT OF REVENUE:

- Community taxes on officials' salaries
- Officials' contributions to the pension scheme

9. TYPE OF MONITORING TO BE APPLIED

- Administrative checks by the DG for Financial Control with regard to the implementation of the budget and to ensure that the expenditure has been incurred in a regular and proper manner plus checks carried out by the Contracts Service of DG XII.
- Scientific checks: ACPM  
Competent officials from DG XII.

FINANCIAL RECORD

1. RELEVANT BUDGET HEADING:

3360/2

1.1 TITLE OF THE PROJECT:

Climatology (indirect action)

2. LEGAL BASIS:

Article 235 of the EEC Treaty

Council decision of . . . . .

3. DESCRIPTION OF THE PROJECT:

3.1 Description

Programme of research into the mechanism and variability of climate to be carried out by means of shared-cost contracts to be concluded with research bodies in the Member States and relating to :

- Studies of climate mechanism and reconstruction of previous climates.
- Studies into the effects of the variability of climate on certain resources, in particular water, and on energy requirements.
- Studies into the effects of certain human activities, in particular these giving rise to pollution, on climate.

3.2 Objective

To help understand climate mechanism and to solve the problems caused by the effects of climatic changeableness on major resources. To contribute to the removal of climatic risks caused by man's exploitation and pollution of the environment.

4. JUSTIFICATION OF THE PROJECT:

It is vital to have better techniques for forecasting the likely effects of climatic changes especially on water resources and on agricultural output. It is also important to assess to what extent climate can change as a function of human activity.

ANNEX III

5. FINANCIAL IMPLICATIONS IN RESPECT OF INTERVENTION APPROPRIATIONS  
(including expenditure on staff and on administrative and technical expenditure)

5.1 Total cost for the expected duration EUA

5.2 Proportion financed from:

- the Community budget 8.000.000 EUA
- national budgets EUA
- other sectors at national level EUA

5.3 Multi-annual timetable

5.3.1.1 Appropriations for commitment in EUA

Type of expenditure	1980	1981	1982	1983	1984	TOTAL
Staff	157.300	158.400	171.200	185.100	200.100	872.100
Administration	33.700	39.600	42.800	46.300	49.900	212.300
Contracts	2.844.000	1.000.000	1.000.000	2.071.600	-	6.915.600
Total	3.035.000	1.198.000	1.214.000	2.303.000	250.000	3.000.000

5.3.1.2 Appropriations for payment in EUA

Type of expenditure	1980	1981	1982	1983	1984	1985	TOTAL
Staff	157.300	158.400	171.200	185.100	200.100	-	872.100
Administration	33.700	39.600	42.800	46.300	49.900	-	212.300
Contracts	909.000	1.800.000	2.135.000	700.600	1.100.000	271.000	6.915.600
Total	1.100.000	1.998.000	2.349.000	932.000	1.350.000	271.000	8.000.000

5.3.2 Method of calculation

a) Staff expenditure

Requirements have been calculated on the basis of a staff complement of:

2 category A staff

1 category C member of staff

Apart from the actual staff complement, the calculations also take account of the rates of salary increases of Commission staff used to estimate the appropriations entered in the 1981 budget; the estimated overall increases for subsequent years are based on the rate of change in the general Community price index used in drawing up the triennial estimates, i.e. 8.1% per annum.

b) Administrative and/or technical expenditure

This expenditure specifically covers the cost of missions and the organization of meetings. It has been estimated on the basis of average requirements.

c) Expenditure on contracts

This expenditure covers the financial participation of the Community in research carried out under shared-cost contracts (studies, research etc) to be concluded with research bodies in the Member States specialized in the field. Since the specific nature of the various topics and the qualifications of the contracting parties are likely to vary, it has not been possible to devise a uniform method of calculation. Consequently, the estimate of requirements is a hypothetical one based on the number of contracts to be negotiated and on average financial participation by the Community approximating to 50% of total costs. At all events, the Advisory Committee on Programme Management will be consulted over the allocation of the appropriations.

ANNEX III

6. FINANCIAL IMPLICATION IN RESPECT OF APPROPRIATIONS FOR STAFF AND CURRENT ADMINISTRATIVE EXPENDITURE:

(see point 5 above)

7. FINANCING OF EXPENDITURE:

7.4 The requisite appropriations to cover the Community's participation in this project are to be entered under future budgets.

8. IMPLICATIONS IN RESPECT OF REVENUE:

- Community taxes on officials' salaries
- Officials' contribution to the pension scheme

9. TYPE OF MONITORING TO BE APPLIED

- Administrative checks by the DG for Financial Control with regard to the implementation of the budget and to ensure that the expenditure has been incurred in a regular and proper manner plus checks carried out by the Contracts Service of DG XII.

- Scientific checks: ACPM

Competent officials from DG XII.

1. RELEVANT BUDGET HEADING:

3360/3

2. TITLE OF THE BUDGETARY HEADING: Environmental Protection :

Analysis of organic micropollutants in water (concerted action)

3. LEGAL BASIS: Article 235 of the EEC Treaty

Council Decision of . . . . .

4. DESCRIPTION, OBJECTIVE(S) AND JUSTIFICATION OF THE PROJECT:

4.1 Description:

Coordination of the most important research work being carried out or planned in the Member States concerning the analysis of micropollutants in water. An association of non-member European States is also envisaged.

4.2 Objective:

Development and extension of research work carried out under COST Project 64b bis.

4.3 Justification:

The proposed research is part of the sectoral programme in the field of environment. It is directly linked to the Council Resolution of 14 January 1974 and also to the European Communities Action Programme on the Environment, in particular the Council Resolution of 17 May 19 77, Title II, Chapter 2.

5. FINANCIAL IMPLICATIONS IN RESPECT OF INTERVENTIONS APPROPRIATIONS  
(including expenditure on staff and administrative and technical expenditure)

5.1 Total cost for the expected duration EUA

5.2 Proportion financed from:

- the Community budget 340.000 EUA
- national budgets EUA
- other sectors at national level EUA

5.3 Multi-annual timetable

5.3.1.1 Appropriations for commitment in EUA

Type of expenditure	1981	1982	1983			TOTAL
Staff	66.000	71.300	77.100			
Administration	24.000	25.700	27.900			
Contracts	36.000	12.000	-			
<b>Total</b>	<b>126.000</b>	<b>109.000</b>	<b>105.000</b>			<b>340.000</b>

5.3.1.2 Appropriations for payment in EUA

Type of expenditure	1981	1982	1983			TOTAL
Staff	66.000	71.300	77.100			
Administration	24.000	25.700	27.900			
Contracts	36.000	12.000	-			
<b>Total</b>	<b>126.000</b>	<b>109.000</b>	<b>105.000</b>			<b>340.000</b>

5.3.2 Method of calculation

a) Staff expenditure

Requirements have been calculated on the basis of a staff complement of:

1 category A member of staff

Apart from the actual staff complement, the calculation also take account of the rates of salary increases of Commission staff used to estimate the appropriations entered in the 1981 budget; the estimated overall increases for subsequent years are based on the rate of change in the general Community price index used in drawing up the triennial estimates, i.e. 8.1% per annum.

b) Administrative and/or technical expenditure

This expenditure specifically covers the cost of missions and the organization of meetings and receptions. It has been estimated on the basis of average requirements.

c) Expenditure on contracts

This modest expenditure covers the financial participation of the Community in studies and research carried out under contracts to be concluded with undertakings and laboratories in the Member States which specialize in this field. Since the specific nature of the various topics and the qualifications of the contracting parties are likely to vary, it has not been possible to devise a uniform method of calculation. Consequently, the estimate of requirements is a hypothetical one based on the number of contracts to be negotiated. At all events, the Advisory Committee will be consulted on the allocation of the appropriations.

6. FINANCIAL IMPLICATION IN RESPECT OF APPROPRIATIONS FOR STAFF AND CURRENT ADMINISTRATIVE EXPENDITURE:

(see point 5 above)

7. FINANCING OF EXPENDITURE:

7.4 The requisite appropriations to cover the Community's participation in this project are to be entered under future budgets.

8. IMPLICATIONS IN RESPECT OF REVENUE:

- Community taxes on officials' salaries
- Officials' contribution to the pension scheme
- Contribution from non-member states.

9. TYPE OF MONITORING TO BE APPLIED

- Administrative checks by the DG for Financial Control with regard to the implementation of the budget and to ensure that the expenditure has been incurred in a regular and proper manner plus checks carried out by the Contracts Service of DG XII.
- Scientific checks: ACPM  
Competent officials from DG XII.

FINANCIAL RECORD

1. RELEVANT BUDGET HEADING: 3360/4
2. TITLE OF THE BUDGET HEADING: Environmental Protection:  
Physico-chemical behaviour of atmospheric pollutants (concerted action)
3. LEGAL BASIS: Article 235 of the EEC Treaty  
Council Decision of . . . . .
4. DESCRIPTION, OBJECTIVE(S) AND JUSTIFICATION OF THE PROJECT:
  - 4.1 Description: Coordination of the most important research work currently being undertaken or planned in the Member States concerning the physico-chemical behaviour of atmospheric pollutants. An association of non-member European States is also envisaged.
  - 4.2 Objective: Development and extension of research which has been carried out under COST Project 61a bis. Greater understanding of the impact of human activities on the atmosphere and their effects on the environment.
  - 4.3 Justification: The proposed research is part of the sectoral programme in the field of environment. It is directly related to the Council Resolution of 14 January 1974 and to the European Communities Action Programme on the Environment, in particular the Council Resolution of 17 May 1977, Title II, Chapter 3.

ANNEX III

5. FINANCIAL IMPLICATIONS IN RESPECT OF INTERVENTIONS APPROPRIATIONS  
(including expenditure on staff and administrative and technical expenditure)

5.1 Total cost for the expected duration EUA

5.2 Proportion financed from:

- the Community budget 440.000 EUA
- national budgets EUA
- other sectors at national level EUA

5.3 Multi-annual timetable

5.3.1.1 Appropriations for commitment in EUA

Type of expenditure	1981	1982	1983			TOTAL
Staff	92.400	99.900	108.000			
Administration	42.600	40.100	42.000			
Contracts		10.000	5.000			
Total	135.000	150.000	155.000			440.000

5.3.1.2 Appropriations for payment in EUA

Type of expenditure	1981	1982	1983			TOTAL
Staff	92.400	99.900	108.000			
Administration	42.600	40.100	42.000			
Contracts		10.000	5.000			
Total	135.000	150.000	155.000			440.000

5.3.2 Method of calculation

a) Staff expenditure

Requirements have been calculated on the basis of a staff

complement of: 1 category A member of staff

1 category C member of staff

Apart from this staff complement, the calculations also take account of the rates of salary increases of Commission staff used to estimate the appropriations entered in the 1981 budget; the estimated overall increases for subsequent years are based on the rate of change in the general Community price index used in drawing up the triennial estimates, i.e. 8.1% per annum.

b) Administrative and/or technical expenditure

This expenditure specifically covers the cost of missions and the organization of meetings. It has been estimated on the basis of average requirements.

c) Expenditure on contracts

This modest expenditure covers the financial participation of the Community in studies and research carried out under contracts to be concluded with undertakings and laboratories in the Member States which specialize in this field. Since the specific nature of the various topics and the qualifications of the contracting parties are likely to vary, it has not been possible to devise a uniform method of calculation. Consequently, the estimate of requirements is a hypothetical one based on the number of contracts to be negotiated. At all events, the Advisory Committee will be consulted over the allocation of the appropriations.

6. FINANCIAL IMPLICATION IN RESPECT OF APPROPRIATIONS FOR STAFF AND CURRENT ADMINISTRATIVE EXPENDITURE:

(see point 5 above)

7. FINANCING OF EXPENDITURE:

7.4 The requisite appropriations to cover the Community's participation in this project are to be entered under future budgets.

8. IMPLICATIONS IN RESPECT OF REVENUE:

- Community taxes on officials' salaries
- Officials' contribution to the pension scheme
- Contribution from non-member states.

9. TYPE OF MONITORING TO BE APPLIED

- Administrative checks by the DG for Financial Control with regard to the implementation of the budget and to ensure that the expenditure has been incurred in a regular and proper manner plus checks carried out by the Contracts Service of DG XII.

- Scientific checks: ACPM  
Competent officials from DG XII.

FINANCIAL RECORD

1. RELEVANT BUDGET HEADING: 3360/5
2. TITLE OF THE BUDGET HEADING: Environmental Protection :  
Treatment and utilization of sewage sludge (concerted action)
3. LEGAL BASIS: Article 235 of the EEC Treaty  
Council Decision of . . . . .
4. DESCRIPTION, OBJECTIVE(S) AND JUSTIFICATION OF THE PROJECT:

4.0 Description

Coordination of the most important research work being carried out or planned in the Member States concerning the treatment and the utilization of sewage sludge. An association of non-member European states is also envisaged.

4.1 Objective

Development and extension of research work carried out under COST Project 68 bis.

4.3 Justification:

The proposed research is part of the sectoral programme in the field of environment. It is directly linked to the Council Resolution of 14 January 1974 and also to the European Communities' Action Programme on the Environment, in particular the Council Resolution of 17 May 1977, Title II, Chapter 2.

ANNEX III

5. FINANCIAL IMPLICATIONS IN RESPECT OF INTERVENTIONS APPROPRIATIONS  
(including expenditure on staff and administrative and technical expenditure)

5.1 Total cost for the expected duration EUA

5.2 Proportion financed from:

- the Community budget 220.000 EUA
- national budgets EUA
- other sectors at national level EUA

5.3 Multi-annual timetable

5.3.1.1 Appropriations for commitment in EUA

Type of expenditure	1981	1982	1983			TOTAL
Staff						
Administration	70.000	70.000	80.000			
Contracts						
Total	70.000	70.000	80.000			220.000

5.3.1.2 Appropriations for payment in EUA

Type of expenditure	1981	1982	1983			TOTAL
Staff						
Administration	70.000	70.000	80.000			
Contracts						
Total	70.000	70.000	80.000			220.000

5.3.2 Method of calculation

a) Administrative and/or technical expenditure

The expenditure mainly covers the cost of missions and the organization of meetings. It has been estimated on the basis of average requirements.

6. FINANCIAL IMPLICATIONS IN RESPECT OF APPROPRIATIONS FOR STAFF AND CURRENT ADMINISTRATIVE EXPENDITURE:

(see under point 5 above)

7. FINANCING OF EXPENDITURE:

7.4 The appropriations needed to cover the Community's participation in this project are to be entered under future budgets.

8. IMPLICATIONS IN RESPECT OF REVENUE:

- Contribution from non-member states.

9. TYPE OF MONITORING TO BE APPLIED

- Administrative checks:

Administrative checks by the DG for Financial Control with regard to the implementation of the budget to ensure that the expenditure has been incurred in a regular and proper manner plus a further check by the Contracts Service of DG XII.

- Scientific checks: ACPM

Competent officials from DG XII.