E U R O P E A N C O M M U N I T I E S

MEDIUM-TERM ECONOMIC POLICY COMMITTEE

Additional Documents to the Report dated 9 April 1969 on "Scientific and technical co-operation between European countries: possibilities in seven sectors"

Brussels, 9 April 1969 10.121/II/69-E

MEDIUM TERM ECONOMIC POLICY COMMITTEE

Working Party "Scientific and Technical Research Policy"

Additional Documents to the Report

"Scientific and technical co-operation between European countries": possibilities in seven sectors

Letter to

the Chariman of the Medium-Term Economic Policy Committee

Dear Sir,

In its report entitled "Scientific and technical cooperation between European countries: possibilities in seven sectors", dated 9 April 1969, the Working Party on Scientific and Technical Policy stated its intention of making various additions to the cooperation proposals drawn up at the Council's request.

In particular, the Working Party has continued studying the projects relating to information science and meteorology.

As regards information science, the chief European firms have been consulted since the report of 9 April 1969 was submitted. On the basis of the opinions obtained from industrial executives, the Working Party has adopted a draft overall study on the development of a high-power data processing system and on the components required for its construction. (Such a system should be marketable between 1978 and 1983.)

The study in question would be divided into three closely linked parts, namely:

(i) market study aimed at ascertaining the demand for such systems in Europe and on a world scale in the period beyond 1978-1983;

(ii) study on the legal, financial and organizational aspects of the project, in order to prepare the ground for detailed proposals on these subjects;

(iii) study on the technical feasibility of the project, in order to assess as accurately as possible the costs involved and the time-limits for developing the system.

The Working Party realized the urgency and importance of this basic study and wishes the Council to put its weight behind it so that it can be set on foot and stimulated. The Working Party considers this procedure to be the only way of ensuring that a complete and detailed proposal can be submitted with the least possible delay.

In the field of training, the Working Party has also gone ahead with its work on the European Institute of Information Science (document No. 14). Despite the provision of more specific information on this project by the experts, it has not been possible for the Working Party to adopt a position, notably because it has still to learn the standpoint of the specialist group on "Post-Graduate Education", which will only be known in a few month' time. In the meantime, it will be advisable to develop in depth the investigation on hand, in close cooperation with the OECD and NATO, who are compiling studies on projects for training and research in the same sector.

With regard to meteorological satellites, the Working Party recommends:

- that ESRO draw up specific proposals on joint participation by European countries with meteorological satellites of their own in the first GARP (Global Atmospheric Research Program) world-scale experiment (1974-1975);
- that ESRO, in its study on meteorological satellites and in particular that part concerned with their economic utilization and their introduction into a world system, be given the backing of the competent departments of the European countries and of the Commission;
- that the Secretariat of the expert group on "Meteorology" give its attention to the relation which exists between the meteorological satellites designed by ESRO and the overall trend in the field of meteorology.

As to the conditions for implementing cooperative projects, the Working Party has made its principal aim that of enlightening the Council on the lines - in some cases there are alternatives - along which solutions could be sought. Needless to say, this is no more than a first attempt, the conclusions from which will need to be reviewed when the other European countries concerned have made clear their attitudes towards the projects to be launched.

The Working Party's efforts have been directed to various projects which are particularly representative as regards their implementation procedures (cf. the case-by-case studies annexed to the present letter). The choice of these projects, which are offered by way of example, is thus in no way based on any scale of priority or relative importance adopted by the Working Party.

This attempt has resulted in the grouping in three categories of the projects calling for related or similar implementing procedures:

Category One: Preparatory studies.

In this category we may classify the forward studies concerning telecommunications (Project 20) and transport (Project 33) and the system or technical feasibility studies on new means of transport (Projects 30/37, 31, 32 and 34 for the initial phases of these projects).

These preparatory studies have been acknowledged to be necessary in order that the governments concerned can decide whether or not to undertake the planned research and development on a cooperative basis. Generally speaking, they would involve very little expenditure, and would probably be completed in a matter of months. The Working Party accordingly proposes that they be carried out by the specialized organizations or under the auspices of the Commission. The fact

that a country does not cooperate in the preparatory-study stage should not debar that country from subsequently participating in the research and development project if this goes ahead.

Category Two: Basic research and public service projects.

The projects classified under this head are of two types. The first covers basic research and research preliminary to the standardization or harmonization of regulations. Examples are Information Science (Project 13), Telecommunications (Projects 21 and 25), Oceanography (Projects 40 and 41) and Nuisances (depending on the project).

Implementation of these projects would involve the setting-up at the European level of coordination groups for each project, who would be responsible for the programming and supervision of the work. For purposes of standardization operations, these groups would be made up of representatives of the competent national authorities and of experts from industry.

The projects could be financed, according to the case, either on a joint basis or by coordinated national efforts, the latter method being adopted mainly for the programmes to be apportioned among the various national centres. Participation in the financing by private enterprises directly concerned would be desirable for certain programmes (see case studies in the Annex).

This category also covers projects relating to scientific activities of a public service nature. Examples are Information Science (Projects 11, 12 and 14), Meteorology (Projects 70 and 71, excluding satellite development) and Nuisances (depending on the project). Projects preliminary to the setting-up of a European data transmission network or of public

utilities would in every case require joint financing.

Category Three: Industrial projects.

- Certain projects concerning the development of new equipment, which could be assigned to groups of European enterprises because of their scale. Concentration of government orders might be desirable in order to ensure a market for the equipment constructed by these groups of enterprises with subsidies from the participating governments. Project 10 (with Project 22 could be merged) and Project 32 are seen to be classifiable in this category.

- Other development projects on a smaller scale may be carried out by firms in the countries concerned. Joint financing of them could be considered if the participating States decided to dovetail their orders for the relevant equipment. Examples are Oceanography (Project 41 (part) and 42) and Meteorology (Project 72).

- Other industrial projects, not leading directly to the manufacture of products and equipment likely to be purchased by the public sector, would lend themselves more to cooperation organized on the "concerted action" principle. This applies in particular to all projects in the metallurgy sector.

In a general context, the Working Party stress the point that, if it were decided to launch projects involving the use of a joint centre and calling for joint financing, it would be necessary to assign such projects wherever possible to existing centres and organizations.

Finally, during more searching investigations, the Working Party singled out a number of questions which would need to be analysed very accurately, notably that of financing machinery which could be relied upon to ensure uninterrupted pursuit of the research up to its completion and also the appropriate budgetary procedures. The Working Party suggests that a study be conducted on this subject.

Yours faithfully,

Pierre AIGRAIN,
Chairman of the Working Party
on Scientific and Technical
Research Policy.

PROJECTS REFERRED TO IN THE BODY OF THE LETTER

Information Science:

10 - High-power data processing systems.
11 - Data transmission networks between research centres.
12 - European programme library
13 - Software standardization committees.
14 - European Institute of Information Science.

Telecommunications:

20 - Forward studies of telecommunications services.
21 - European conformity certificates for electronic components.
22 - New components for computers.
23 - Basic research on the properties of semiconductors.
24 - Solid state devices for hyperfrequency use.
25 - Basic research on the propagation of high frequency and very high frequency hertzian waves.

New Means of Transport:

30/37 - Devices for electronic traffic aids.
31 - Study of the advantages of electromagnetic "lift" (sustentation).
32 - Study of the advantages of a marine hovercraft of about 2,000 metric tons.
33 - Forward study of passenger transport between large conurbations.
34 - Study of closed-circuit gas turbines for use on railways.

Oceanography.

40 - Fight against and surveillance of pollution of the sea.
41 - Development of a device for measuring toxicity.
42 - Development of a device for toxicological and biological studies in the sea (undersea Ecostat).

Metallurgy:

50-57 - Combined projects.

Nuisances:

6 - (all projects in field of Nuisances).

Meteorology:

70 - Common Meteorological Computation and Research Centre.
71 - Joint development and use of European meteorological satellites.
72 - Joint development, standardization and purchase of meteorological equipment.

MEDIUM TERM ECONOMIC POLICY COMMITTEE

Working Party "Scientific and Technical Research Policy"

ANNEXES

CASE STUDIES

The eleven case studies set out below have been compiled on a standard pattern:

- nature and objectives of project;
- programming and supervision of project;
- performance;
- industrial utilization of results;
- financing.

As this pattern shows, the description of the implementation procedures is in every case preceded by an analysis of the nature and objectives of the project concerned. In particular, it has been considered advisable to indicate whether the project is mainly of general interest or of interest to industry and in what degree it approximates to the industrial phase.

The following projects are described below:

Field: Information Science

Project 10: HIGH-POWER DATA PROCESSING SYSTEMS

1. Nature and aims of project

- Research and development leading to the production of new high-power data processing systems(*).

- Combination of commercial, technological and industrial aims. The industrial aim, the creation of new structures in part of the electronics industry, is considered very important. The advantage of the project from an industrial standpoint will be heightened by significant effects on the supplier and user branches. The greatest weight, therefore, attaches to the industrial advantage.

The system will be partly used for requirements guaranteed by the public authorities, but will in the main be made commercially available to the private sector. Work on the project must be very close to the industrial stage, as the project is geared to design and production and not to research as such.

2. Programming and supervision of project

The programming is a highly complex operation, comprising the choice of the project to be carried out, detailed technical programming of the project as adopted, and administrative and financial programming.

In this context, it is necessary to start immediately on the study, in collaboration with industry, of:

- the market prospects;
- the procedures for organization from the legal, administrative and financial standpoints;
- the technical feasibility of the project, together with an assessment of the cost and the drawing-up of a time schedule.

It is also necessary to set up without delay a group for coordinating and supervising the project, operating abreast of current activity and associating manufacturers in the work.

(*) With regard to the two alternatives outlines in the main report, dated 9 April (Project 10), the manufacturers are only considering the long-term project. The present document has been drawn up with this in mind.

3. Performance

Responsibility for this must of necessity be borne by industry and industrial centres, although subcontracting to certain public or private laboratories is not to be ruled out.

In addition, two major requirements must be fulfilled:

(a) as it is a complex project, there must be a single project superintendent;

(b) the various phases of research and development must be integrated, as also must this composite phase and that of series production. This link-up must be actively pursued so as to prevent the research, especially during the first few years, from assuming a semi-academic aspect.

This process would be facilitated by the Member States' giving an undertaking to proceed automatically to the following phase as soon as the one before it had been successfully accomplished.

For the purposes of the project, consideration must be given to grouping the participating firms into a joint-subsidiary type or organization.

The manufacturers have already intimated their preferences for having the development and management of the project carried out in a joint organization with centralized control and supervision. On the other hand, implementation of the project, as regards both R & D and production, would be effected by subcontracting, preferably to the parent companies, on a wide scale.

4. Industrial utilization

- Integration of the R & D phase and the production phase would be necessary (see above).
- There are major problems in the marketing phase, particularly as regards the introduction of the machine into the range of hardware manufactured by the various participating firms.

If it were found desirable for there to be a large volume of government orders, it would be necessary to determine:

- the appropriate time for dovetailing such orders;
- the volume of such orders;
- the extent to which such outlets in the public sector will be guaranteed (price, delivery conditions, etc.).

5. Financing

- It would be necessary to have substantial funds, which could only be achieved by combining private or public resources. Since the project in question is one the results of which would be directly extended to industry, the public sector should only share in its financing, this share nevertheless being essential to start it up. In their first reaction, however, the manufacturers' proposal is that the project should only be undertaken on the basis of 100% government financing of the current expenditure.
- As regards government participation, joint financing is the appropriate method because this is a single, highly integrated project, beyond the scope of firms. In certain forms, financing on a national basis is not to be ruled out.
- Various procedures for financing from public funds may be considered, namely:
  - subsidies;
  - appropriations;
  - purchase guarantees in the form of a substantial volume of government orders (see above).

These forms of financing may be combined, in proportions differing according to the characteristics of the system.

- A prior commitment by the Member States to share in the financing of each phase of the project would further both the implementation of the overall project and the integration of the various phases.

Field: Telecommunications

Project 20: FORWARD STUDIES ON TELECOMMUNICATIONS SERVICES

1. Nature and objectives of project

- General study of telecommunications of services to be set up around 1985

Economic investigation of requirements with the aim of orienting technological research and making it possible to draw up a concerted programme of cooperative projects.

- Special study of data transmission services to be set up around 1972-1973

Economic investigation of requirements in order to prepare the ground for decisions concerning the possible setting-up of a separate data transmission network around 1973. This work is in the public interest in that it paves the way for decisions by the public authorities regarding cooperation, development and technological research.

2. Programming and supervision of project

General study :

- This is to be assigned to an existing international body competent to undertake such studies, such as the Commission or the CEPT (European Conference of Postal and Telecommunications Administrations), the Commission having already undertaken initial exploratory work on pinpointing the problems to be tackled during subsequent stages.

In the selection of the method to be adopted, account must be taken of the following points:

- close association of the national postal and telegraph authorities in this work is essential to its success; collaboration in studies, which is a preparatory stage for other projects, should facilitate joint utilization of their results;
- the manufacturers' standpoint must be considered at each phase of the work;

- unified administration of the entire study is highly desirable.

The date transmission study is the province of the national authorities. The results can only be utilized if the latter can coordinate their work, which presupposes that the study secretariat should be run on a joint basis by the body already mentioned or by the specialist group.

3. Performance

The general study will be assigned under contract to specialized institutes for this type of forward research embracing technical and economic aspects.

The data transmission study will be carried out with the coordinated resources of the national authorities.

4. Financing

Only the general study calls for financing, which, moreover, would be on a small scale and from non-repayable funds. Joint financing is undoubtedly the proper course, having regard to the fact that this project is of general interest and to the use to which it can be put by the decision-making authorities of the international cooperative group.

Field: Telecommunications

Project 21: CREATION OF EUROPEAN CONFORMITY CERTIFICATES FOR ELECTRONIC COMPONENTS

1. Nature and objectives of project

This is a project of a public service nature which aims, by means of standardization and approval procedures, at widening the European market for components and also enables component reliability experiments to be coordinated. It will serve both the public interest and that of industry and concerns the actual industrial production stage.

2. Programming and supervision of project

Programming comprises two levels:

- national level: programming of the measures and planning of the structures necessary in each country for the application of harmonized systems for ensuring quality standards in electronic components, currently under study by a standardization committee initially consisting of representatives of France, Germany and the United Kingdom and subsequently extended to include representatives of other countries.
- European level: work to be organized within a coordination group, an enlargement of the committee, so as to provide links with the national bodies, the secretariat being fairly small. These units would also be responsible for supervision of the project at the appropriate level.

3. Performance

The study would be performed mainly in the national standardization bodies already in existence or to be set up within the framework of the project. The manufacturers must be closely associated with the work.

At the European level, information would be collated and activities coordinated through the agency of the above-mentioned secretariat.

Reliability tests may be carried out either in official centres of the countries concerned or in approved industrial centres and under the supervision of the standardization body. Some experiments could, if appropriate, be performed in joint centres.

4. Financing

(a) at national level:

Financing of the expenses involved in setting-up the bodies responsible for issuing approval certificates and performing reliability tests must be done at the national level, and discussions on the procedures governing industry's participation must be conducted at the same level.

(b) at European level:

The coordination secretariat must be financed on a joint basis.

Field: Telecommunications

Project 25: RESEARCH ON THE PROPAGATION OF HERTZIAN WAVES

1. Nature and objectives of project

Basic research aimed at improving short-wave radiocommunications, widening the field for the use of hertzian beams on the ground and by satellite, and decreasing the cost of the necessary plant and equipment.

Work of general interest, which should result in new specifications for the equipment required by the public authorities from industry.

2. Programming and supervision of project

It is necessary to determine jointly a programme of general-interest projects which will be carried out on a decentralized basis by various research centres in order to arrive at a complete pooling of results. Determination of this programme would be the responsibility of the governments, acting through the coordination group, which would consist of representatives of the various countries' postal and telegraph authorities.

The research apportioned among public or, if appropriate, private research centres would be under the supervision of the national authorities, who would be in close contact with each other through the coordination group, which would attend to the pooling of results.

3. Execution

The research would be performed in national research centres.

4. Financing

It will be necessary to be able to call upon centres which will carry out the research with funds totalling 5,000,000 u.a., to be spread over a period of five years. Financing will be from non-repayable public funds, which will have to be provided by the countries in which the work is being performed. The study of transhorizon propagation curves in countries with non-temperate climates will have to be financed jointly by the countries concerned.

Each country may finance certain work carried out in other countries with which it wishes to be more closely associated; the cooperation procedures will have to be determined case by case.

New Means of Field: Transport

PROJECT 30: DEVICES FOR ELECTRONIC TRAFFIC AIDS ON MAJOR ROADS

1. Nature and objectives of project:

Development of a comprehensive system of traffic aids on motorways and on major roads in towns

- overall objective: public service activity (traffic aids system);
- development of the system involves:
  - studies (systems analysis, simulation, signalling, profitability);
  - research and development on new equipment (data collection)
  - standardization operations (signalling).

2. Programming and supervision of project

(a) programming carried out by a coordination group, which will have to be set up as soon as the project is launched; this is because research is being undertaken in certain member countries on a number of aspects of an integrated system, which must therefore be taken into account for the purposes of the new research. It is also essential to have a unified design, the desired result being a single system.

The coordination group will consult the appropriate manufacturers during the development of the system. Whenever the research concerns new equipment, manufacturers will be closely associated in the group's work.

(b) Supervision of work

This will be carried out by the coordination group.

3. Performance of research

- Studies: carried out in the public services' (road research) laboratories (or centres). For each study or group of studies a main laboratory will be appointed, which will work in cooperation with others (researchers being seconded, if necessary, to the main laboratory).

- Research and development on new equipment: determination of types of equipment will be followed by selection, on a joint-tender basis, of the enterprises to be responsible for development of prototypes. The experimental work on prototypes, as on the signalling and profitability studies, will be performed by the main laboratories (on motorway sections already chosen for the purpose in Germany, France and Italy).

As regards certain high-cost types of equipment, there are two possible alternative courses for the designing and production of prototypes:

- setting up a European consortium in order to enable the industries of the various countries to participate and to ensure access to the various markets;
- awarding the contract to an enterprise in one of the Community countries, it being understood in either case that the production run would be long enough to make for reduction of costs (cf. size of market and size of enterprise).

In the case of low-cost equipment, it will be sufficient to lay down uniform specifications; contracts could be awarded and production carried out within a national framework.

4. Industrial utilization of research results

- The joint invitation to tender for prototypes and the influence of the large market on the lowering of costs of some types of equipment (certain detectors, for instance) makes it necessary to group government orders in certain cases.

- For the production and marketing of high-cost equipment, groupings of firms may be recommended (cf. Section 3 above).

5. Financing

- Value of project: about 1,200,000 u.a.
- Type of financing:

  definitive financing from public funds, except for certain new types of equipment, in which case the R & D will be financed by industry.

- Case for joint government financing, where called for:

  Such financing is necessary:

  - for the studies, in view of the fact that institutes will be working in association with a main laboratory, and in particular seconding researchers. If a study were to be undertaken by one institute only, there would be a case for having it financed by an individual country. However, for the purposes of overall coordination of the project, this type of financing - of an exceptional nature in the present instance - does not appear desirable;
  - for research on certain types of equipment (where the R & D would not be financed by industry), the fact that a joint call for tenders is to be issued necessitates financing on a joint basis.

PROJECT 37: VEHICLE-MOUNTED DEVICE TO REGULATE THE GAP BETWEEN VEHICLES

1. Nature and objectives of project

Development of a vehicle-mounted device to regulate the gap between vehicles

- Public-service objective (traffic aids);
- Preliminary feasibility study on technical and economic aspects, designed to lead to:
  - either specifications for a device which efforts would subsequently be made to introduce on the market;
  - or the launching of a R & D programme.

2. Programming and supervision of project

(a) Programming will be carried out by a coordination group. As it is a case of research on new equipment, the manufacturers will be closely associated with the work of the group.

(b) The work will be supervised by the coordination group.

3. Performance of research

- Studies: carried out in the public services' (road research) laboratories (or centres). A main laboratory would be appointed, which would work in association with others (researchers being seconded, if necessary, to the main laboratory).

- Research and development of new equipment: determination of types of new equipment will be followed by selection, on a joint-tender basis, of the enterprises to be responsible for development of prototypes.

4. Industrial utilization of research results

The objective being to market a device at the lowest possible cost (in order to facilitate its adoption by users), groupings of enterprises may be recommended. Such groupings could be encouraged only at the prototype construction stage, as production in this case cannot enjoy the advantage of combined government orders.

5. Financing

- Value of project: 700,000 u.a.
- Type of financing:
  - for the preliminary study, definitive financing from public funds;
  - for the R & D on the vehicle-mounted device, financing by industry. However, financing would be from repayable public funds should it be necessary to have prototypes constructed and to experiment with them in order to decide on a type of device.
- Case for joint government financing

Such financing is necessary:

- for the studies, in view of the fact that institutes will be working in association with a main laboratory, and in particular seconding researchers;
- for the equipment, if it is necessary to construct several prototypes and make a choice among them.

Field: New Means of Transport

Project 32: STUDY OF A MARINE HOVERCRAFT OF 1,000-2,000 TONS

1. Nature and objectives of project:

Preliminary study of a R & D project concerning a marine hovercraft of between 1000 and 2000 tons:

(1) Definition of main parameters, and on the basis thereof assessment of the possible cost;

(2) market study;

(3) feasibility study.

This project is mainly of industrial interest by reason of its possible extension to industry (R & D project); it is also of general interest to the extent that buyers of the future hovercraft will be companies operating regular lines (State or private companies). The planned tonnage opens up access to a large market, namely ferry traffic.

2. Programming and supervision of project

(a) programming will be undertaken by a coordination group on the basis of preliminary projects submitted to it by firms, possibly combining for the purpose, and, if necessary, by national centres or institutes;

(b) the work will be supervised by the coordination group.

3. Performance of research:

This will be done in industry, and if appropriate in national institutes or centres, the study being compiled by the firms mainly concerned, in collaboration with one

or more national institutes or centres as well as with users. A main institute or centre will have to be appointed, either from among the national institutes or centres or from among the enterprises concerned.

4. Industrial utilization of results

- from the preliminary studies stage, the grouping of enterprises must foreshadow the consortium which, at the R & D stage, will be commissioned to construct the prototypes (possibly through the agency of a joint subsidiary);

- at the marketing stage, the combining of government orders must be considered wherever companies under the control of a public authority are concerned.

5. Financing:

- Value of project: 1,200,000 u.a.

(1) Preliminary draft project, including some tests in water tanks (200,000 u.a.).

(2) Technical feasibility study, including more searching tests with small-scale models in order to determine the systems to be adopted (1,000,000 u.a.).

- Financing will take one of the following forms:
  - joint government financing of part of the project only, the rest being done by industry;
  - joint government financing for the entire project, but with provision for repayment of a portion of the funds employed. (In either case, government financing would irrevocably cover the entire project if the findings from the study were such as to mean abandonment of the R & D project.)
  - Joint government financing in one form or the other is necessary having regard to the following facts:
    - at study level, the right which the Community must have to make a choice with respect to other fast marine transport techniques. (The results of the study will have to be taken

as the factors on the basis of which the Community will be able to decide in favour of a particular technique.)

- at R & D project level, the overall scope of the undertaking (construction of prototypes). At this stage, however, the results of the study will make it possible to determine the proportion in which the market conditions would permit incorporation of the R & D expenses in the selling price; depending on these findings, it might be possible to arrange simply for jointly financed repayable credits to be opened, which would go hand in hand with the combining of public contracts.

Field: Oceanography

PROJECT 43: SETTING-UP OF AN OCEANOGRAPHICAL MEASURING NETWORK IN EUROPEAN WATERS

PROCEDURE

1. Nature and objectives of project

Setting-up of an oceanographical and meteorological measuring network in European waters and organization of the appropriate land services.

- Because of the facilities it will offer for recording and transmitting important data, the measurement network is of general interest.
- The development and construction of an automatic measuring station will also serve the interests of the industries operating in this sector.

2. Programming and supervision of project

The measuring network will be set up in three stages: development of a complete automatic oceanographical measurement station; installation of an experimental network; installation of the operational measuring network.

In order to draw up the programme for these three phases, it is necessary to set up a coordination group which will also have to be responsible for supervising the proper use of the funds made available and, if appropriate, for ensuring continuity of the work on development of the measuring station. During the third phase, it will also be necessary to consult representatives of industry.

This group, underpinned by an administrative infrastructure which would be as light as possible, will be required to carry out the following tasks at the various phases:

I. Development of a measuring station:

Determination of the technical specifications for the constituents involved in the construction of a measuring station and its accessory equipment, with due allowance for the specific environmental conditions. Granting of development contracts, financial supervision and, if necessary, supervision of the development work.

II. Experimental network:

Study and selection of the site and of the type of measuring station and experimental network instrumentation; financial supervision.

III. Setting-up of a measuring network in European waters:

Determination, coordination and supervision, with due regard to the experience acquired during the setting-up of the experimental network, of the necessary preparatory work on the setting-up of an operational measuring network from the technical and organizational standpoints.

3. Performance

I. Development of a measuring station.

The measuring station will be developed by the building block system and equipped, according to requirements, with various elements (measuring probes, electricity supply plant, anchoring systems, transmitting units). The development work will be assigned to several firms in different branches of activity (electronics, buoy construction, equipment construction), which, moreover, will be able to combine so as to form a multinational consortium.

The development contracts may be awarded on the basis of tenders or by any other appropriate selection method. They will be concluded by the coordination group. There are two alternative procedures:

- Awarding of a contract for the development of a complete prototype automatic oceanographical measuring station. In this case, the development expenses will be borne by the principal. The advantage here is that the principal will have the research results and will subsequently retain complete freedom in the awarding of production contracts, with due regard to geographical distribution. The drawback is that it will be difficult to assess the amount of the development costs (Hypothesis 1).

- Awarding of a contract for the development and supply at a fixed price of 10 initial complete automatic oceanographical measuring stations for the setting-up of an experimental network. In this case, the development costs will be included in the production costs. The advantage here is that the principal will not have to contend with any development risk and will be able to make an overall assessment of the development and production costs. The drawback is that he will be more dependent on the supplier (Hypothesis 2).

II. Experimental network

After having examined the technical and financial conditions and the organizational aspects, the coordination group having programming, decision-making and supervisory powers will commission either an existing or a new joint institute to set up an experimental network, using the jointly developed and controlled measuring stations. The measuring network will be managed by the institute in question.

III. Measuring network in European waters

After the measuring stations ordered have been delivered, the measuring network will be installed and the appropriate land services organized. The measuring network set up in European waters will call for the creation of a permanent agency for coordinating the various parts of the network and for processing and disseminating the recorded measuring data.

4. Industrial utilization

Hypothesis 1: Through the agency of the coordination group having powers of programming, decision-making and supervision, a contract for

the supply of 10 initial measuring stations for the setting-up of the experimental network will be awarded on a joint basis (after an invitation to submit tenders or the application of any other appropriate selection method).

Then the operational network has to be set up, either a contract will be awarded on a joint basis or public calls for tender, coordinated between the various countries, will be issued. In the event of a contract being awarded on a joint basis, consideration may be given either to the firms which have already carried out the development work or to other enterprises having the necessary qualifications.

Hypothesis 2: A contract will be awarded jointly for the supply of measuring stations for the setting-up of operational measuring network. The contract will be concluded with the firms which have already designed and constructed the 11 experimental network measuring stations.

Orders will be placed (after an invitation to submit tenders or the application of any other appropriate selection method) for the equipment necessary for organizing the appropriate land services (e.g. data processing plant). Orders for equipment to be used jointly may be awarded at Community level or, subject to coordination, at the national level.

5. Financing

The project will be financed from public resources.

I. Development of measuring station:
Hypothesis 1: Joint financing of the development of the prototype measuring station (more than 500,000 u.a.). This would be a non-repayable subsidy.

II. Setting-up of experimental network:
Joint financing of the setting-up of the experimental network (more than 2,000,000 u.a.). This would consist in non-repayable subsidies.
Joint financing of the setting-up of the experimental network management expenses.

III. Setting-up of operational measuring network:
- joint financing of the measuring network set up in European waters and of the organization of the appropriate land services;
- joint financing of the measuring network set up in European waters and national-level financing of the organization of the appropriate land services;
- national-level financing of those parts of the network which are located off the coasts of each country and of the organization of the appropriate land services.

Management of the measuring network may be financed either at Community level or at national level.

Field: Nuisances

Project 6: NUISANCES

1. Nature and objectives of projects

All projects under the head of nuisances have as their main objective the protection of man and his environment, i.e., a "public service" objective. Some of them are to provide the basis for the adoption of harmonized standards. The majority of them involve basic research, some of which is aimed at developing processes or devices which may be of interest from an industrial standpoint.

2. Programming and supervision of projects

The compilation of programmes and supervision of the work on the projects may be carried out in accordance with either of the following procedures:

- through the agency of coordination groups, Air, Noise, Water, Pharmaceuticals, etc.);
- by assigning this task to the competent departments of the Commission (which have more than ten years' experience in the field), aided by ad hoc expert groups.

The draft programmes thus drawn up would be submitted to a general guidance and coordination agency, which would also be required to keep an overall watch on the supervision of the work.

It must, however, be pointed out that the nine new projects will only be really meaningful if carried out as part of a "European policy for the protection of man and his environment". For this purpose, consideration must be given to the creation at the earliest possible moment of a group responsible for determining the overall guidelines for the present and future programmes and for supervising the work. It would also be advantageous if this body were to be assigned certain responsibilities as regards preparatory work on the standards and fixing the time schedule for the implementation

of the new regulations; for experience has shown that a statement by the public authorities of their intentions regarding the adoption of new standards will in many cases have the effect of prompting those responsible for combating the "nuisance" in question to take action on their own initiative in the form of adjusting to the rules within the prescribed time-limits.

In the case of projects exercising an influence at the industrial level, consultation with the enterprises concerned is clearly desirable at programming level.

3. Performance

The projects now under consideration should be carried out in public or university laboratories; in some cases, involving the development of processes or equipment, the aid of industry will have to be enlisted.

Some projects or parts of them will be carried out in the national laboratories on the basis of coordination. Other projects or parts of them, which do not lend themselves to apportionment of tasks, will have to be performed in a single centre, working on the joint behalf of the parties concerned. This centre could be the Euratom Joint Research Centre or an existing national centre specially commissioned for the work in question.

4. Industrial utilization of research results

Memorandum only.

5. Financing

The funds required for carrying out the nine projects amount to 6-7 million u.a. for an estimated three-year period.

The projects or parts of them to be performed in the national laboratories would have to be financed at the national level. On the other hand, the projects or parts of them to be performed in a single centre would have to be financed on a joint

basis, the funds being made available to the authority responsible for managing and coordinating the projects.

As a general rule, the money should come form public funds, because the ultimate purpose of the proposed research is of general interest. However, in cases where firms might be interested in the production of marketable equipment or processes, such firms should take as large a share as possible in the financing. Where standards could be set beforehand and a time schedule drawn up for their application, the formula adopted should be that of 100% financing by the firm, possibly with a repayable loan.

Field: Meteorology

Project 70: JOINT METEOROLOGICAL COMPUTATION CENTRE (RESEARCH AND EXPLOITATION)

Planned Procedure

1. Nature and objectives of project

Rendering of public services and performance of research aimed at improving such services.

2. Programming and supervision of project

The drawing-up of the work programme and the setting-up of the centre are, on the whole, something entirely new. In the preparation of the work programme, however, use must be made of the experience acquired in the Member States, the United States and the USSR.

The work programme should be drawn up by a coordination group consisting of responsible persons in the national meteorological departments. This group should also contain experts on the working-out of projects and have the assistance of a very-high-level Scientific Committee. Responsibility for supervising the management and the research activities would also devolve upon this group, assisted by its Scientific Council.

3. Performance

The project embraces:

(a) the setting-up of the Centre (acquisition or construction of the building, acquisition of the necessary plant - particularly the computer - and recruitment of the staff). Responsibility for these tasks could be assigned to an Executive Committee, which would be formed to operate for the duration of the work;

(b) the services and research performed by the Centre. Operation of the Centre should be assigned to a single responsible Director and the staff seconded by the member countries.

4. Financing

This project, which has been classed in costs category III, demands joint financing.

Field: Meteorology

PROJECT 72: DEVELOPMENT AND STANDARDIZATION OF METEOROLOGICAL EQUIPMENT

Proposed Procedure

1. Nature and objectives of project

Joint standardization and development of meteorological equipment; purchase of standardized devices. The project is mainly one of general interest, but, to the extent that it will enable Community-produced items to be substituted for imports, it will also serve the interests of European industry. There are to all intents and purposes no outlets on the general market. There may, however, be export openings.

2. Programming and supervision of project

Not all types of meteorological equipment have attained the same level of development. The special cases contemplated range from "conventional" (but not standardized) devices of routine use in all meteorological departments and devices produced at the industrial level (balloons, radio-sondes) to experimental models of new instruments existing in one country or another (a case in point being radiometric methods for determining radiation balance and for measuring temperature at a distance). Generally speaking, however, the situation is that in several countries devices are available (if only in prototype form) which as regards efficiency are still not entirely satisfactory.

The project can be subdivided into several phases, namely:

- adoption of joint decisions concerning the measuring programme, precision standards and coordinated utilization of data);
- comparison of existing devices (experimental models, prototypes, devices manufactured at the industrial level) with the standards adopted;

- if possible, adoption of an already existing solution; otherwise (something for which a case can be made out) development of the appropriate prototype. Purchase of standardized equipment.

The drawing-up of the work programme may be assigned to a coordination group consisting of representatives in responsible positions from the various countries' meteorological departments. This group would also have the task of ensuring that the work was duly carried out and that the optimum solutions were adopted. The group's decisions must be binding on the national authorities.

3. Performance and supervision

The experimental models of the required devices may be constructed either in the workshops of the meteorological departments or by industry. However, an invitation to tender for more experimental models would hardly appear to hold out any interest for manufacturers; on the other hand, the simultaneous award of a prototype contract is indefensible, for this would be to skip an important phase - that of comparison of the various models and adoption of the best solution. It will therefore be preferable to have the experimental models constructed, in accordance with current practice, in the meteorological departments' workshops.

The prototype will then be constructed by industry. The contract will be awarded, as far as possible, on the basis of tenders. Generally speaking, the various devices are not sufficiently complicated for their construction to require, on technical grounds, cooperation between several firms.

Responsibility for this phase will devolve upon industry.

4. Industrial utilization of results

The devices when developed are intended for use in public service installations. Having regard to the fact that in the medium term there is only likely to be a relatively small market, it would appear preferable to concentrate government orders with one or perhaps two manufacturers for each type of device.

Each of the participating countries could then purchase the number of devices it requires directly from the manufacturer jointly agreed upon.

It must, however, be considered whether the concerted awarding of contracts (multiannual plans) might not enable more favourable purchasing conditions to be obtained.

5. Financing

The proposed project's purpose is to coordinate the measures and plans currently being carried out in the various participating countries, with the long-term aim of obtaining the most favourable buying prices.

Since in the short term the supplementary expenses are likely to be relatively modest, the project has been classified in Category I (minimum of 1,000,000-2,000,000 u.a.).

The following possible methods of financing the prototypes may be considered:

(a) Source of appropriations:

- joint or Community financing (after reaching agreement on the type of equipment to be adopted). As this method would not appear to be absolutely necessary, consideration could also be given to:
- financing on a national basis.

The manufacturers could be required to repay the funds used for construction of the prototype from the proceeds which they derive from subsequent contracts, more particularly in the export field.

(b) Procedure governing appropriations:

Prototype construction financed by repayable loans or subsidies in the event of a contract being awarded.

The possibility of "financing by industry provided a market is guaranteed" is not entirely ruled out. In this case, however, the principals must be particularly careful to guard against the risk of inadequate efficiency in the prototype. It is also to be asked whether, in the final analysis, this method would really prove less expensive.

COMBINED PROJECTS

A combined project lies between mere coordination of R & D programmes at international level in order to avoid the most irksome types of duplication of effort, and integration of national research policies. It represents voluntary operational coordination of R & D projects which can be developed alongside national projects in the same fields which are tied in with tehm.

A distinction must be made between two main classes of combined projects to which different methods of operation will apply:

1. Projects with a scientific or industrial aim which make it desirable or necessary to have prior agreements concluded between the enterprises concerned on the utilization of the research results and the marketing of the resultant products.

2. Projects aimed at improving public services which are more the responsibility of governments and which do not call for the conclusion of such industrial agreements at the outset.

As combined projects have first of all been envisaged for the field of metallurgy, the problems have been studied mainly in the context of the first, industrial aim, category.

With regard to R & D projects in the steel sector, Article 55 of the Paris Treaty has prescribed powers on the basis of which procedures have been developed and considerable experience acquired. In order not to overlap the projects being or scheduled to be conducted within this framework, the authorities responsible for such combined action should not embark upon examination of projects in the steel sector util they have satisfied themselves that projects relating to the same subjects have not already been submitted to the Commission.

The main lines of procedure in a combined project of this type are examined below:

I. Participation in a combined project

The participants in a combined project may be governments or international bodies possessing either appropriations for R & D programmes or research centres.

Participation in a combined project is on a voluntary basis. Non-participation or withdrawal by any country, however regrettable, should not prevent the other participants from going ahead with the project.

At the same time, the Working Party draws attention to the practical importance which it attaches to the concept that all governments who have devoted appropriations from public funds to fields covered by a combined project should actually take part in it. Otherwise there would be a danger that only research of marginal interest would be carried out under the project.

Participation by a country implies that funds from national sources appropriated for any part-project should represent a reasonable proportion of the total amount devoted to it.

II. Financing

As regards financing, a combined project is based on the allocation by each country's authorities of government funds to the country's laboratories or firms concerned, on the recommendation of a committee consisting of representatives of the participants. Where the usefulness of the research warrants, such a consideration must be given to allowing appropriations from a country's funds to be spent in other countries or made available to joint centres.

In view of the industrial nature of the proposed projects, the shared-expenses contract principle has been adopted. In order to attract the most worthwhile R & D programmes into the sphere of combined projects, it is suggested that as far as possible the proportion of international combined projects which is finances from public funds should be higher than in similar projects carried out in the purely national centres. In the case of contracts awarded to research institutes and universities, where the absolute amounts involved are relatively small, the proportion of public funds may be higher than that envisaged for contracts with industrial firms.

This procedure, i.e., allocating government funds to national laboratories or domestic firms working jointly with others at international level, serves to maintain operating efficiency, provided the initiative in the matter of programmes is retained by the European Committee, which has a comprehensive view over the research programmes. It nevertheless means that recommendations made by this Committee to the national authorities must be acted upon in practice by the latter.

III. Programming and decision-making

1. The Ministerial Conference which takes the decision to initiate combined projects in the various fields will at the same time lay down in each case the objectives, the general programmes, the duration and the total amount of expenditure. The groundwork for these decisions will have been prepared by experts from all countries likely to participate in these projects, with the aid of the Commission. Each country participating in all or any part of these projects will fix the amount which it intends to contribute to it.

2. Implementation of the Ministerial Conference's decisions is the task of the single Coordination Committee and of the Scientific Committee for each of the combined projects. The composition of these two Committees and the apportionment of powers and responsibilities between them are specified below, for the "running-in" period at all events. The Working Party is alive to the possibility that amendments may be made to this scheme in the light of experience.

2.1 Coordination Committee

This Committee, which covers the entire range of combined projects, is made up of representatives of all the participants in these projects - governments, Commission, international bodies. These high-ranking officials have general powers in the field of research policy, as regards both financing and programmes.

Pursuant to the decisions taken by the Ministerial Conference on programmes, the Committee obtains the technical opinion of the Scientific Committee concerned on the proposals received, decided which projects are to form the subject of contracts and makes recommendations to the national authorities to award the relevant contracts, over which the latter exercise financial and administrative supervision.

The decisions of the Coordination Committee are taken by means of a simple majority of the participants in the combined project concerned, any minority viewpoints being stated. Its recommendations may be vetoed by the representative of the country in which the project should be carried out, so as to avoid compelling any country which does not wish to do so to enter into a project approved by an international committee.

The Working Party nevertheless realizes that, while this legal reservation is permissible, the smooth operation of a combined project requires that in practice the recommendations issued by the Committee are complied with in virtually every case. This is all the more warranted as the projects are submitted and performed by a multinational association of industrial firms.

While the activities under the concerted project are being carried out jointly, the Coordination Committee, having acquainted itself with the broad lines of the various national research programmes, endeavours to coordinate them in order to reduce or eliminate duplication of effort.

2.2 Scientific Committee for Joint Projects

This Committee consists of outstanding experts in the field concerned from the worlds of industry and science, each of the participants appointing two members.

Under the instructions given by the Coordination Committee, it analyses the research proposals submitted to it by the industrial firms or national centres concerned. It issues a reasoned opinion on their value and recommends the most desirable and profitable groupings, which it endeavours to promote in such a way as to set the projects on a multinational basis, with the agreement of the parties concerned. For these purposes, it enters into all such contacts as it may deem necessary with industrial and scientific quarters. It submits its technical opinion on the proposals to the Coordination Committee, this opinion reflecting all the various viewpoints and showing the grounds for them in each case. For obvious reasons connected with the protection of information, only the representatives of the countries participating in the sector concerned under the project will take part in the analysis of the proposals and the drawing-up of the opinion. The same representatives will be responsible for the technical supervision of the research after the contracts have been awarded.

The Secretariat of these two Committees shall be staffed by members of the Commission's departments.

IV. Method of operation

In the case of a combined project with an industrial aim, e.g., in the field of Metallurgy, the most appropriate method of operation is still the shared-expenses research contract.

In order to further coordination and integration of the research at European level, everything will be done to ensure that the projects concerned are carried out on the widest possible multinational basis, with the agreement of the parties concerned. The programmes will thus be submitted and performed jointly by ad hoc associations of industrial firms and institutes. The day-to-day stimulation of the research is the task of the project heads in each of these associations, who will be accountable for management to the Scientific Committee, the responsibility devolving upon one of them.

Proposals from a single enterprise which could not be grouped with those from other firms of other nationalities would in the normal course be left for possible inclusion in the national programmes.

The assignment of the research to industrial firms operating for their own account in cooperation with institutes is calculated to assist as much as possible the transfer of the resultant information to potential users.

V. Dissemination of information

The joint implementation of research projects on a multinational basis provides a solution to the problem inherent in the dissemination of information and in industrial property. Two levels may be considered for the dissemination of results:

- the first, as between participants grouped together, would make for a rapid and comprehensive exchange, which could extend to the exchange between the partners or licences on the patents resulting from the research. This would give manufacturers an incentive

to work together and to engage in research with others, having the prospect of adding to the results of their own work those acquired by other manufacturers with whom they have agreed to cooperate of their own free will. The project heads working together will between them be responsible for this privileged pooling of results;

- the second, between competitive or complementary groupings, would mean partial and/or delayed dissemination, by means of reports and meetings. In this case, patents would be exchanged on normal commercial terms.

In every case, the participants in a concerted project obtain information at this second level and receive an irrevocable, royalty-free licence for their own use.

Needless to say, neither detailed results nor royalty-free licences on patents are made available to non-participating countries.