
EUROPEAN PARLIAMENT

Working Documents

1978 - 1979

7 December 1978

DOCUMENT 478/78

Report

drawn up on behalf of the Committee on Energy and Research

on the proposal from the Commission of the European Communities to the Council (Doc. 350/78) for a decision adopting a multiannual research programme for the European Economic Community in the field of climatology (indirect action 1979 – 1983)

Rapporteur: Mr E. HOLST

1.2.1

By letter of 28 September 1978 the President of the Council of the European Communities requested the European Parliament, pursuant to Article 235 of the EEC Treaty, to deliver an opinion on the proposal from the Commission of the European Communities to the Council for a decision adopting a multiannual research programme for the European Economic Community in the field of climatology (indirect action - 1979 to 1983).

The President of the European Parliament referred this proposal to the Committee on Energy and Research as the committee responsible and to the Committee on Budgets and the Committee on the Environment, Public Health and Consumer Protection for their opinions.

On 18 September 1978 the Committee on Energy and Research appointed Mr Holst rapporteur.

It considered this proposal at its meetings of 20 October and 23 November 1978.

At its meeting of 23 November 1978 the committee unanimously adopted the motion for a resolution and the explanatory statement by 13 votes to nil.

Present: Mrs Walz, chairman; Mr Flämig and Mr Veronesi, vice-chairmen; Mr Holst, rapporteur; Mr Ansquer, Mr Edwards, Mr Fioret, Mr Fitch, Mr Fuchs, Mr Lamberts, Mr Liogier, Mr Power and Mr Vergeer.

The opinions of the Committee on Budgets and the Committee on the Environment, Public Health and Consumer Protection are attached.

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The Committee on Energy and Research hereby submits to the European Parliament the following motion for a resolution together with explanatory statement:

MOTION FOR A RESOLUTION

embodying the opinion of the European Parliament on the proposal from the Commission of the European Communities to the Council for a decision adopting a multiannual research programme for the European Economic Community in the field of climatology (indirect action - 1979 to 1983)

The European Parliament,

- having regard to the proposal from the Commission of the European Communities to the Council¹,
 - having been consulted by the Council pursuant to Article 235 of the EEC Treaty (Doc. 350/78),
 - having regard to the report of the Committee on Energy and Research and the opinions of the Committee on Budgets and the Committee on the Environment, Public Health and Consumer Protection (Doc. 478/78),
1. Recognizes the need for increased knowledge of the underlying mechanisms of the climate and climate changes as existing knowledge in this area at present provides an inadequate basis for reliable climate prediction;
 2. Draws attention to the fact that improved climate predictions are a necessary basis for any measures to be taken with regard to the consequences of such climatic conditions and relations which society has no influence on, but which have considerable, and often undesirable, economic and social consequences;
 3. On the other hand, stresses the importance of the fact that a major part of the research programme is directed towards the study of those climatic conditions which are influenced and perhaps determined by the agency of individuals and society, particularly with regard to energy;
 4. Recalls that neither the weather nor the climate respects geographic or political frontiers and that this is an indication of the need for and the desirability of a common research effort at European level;

¹ OJ No. C 247, 18.10.1978, p. 2

5. Therefore welcomes the fact that the programme opens up the possibility of cooperation with other European countries with which the Community has common interests and with which it also cooperates in other scientific and technological fields;
6. Since climatic phenomena are observed throughout the atmosphere and biosphere, recommends the closest possible collaboration with all scientific institutions in the world which are engaged in meteorological and climatological research and studies;
7. Considers the present programme to be a first essential step in an effort which will have to be maintained for many years to come;
8. Agrees that the proposed research programme should be carried out as an indirect action since this will ensure optimum utilization and coordination of the financial and manpower effort which is already being made in the Member States;
9. Endorses and supports the Commission's proposal subject to the following amendments, pursuant to the second paragraph of Article 149 of the EEC Treaty.

Decision adopting a multiannual research
programme for the European Economic Community
in the field of climatology (indirect action -
1979 to 1983)

Preamble unchanged

Recitals unchanged

Article 1 unchanged

Article 2

The upper limit of expenditure commitments necessary for the implementation of this programme is estimated at 8,000,000 European units of account, the European unit of account being defined by the Financial Regulations applicable, and the number of staff is set at three.

Article 2

The upper limit of expenditure commitment necessary for the implementation of this programme is estimated at 8 million European units of account, as defined in Article 10 of the Financial Regulation of 21 December 1977, and the number of staff is set at three. These figures are of an indicative nature only.

Article 3 unchanged

Article 4

During the third year, the programme shall be reviewed; this review may result in a revision of the programme in accordance with the appropriate procedures after the Advisory Committee on Programme Management has been consulted. The European Parliament shall be informed of the results of that review.

Article 4

Before the second year has expired, the programme shall be reviewed; this review may result in a revision of the programme in accordance with the appropriate procedures after the Advisory Committee on Programme Management and the European Parliament have been consulted. The European Parliament shall be informed of the results of that review.

Articles 5, 6 and 7 unchanged

¹ For complete text see OJ No. C 247, 18.10.1978, p. 2

EXPLANATORY STATEMENTI. INTRODUCTION

1. The Commission has submitted to Parliament a multiannual research programme in the field of climatology for its opinion. The programme can be seen as a part of the Community's policy in the scientific and technological field.

2. At a time when technological conquests have made possible a virtually inconceivable explosion in accessible knowledge in practically all fields it may seem incredible that, with regard to the climate which has always been and still is a determining factor in our daily life in all its manifold aspects, it is only now deemed important to have:

- an increased 'understanding of the mechanism of climate and of the causes of climatic variability';
- and 'assessment of the impacts that climatic variability could have on basic European resources, as well as the role that man could be playing in that variability itself'¹.

3. Nevertheless we must admit, with the Commission, that these two basic needs are real needs. This is also sufficient justification in itself for giving unqualified support to the present proposal for a research programme. Your rapporteur is also convinced that the economic effort required for the implementation of the programme is not only a necessity but will also be richly repaid when the results attained are translated into 'applied climatology', which is naturally the underlying ultimate objective.

II. OBJECTIVE AND CONTENT OF THE PROPOSAL

4. In view of the objective of creating improved methods of climate prediction and, as a more distant objective, of being able to take effective social measures to counter the effects of the climate and in particular changes in climate, the Commission has specified certain priorities for research where the need for increased knowledge is most urgently felt. These priorities are:

1. Understanding the climate
 - reconstruction of past climates
 - climate modelling and prediction
2. Man-climate interactions
 - climatic variability and resources
 - man's impacts on climate

¹ COM(78) 408 final, page (i)

5. By way of support for the above fields of research, the proposal is that the following specific activities should be started:

- the establishment of an inter-disciplinary group for the study of climatic impacts, and
- the inventory, coordination and enrichment of European climatic data sets.

6. The research programme is to be realized on the basis of the normal implementing provisions for indirect action. The EEC will cover up to 50% of expenditure on the research contracts entered into and implemented in connection with the programme. The Commission is to be responsible for the administration and execution of the programme with the help of an Advisory Committee on Programme Management. The cost of the five-year programme is put at 8 million European units of account and the staff requirement at three, broken down into two A posts and one C post.

III. COMMENTS ON THE COMMISSION'S PROPOSAL

Climate and weather¹

7. We are all familiar with the often calamitous reports in the press and on television of the imminent ice age and the evolution of a sub-tropical climate in northern Europe, these two predictions being based respectively on recorded extremes of warm or cold weather. Here we already have two concepts which are very often confused but which must be clearly distinguished. Concepts such as ice age and sub-tropical climate are both climatological concepts whereas extremes of cold and hot weather must be seen as weather concepts.

8. Both the climate and the weather are expressions of relationships which are determined by a number of interrelated parameters: temperature, precipitation, wind, cloud cover, humidity, pressure, etc. Weather is the normal expression for conditions which last at most a few days whereas climate represents average weather conditions over a fairly long period.

9. It is necessary to make this distinction in order to avoid the confusion created by the abovementioned press reports, which, according to your rapporteur, also enter into the Commission's document. Some climatologists for example consider that significant statements about the climate must be based on such a large number of years that any extreme conditions in a single year or a number of years make little effect on the averages obtained.

¹ - Dansgaard 'Klima, is og samfund' (Climate, Ice and Society) in Naturens Verden 1977/17
- Bolin 'The Carbon Cycle' in Scientific American, Sept. 1970

This problem can be illustrated by two examples: the summers of 1975 and 1976 were extremely warm and dry in most of Europe whereas at the same time Moscow was experiencing uncommonly cold summers with considerable precipitation. Is this an indication of a climate change and how should it be interpreted? The decade 1937-1947 was the warmest in several centuries but also included four extremely severe winters, namely 1940-42 and 1947.

10. These examples are given in order to stress the importance of treating extreme weather situations as referred to in the Commission's document with caution. They may be taken as meaning that we perhaps face more frequent extremes of weather. This would have implications for society which would then have to plan for the undesirable consequences, including the economic effects.

The Commission's proposal as regards the climate in the short and longer term

11. The above distinction between climate and weather means that the two priority fields for research in fact touch on two different sets of conditions:

- a: the climate and changes in the climate seen over a long period, namely a number of years.
- b: the weather seen as the average of a short period of up to 14 days.

The first area of research, the establishment of climate models and predictions, and the support for this, construction of past climates, is primarily concerned with (a).

12. Our modern society which is characterized by an infinitely complicated network of interrelationships is extremely vulnerable and sensitive to even the smallest changes in climate. Here we have only to think of the economic effects of a failed harvest following either too much or too little rain or a flood disaster. If such climatological occurrences could be predicted it would be possible to take effective counter-measures and thus ward off some of the worst effects. But predicting the climate requires the establishment of a model embracing not only all the significant climatological parameters but also their interrelationships, to give us a picture of the mechanisms which govern the climate. The extent of the problem is illustrated by the fact that existing climate models can only carry out very simplified tasks, and the estimation that the world's fastest computer is 100 times too slow to put together a more comprehensive climate prediction in a reasonable time. A not inconsiderable part of the problem lies in the definition of the problem to be solved by further computer processing. The definition of this urgent problem is one of the aims of the research programme under consideration.

13. The correct programming of a computer for climate prediction necessarily requires a check on the reliability of the climate model applied. One method is to apply the model to known situations and to see whether it will 'predict' the changes which actually took place. A study of past climates and changes in climate is therefore put forward in the hope of identifying inter-relationships and causes of certain climatic conditions. Sufficiently detailed records of climatological measurements and observations do not stretch very far back in time (only about 100 years). Your rapporteur doubts the value of historical records since these may be of the nature of the 'calamitous' reports compiled for other purposes which we have referred to above. On the other hand we can use the knowledge presented by other branches of science and the results of geological, botanical and geophysical chemical studies.

14. In this connection your rapporteur draws attention to the research in Greenland. The drilling and complex analysis of ice cores make it theoretically possible to analyse climate and climate changes during 500,000 years in the central Greenland ice cap which is 3,300 metres thick. The results of investigations so far already give a plausible explanation of social changes which took place in Greenland during the historical period when the island was inhabited and which are described in historical source material. This is not to say that climatic changes are the one and only explanation of changes in the pattern of society. This example is put forward to show that the study of the climate in past times is one of the few methods of finding out about climatic changes over a longer period and that ice caps offer a unique opportunity for this. Parallel studies could also be carried out in the form of soil and sea floor analysis even when other 'disturbing' parameters intervene.

Man-climate interactions

15. This refers to areas of research which have to be based on climatological study over a considerable number of years and where long-term measures are needed if they are to be effective against the negative impact of the climate and even more so if they are to be effective against the impact of human activity. There is thus overlapping with the areas of research concerning the study of earlier climatological conditions referred to above.

16. Throughout the world climatologists are worried about the considerable and increasing burning of fossil fuels which has been going on since the beginning of industrialization. It has two main effects, one of which is to heat up the atmosphere and the other is to release carbon dioxide which cannot be absorbed via photosynthesis in plants and trees as part of the normal natural cycle.

Although there is some uncertainty about the degree to which the atmosphere has been warmed up by direct release of heat, it is easier to calculate the increase in carbon dioxide in the atmosphere as a result of fossil fuel burning. It has been calculated, although there are some elements of uncertainty, that during the next 50 years the burning of fossil fuels will result in an average increase in world temperatures of between 0.6 and 1.2°C depending on the rate of increase in burning. This may not seem dangerous but it must be pointed out that this is a world average. An increase in temperature of this kind is not distributed equally over the whole globe but will be greater in higher latitudes, so although an overall 1°C increase in the temperature of the atmosphere may bring a ½°C increase in sub-tropical climatic zones the increase will be 3°C at 75° N. It is this fact which leads doomsday prophets to talk about the melting of inland and Antarctic ice masses with a corresponding increase in the level of the world's seas (and consequently perhaps widespread flooding).

17. Apart from the effects on nature and the environment, the two above-mentioned processes may be strengthened by the 'greenhouse' effect. Part of the heat which the earth receives from the sun (and of which a certain part is returned to the atmosphere) may be absorbed by carbon dioxide and water vapour in the atmosphere. This may produce an even greater increase in the temperature of the atmosphere than that caused by natural and climatological processes. We still do not know enough about the precise processes which take place in the atmosphere to be able to predict these effects, let alone the 'greenhouse' effect. Only with improved climate models will we be able to work out untenuous hypotheses regarding the consequences of energy consumption. The Committee on the Environment, Public Health and Consumer Protection also attaches importance to this matter in its opinion.

18. The problems which are set out above clearly show the extent of the problem and the importance of taking immediate action to increase our knowledge of the underlying mechanisms of the climate and the way in which they are affected both by natural phenomena and - not least - by human activities. It is high time that this whole field was cleared of conjecture. It is significant that present knowledge can be used by people (even experts) to predict either the rapid advance of a widespread sub-tropical climate in central and northern Europe or to predict an imminent ice age.

Whichever of these two prophecies is right, it does not require much imagination to conceive the social and economic effects of any such climatic changes. The effects of a change in conditions for world food production can be put forward as one example of the numerous sectors of society which will be concerned. And it would require much smaller climatological changes than those extremes put forward here to have an effect on social economy.

19. One single example is the effect which a small change in climate had on Greenland society where the dependence on fishing naturally means that changes are felt more keenly. A general increase in temperature (over 2°C) in the period 1910-1930 made it possible to change from seal and whale fishing to 'industrialized' fishing with the accent on cod (the increased temperature encouraged cod spawning). A subsequent cooling of these waters drove the cod away from their spawning grounds again and thus made it necessary for the Greenlanders to radically reorientate their industrial activities.

20. Any climatic condition or change is by the nature of things a general one even it may show regional characteristics. There is no doubt that for this reason research must become more international. Climate and weather do not change at national or political frontiers. Your committee is therefore glad to see that the Communities are taking up this urgent task and that this proposal for a decision also opens the way for cooperation with other European states in the context of COST. A Community programme could also provide a contribution to international research carried out under the aegis of the UN, WHO and the World Meteorological Organization.

IV. IMPLEMENTING PROVISIONS

21. The Commission puts the expenditure commitments for the implementation of this programme at 8 m EUA and personnel requirements at three.

As usual Parliament must point out that the financial implementing provisions can only be indicative for the financial year in question since the final provisions are determined as part of the budgetary procedure. Article 2 of the proposal for a Council decision must therefore be amended as follows

'The upper limit of expenditure commitments necessary for the implementation of this programme is estimated at 8 million European units of account, the European unit of account being as defined in Article 10 of the Financial Regulation of 21 December 1977, and the number of staff is set at 3. These figures are of an indicative nature only.'

22. As is customary, Parliament must ask to be consulted on any revision of the programme which is based on Article 235 of the EEC Treaty.

An addition is therefore proposed to Article 4 of the Commission's proposal for a Council decision. It is proposed that the words 'and the European Parliament have' should be added to the first sentence of Article 4.

Furthermore, the committee must insist that the research programme be reviewed before the end of the second year. It would not be possible to introduce changes if the review were held later; the review clause proposed by the Commission can therefore be regarded as unrealistic.

V. CONCLUSION

23. As will be clear from the above remarks, the Committee on Energy and Research welcomes the research programme put forward by the Commission. The social need for greater knowledge of climatological interrelationships is evident and only by coordinating efforts is there any hope of being able to take measures in good time to reduce as far as possible the worst climatological effects whether these be due to natural or human agency. Only increased knowledge about the climate and its underlying mechanisms can provide guidelines for reaction by the community to extraneous influences on the basic conditions of life.

24. The Committee on Energy and Research hopes that the proposed research programme will be concluded successfully and will eventually form the basis for new research activities in this field at both national and Community level. The aim of obtaining adequate knowledge of the climate can naturally not be expected to be attained even if the programme under consideration here is completed successfully.

OPINION OF THE COMMITTEE ON BUDGETS

Letter from the acting chairman of the committee
to Mrs WALZ, chairman of the Committee on Energy
and Research

1 December 1978

Subject: Proposal for a Council decision adopting a multiannual research programme for the European Economic Community in the field of climatology (indirect action 1979-1983) (Doc. 350/78 - COM(78) 406 final)

Dear Mrs Walz,

At its meeting of 29/30 November 1978 the Committee on Budgets considered the above proposal for a decision which is intended to contribute towards the understanding of the mechanism of climate and to the assessment of the impact that climatic variability could have on basic resources.

The proposal, which includes two research areas ('Understanding climate' and 'Man-climate interaction'), each accounting for 40% of costs, and a further area entitled 'Special activities', would require total expenditure over the five-year period (1979-1983) of 8 million EUA. Of this, 2,117,000 EUA in commitment appropriations and 717,100 EUA in payment appropriations would be included in the 1979 budget.

Quite apart from the appropriations for 1979, which the budgetary authority will have to approve in the normal way, our committee would make the following points:

- as regards the financial implications of these proposals, the expenditure shown in the financial statement appears both reasonable and credible, and the financial statement itself is satisfactory in its presentation;
- the proposal for a Council decision contains an Article 2 which refers to the expenditure commitments necessary for the implementation of the programme.

For the sake of consistency with the demand invariably made by our committee in similar cases, the Committee on Energy and Research would be well advised to make reference to the European Parliament's budgetary powers and call for the deletion of Article 2, or at least the following change: 'The upper limit of expenditure necessary for the implementation of this programme is estimated, pursuant to Article 10 of the Financial Regulation of 21 December 1977, at 8 million EUA, and the number of staff at 3. These figures are merely for guidance'.

Subject to these reservations, the opinion of the Committee on Budgets is favourable.

Yours sincerely,

(sgd.) Martin Bangemann
Acting Chairman

Present: Mr Bangemann, Vice-Chairman and acting chairman; Mr Croze, Mrs Dahlerup, Mr Dalyell, Mr Dankert, Mr Hamilton, Mr Nielsen, Mr Radoux, Mr Schreiber, Mr Scott-Hopkins, Mr Shaw and Mr Würtz.

OPINION OF THE COMMITTEE ON THE ENVIRONMENT, PUBLIC HEALTH AND CONSUMER
PROTECTION

Draftsman : Mr E. MULLER

On 25 September 1978 the Committee on the Environment, Public Health and Consumer Protection appointed Mr E. Muller draftsman.

It considered the draft opinion at its meeting of 22 November 1978.

Present: Mr Baas, vice-chairman; and deputy rapporteur; Mr Didier, Mr Granet, Lord Kennet, Mr Lamberts, Mr Willi Müller, Mr Noè, Mrs Squarcialupi, Mr Verhaegen, Mr Veronesi and Mr Wawrzik.

A. Introduction

1. With the proposal for a five-year programme in the field of climatology the Commission intends to initiate high-level scientific research with a view to acquiring a better insight into

- (a) the mechanism of climatic changes, and
- (b) the interactions between climate and man.

2. To support these two research objectives it is also proposed to set up an interdisciplinary group for the study of climatic impacts and to carry out an inventory, coordination and enrichment of European climatic data sets.

3. This multiannual programme will be implemented by means of jointly funded contracts with private and public organizations in the field of climatological research in the Member States. The maximum contribution from the Commission to the cost of this five-year research programme (1979-1983) is estimated at an overall 8 million EUA. The payment and commitment appropriations required for 1979 have already been entered, with the support of the European Parliament, against Item 3366 in the 1979 draft budget (section relating to the Commission).

4. The programme will be reviewed and, possibly, revised after two years. Provision has also been made for inviting the COST countries to participate in the research programme.

B. General comments

5. Subject to a shift of emphasis which will need to be taken into account by the committee responsible, the committee can largely endorse the outline and the detailed description of the contract work to be carried out as put forward in the present research programme.

6. In the programme the Commission proposes two areas of research devoted to specific instruments and services.

The main justification for the research lies in the fact that there is no guarantee that the climate will remain constant enough to satisfy industrial requirements during the periods covered by economic planning.

7. To illustrate this detailed proposal the Commission has listed in an appendix a number of noteworthy weather extremes. However, this list is confined to a number of exceptional climatic phenomena observed at world level without much detail about the negative repercussions for man. On the basis of a system-analysis approach and by the development of atmospheric circulation models, the Commission hopes to be able to produce longer range climatic predictions.

8. The committee hopes that scientific methods of this kind, which are already being used by meteorological institutes, in many countries, do not give rise to duplication of research into natural phenomena comprising similar components. It is more important, in its view, to shift the emphasis of the research activities under consideration onto climatic phenomena that are partly induced by human activities. Longer range climatic forecasting is certainly highly desirable, but greater importance surely attaches to counteracting disruptions of the climate.

9. The chief concern here is the prevention of phenomena such as the formation of poison clouds above certain areas, persistent smog, thermic pollution, black snow, destruction of the ozone layer, increased levels of humidity, disruptions of the ecological balance of whatever land, unexpected plagues of insects, etc. Here, it is, in fact, more a question of the maintenance or restoration of the natural components of climatic equilibrium which have been negatively influenced by human agency. Improving the quality of life is thus closely connected here with the protection of the natural environment.

10. Examples of what can only be regarded as recent human dislocations of the climatic equilibrium are the substantial reduction in the total area of woodland and countryside, excessive energy consumption, the lavish use of all kinds of chemical products with little concern as to their repercussions for future generations with the result that the quality of the atmosphere, which is, after all, one of the principal elements for survival, has markedly deteriorated.

11. This all serves to underline the need for climatological research to be based more on aeronomy, the science that concentrates on the study of the upper atmosphere, and on the interaction between the sun and the earth's biosphere, electrical and magnetic fields of gravity and cosmic rays. The basic rules are largely determined by the general laws and axioms of physics and chemistry, but do not cover the disruptions caused by human beings, which can have tragic consequences.

C. Conclusion

12. With the proviso that the Commission concentrate its research more on the interaction between climate and human activities, the committee delivers a favourable opinion on the present research programme.

