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REPORT

on the possibility of establishing

REGIONAL CENTERS

FOR RESEARCH AND DEVELOPMENT

IN MARINE INDUSTRIAL TECHNOLOGY

by

Elisabeth Mann Borgese, Consultant

UNIDO, 1987

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CONTENTS

EXECUTIVE SUMMARY

This paper the describes the present situation with regard to the possibilities of establishing Regional Centres for Research and Development in Marine Industrial Technologies.

These possibilities have been enhanced by a Seminar organised in February, 1987, in Malta, by the International Ocean Institute, the Foundation for International Studies, and the Malta Oceanographic Commission. The Government of Malta has endorsed a proposal for the establishment of such a Centre in the Mediterranean.

REPORT

BACKGROUND

1. In his report to UNIDO IV, the Executive Director, commenting on the recent establishment of the International Centre for Genetic Engineering and Biotechnology, under the auspices of UNIDO, stressed that

> Innovative acts of international co-operation are necessary...in other frontier technologies as well. In the fields of micro-electronics, new materials *marine industrial technology and energy*, the UNIDO secretariat should be requested to promote intertional centres with the active co-operation of developed and developing countries.

2. UNIDO thereupon commissioned a study to

(a) give an overview of the present state of development of marine industrial technology; and

(b) make policy recommendations with regard to the possibility of establishing a Centre or Centres in accordance with the Executive Director's suggestion.

3. That study noted

(a) that there were two articles (Art. 276 and 277) in the United Nations Convention on the Law of the Sea, mandating, in a rather detailed manner, the establishment of *Regional Centres* for the advancement of marine sciences and technology;

(b) that the *Regional Seas Programme* established in 1974 on the initiative of the United Nations Environment Programme to advance regional cooperation and ecologically sustainable development in the marine sector, provides a ready *institutional infrastructure* for the establishment of such Centres; and

(c) that, once such Centres were established, integration of their policies and coordination of their activities could best be achieved through a Centre of Co-ordination of which they all would be members.

4. As developing countries are updating their legisiation and adapting their institutional infrastructure to meet the requirements of ocean management, the need for South-South and North-South cooperation in the development of marine industrial technology has become ever more apparent and pressing. Without such cooperation, the benefits to be derived from the U.N. Convention on the Law of the Sea would remain an ephemeral dream.

TRANSFER OF TECHNOLOGY.

5. The transfer of technology can be effected at different stages of technology development:

(a) Finished "hardware" could be "transferred" through cooperative arrangements of various kinds (licenses, leases, etc.);

(b) cooperative arrangements could be made at the initial, or R&D stage of technology development.

6. The "transfer of ready-made technology has not given satisfactory results in the past. The cost of transfer, in most cases, has been too high; "software," or "knowhow," training and the transfer of spar parts often has been lagging behind the transfer of "hardware," and the technology "transferred" often turned out to be "inappropriate."

7. Cooperative arrangements between industrialised and developing countries at the R&D stage are presently practically nonexistant. *Less than 3 percent of all funds spent on R&D are presently spent in developing countries.* The R&D gap is the worst of all development gaps as it affects not only the present but the future of industrial

development and national security.

8. The transfer of technology at the R&D stage has three major advantages:

(a) It costs far less than later acquisition of ready-made hardware, the cost of which includes the investment made by others in R&D. A technology developed jointly does not have to be "transferred." It is "owned" by all participating countries. *Cooperative R&D thus is a way of applying the concept of the Common Heritage of Mankind to technology.*

(b) The participation of developing countries in the R&D will assure that the technology is "appropriate," responding to the needs and conditions of the countries in question;

(c) Cooperative R&D provides a component of *training* which will avoid later problems of maintenance and repair.

CHANGES IN THE ORGANISATION OF R&D

9. Important changes are taking place in the R&D sector of industrial technology. In the West, it was, until recently, the private sector that was the engine of progress in technological innovation. With the advent of "high technology," both costs and risks in the R&D phase have become too high for the private sector to bear alone. First the banks, and behind the banks, the State, are now playing an unprecedented role in R&D in high technology. Even in the United States, the land of greatest faith in the "free-enterprise" system, over 50 percent of the cost of R&D are borne by the Federal Government.

10. For smaller countries R&D costs are too high even for the combined efforts of the public and the private sector to remain competitive. *A new pattern of international public/private cooperation is emerging* in such enterprises as ESPRIT or the highly successful EUREKA, which will

undoubtedly affect the structure and function of the MNCs as a whole.

11. *The problem is to include developing countries in this cooperation* and thereby contribute to the bridging of the R&D gap.

CHANGES IN INTERNATIONAL ORGANISATION

12. Governments (the public sector) alone can no longer be expected to finance international institutions which, no matter how crucially important they may be politically or scientifically, remain economically unproductive. The present worldwide economic recession and financial crisis causes difficulties for the maintenance and effective continuation of existing international organisations. To expect governments to undertake the establishment of yet another vast international bureaucracy would not be realistic.

13. In their study, South-South Cooperation: Lessons, Challenges, and Prospects. Background Study for the 8th Non-Aligned Summit, Harare, September 3-7, 1986, the Yugoslav Team pointed out that

> South-South cooperation has reached a level where *decisive shifts towards new forms and patterns are required. Continuation of the present practice will disprove the validity of this cooperation, and will become futile and unproductive...*
>
> *In addition to governments (that would be expected to continue to create the necessary political conditions for South-South cooperation), nongovernmental organisations and particularly companies and other economic actors should be fully engaged in the implementation of cooperation programs.*

The Yugoslav team also stressed the need for

strengthening of research and development activities which are the basis for the development of ownerhip's specific advantages which are the driving force for the international investments...

14. It is in accordance with these principles that is is proposed that Regional Centres for Research and Development in Marine Industrial Technology should be established. It is suggested that the current trend toward establishing new forms of international public/private cooperation be utilised for the benefit of States, whether industrialised or developing, of the private sector, where it exists, and of the international community.

REGIONAL DEVELOPMENT

15. In establishing Regional Centres for Research and Development in Marine Industrial Technology, existing conditions and requirements must be taken as a starting point. These vary from region to region.

Pilot Study in the Mediterranean

16. The Mediterranean appears in many ways an ideal region for a pilot experiment. The Mediterranean Sea is bordered by developed as well as developing countries, of all shades of social and economic organisation. The Mediterranean exhibits the most advanced marine uses: transportation; fishing; oil and gas; mineral mining; fresh water extraction; marine archeology; tourism -- to name the most important ones. The most advanced marine environmental programmes have been developed here. Some of the largest genuine ship-owners are Mediterranean. The Mediterranean coastal States have extensive marine skills, thanks to their historic links to the sea. The Mediterranean is a microcosmos, a world community in a nutshell. If cooperation between developed and developing countries in marine resource management can be achieved in the Mediterranean, if new forms of scientific/industrial organisation can be created here, prospects will be brighter for the world as a whole.

17. The EUREKA infrastructure, firmly established, but at the same time very flexible, already contains three marine projects, which could be expanded to include non-European, developing nations from the Southern and Eastern shores of the Mediterranean. The EUREKA structure is described in Annex III.

18. During a recent seminar on the Mediterranean and the Law of the Sea, co-sponsored by the International Ocean Institute, the Foundation of International Studies, and the Malta Oceanographic Commission (Malta, February 22-24, 1987), the International Ocean Institute introduced a draft proposal for the establishment of a Mediterranean Centre for Research and Development in Marine Industrial Technology. The draft proposal is attached in Annex I.

19. The Government of Malta presented a position paper which warmly endorsed the proposal and offered a site in Malta to host the Centre. The position paper also raised a few fundamental questions and concurred with the IOI paper on the need for a *feasibility study*. The Maltese position paper is reproduced in Annex II.

20. Annex IV attempts to answer some of the questions raised by the Maltese position paper as well as during the discussion following the presentation of the IOI proposal.

21. Annex V gives a summary outline of the proposed feasibility study. This study should be completed in four months, April/July thus making it possible for the proposal to be included in the agenda of the Fifth Meeting of States Parties to the Barcelona Convention in Athens, in September 1987.

22. It should be noted, in conclusion, that the idea of the Regional Centres for Research and Development in Marine Industrial Technology may well be an idea whose time has come.

(a) In the Indian Ocean, the IOMAC I Conference, concluded in Colombo in January, 1987, included in its recommendations

> Establishment, with assistance from international funding agencies, of a Regional Centre for Marine Technology. The Centre should utilize experts from within the region. Its functions should include
>
> . coordination of marine science and technological research;
>
> . gathering and disseminating information;
>
> . promotion of the transfer of marine technology within the region to enable States to carry out surveys, mapping, exploration for resources and resource exploitation and provision of training facilities.

IOMAC I also recommended the holding of a workshop to discuss the feasibility of establishing appropriate mechanisms for the creation of the Centre.

(b) In the Caribbean, the Government of Colombia has commissioned a study on a joint venture for the Enterprise, i.e.,the operational arm of the International Seabed Authority established by the L.o.S. Convention on the Law of the Sea. The first part of this study covers exploration, research and development and suggests a methodology very similar to that proposed in the present Report. It is also suggested that this joint venture for exploration, research and development should establish appropriate links with a Regional Centre within the framework of the Regional Seas Programme.

(c) The Asean countries as well as the South Pacific Islands, as well as other regions are aware of the need for a regional centre for marine technology, and would most likely adopt the Mediterranean model if it were realised successfully.

23. There is no reason to assume that this new form of scientific/industrial cooperation need, in the long term, be restricted to the marine sector. The marine sector itself is more important to the global economy than the superficial observer might assume: including, as it does, micro-electronics (computerisation), satellite technology, remote sensing, bio-technology, and an array of the most sophisticated technologies for deep-sea exploration and the exploitation of deep-sea resources. If successfully established in the marine sector, the new model might well be expanded to other sectors of scientific/industrial cooperation, as suggested by the EUREKA model itself, which thus would be expanded, from North-North to North-South and South-South cooperation.

24. The Mediterranean pilot project thus has the potential of a break-through towards a sharing of R&D with the South, of bridging the R&D gap, and of applying the concept of the Common Heritage of Mankind to technology: not through confrontation with vested interests but through cooperation in the development of future technologies.

ANNEX I

Pacem in Maribus

International Ocean Institute

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DRAFT PROPOSAL

FOR THE ESTABLISHMENT OF A

MEDITERRANEAN CENTRE FOR RESEARCH AND DEVELOPMENT

IN MARINE INDUSTRIAL TECHNOLOGY

CONTENTS

EXECUTIVE SUMMARY

Marine industrial technology is going to play an increasingly important role in the world economy. Presently there are very few States with the capability of developing this type of technology which relies heavily on micro-electronics, bio-technology, remote sensing, robotics and other advanced forms of high tech. The establishment of Regional Centres for Research and Development in Marine Industrial Technologies would contribute to spreading these technologies among all interested countries, developed as well as developing.

The United Nations Convention on the Law of the Sea provides for the creation of such Centres but fails to specify where and how they should be established. UNIDO has begun to study these questions. It would appear that the UNEP-initiated Regional Seas Programme could provide a most suitable framework.

Within this framework, the Barcelona Convention and the Mediterranean Action Plan would offer a most promising starting point. A Mediterranean Centre for Research and Development in Marine Industrial Technology could be structured along the lines of the EC's EUREKA projects and cooperate with EUREKA in the marine sector (EUROMAR), expanding the model so as to include both developed and developing countries in the Mediterranean basin.

This paper discusses ways and means for the establishment of the Centre.

If successful, the Mediterranean Centre for Research and Development in Marine Industrial Technology could become a model for other Centres in other Regional Seas Programmes. This would be a first element for the bridging of the R&D gap between developed and developing countries which, considering the fundamental importance of R&D for economic development and national security, is the worst of all development gaps as it determines not only the present but, to a large extent, the future as well.

Pacem in Maribus

International Ocean Institute

P.O. Box 524 Valletta - Malta Cables: Interocean

DRAFT PROPOSAL

1. Proposal

We wish to propose the establishment of a

MEDITERRANEAN CENTRE FOR RESEARCH AND DEVELOPMENT IN MARINE INDUSTRIAL TECHNOLOGY

2. Purpose

The purpose of establishing such a Centre would be

. to promote regional cooperation in the peaceful uses of the Mediterranean Sea;

. to promote the implementation of Articles 276 and 277 of the 1982 United Nations Convention on the Law of the Sea which prescribes the establishment of regional centres for marine scientific and technological research, to stimulate and advance the conduct of marine scientific research by developing States and foster the transfer of marine technology;

. to encourage new forms of scientific-industrial cooperation between the developed and the developing countries in the Mediterranean region.

3. Background

(a) The Mediterranean Action Plan

The Mediterranean Action Plan, adopted in Barcelona in 1975, called for, inter alia, a socio-economic programme that would reconcile vital development priorities with a healthy Mediterranean environment. Subsequent documents, such as the Long-Term Programme (MED POL II), the Blue Plan, the

Priority Actions Programme, and the Protocol dealing with Pollution from Land-based Sources, have spelled out this goal in concrete terms. The Parties are to explore the long-term evolution of the relationship between development and the environment in the Mediterranean; to improve technologies required to provide a better understanding of processes and phenomena involved in the complex mechanisms of pollution; to stimulate technological co-operation and exchange of know-how among member States, and their scientific and industrial institutions; to explore potential applications of renewable sources of energy, with particular emphasis on solar energy; to design improved methods of disposing of solid and liquid waste; and to implement the Long-Term Pollution Monitoring and Research programme of MED POL II and III.

While the role of UNEP is, above all, one of co-ordinating and harmonising, the responsibility for executing these activities now rests almost entirely with the States Parties to the Barcelona Convention and its Protocols. The cost to States Parties of implementing the Protocol on Pollution from Land-based Sources is estimated to be up to 15 billion dollars over the next 10-15 years.

This cost could conceivably be reduced quite considerably if States Parties, their industries and scientific organisations agreed to join their efforts and carry out jointly projects of research and development in marine industrial technologies, with a built-in component of environmental impact assessment at the R&D stage. The establishment of a Centre for Research and Development in Marine Industrial Technology would enhance both development and environmental quality in the Mediterranean and promote the implementation of the Mediterranean Action Plan.

(b) The United Nations Convention on the Law of the Sea, 1982.

The United Nations Convention on the Law of the Sea, 1982, contains two articles, Art. 276 and 277, which mandate the

establishment of Regional Centres which should be effected through States, in co-ordination with the competent internationl organisations, and national marine scientific and technological research institutions. The purpose of the Centres would be to stimulate and advance the conduct of marine scientific research by developing States and foster the transfer of marine technology.

Article 277 provides that the functions of such regional centres should include, inter alia:

(a) training and educational programmes at all levels on various aspects of marine sacientific and technological research, particularly marine biology, including conservation and management of living resources, oceanography, hydrography, engineering, geological exploration of the sea-bed, mining and desalination tehnologies;

(b) management studies;

(c) study programmes related to the protection and preservation of the marine environment and the prevention, reduction and control of pollution;

(d) organisation of regional conferences, seminars and symposia;

(e) acquisition and processing of marine scientific and technological data and information;

(f) prompt dissemination of results of marine scientific and technological research in readily available publications;

(g) publicizing national policies with regard to the transfer of marine technology and systematic comparative study of those policies;

(h) compilation and systematisation of information on

the marketing of technology and on contracts and other arrrangements concerning patents;

(i) technical cooperation with other States of the region.

These functions could well be assumed by a Mediterranean Centre for Research and Development in Marine Industrial Technology which thus could be considered as an effective implementation of the two Articles of the Convention. It should also be stressed that joint research and development is probably the most efficient way to foster the transfer of marine technology.

(c) Research and Development in the European Economic Community

To stimulate research and development in high technologies, to reduce risks and share costs and make European high-tech industries competitive on the world market, The European Community has deviced new forms of pooling its scientific/ industrial strength in projects such as ESPRIT or EUREKA.

EUREKA has a simple organisational structure, consisting of four elements: National co-ordinators, the meeting of National Co-ordinators, a Conference of Ministers, and a Secretariat. Industrial enterprises submit joint project proposals to their own national C-ordinators. The Co-ordinators make a first selection which is then submitted for discusion and refinement to the meeting of all national co-ordinators. A final selection goes from there to the Conference of Ministers. Once a project has been accepted by that Conference, half of the necessary investment in R&D is made by the industrial enterprise that made the proposal, half by the Governments of participating States and and by the EEC, if the latter is a participant in a given project. Technologies resulting from research and development undertaken under EUREKA auspices and financed jointly are the property of, and accessible to, all participating States and industries.

EUREKA includes three marine industrial projects:

One is a high-tech project to develop technologies needed for the design and construction of boats for industrial fisheries. The initiators of the project were France, through IFREMER and MANCHE, and Spain, through DCN-INI

There will be a number of other participants.

The French subscribed 40 percent of the cost, Spain, 60 percent.

Eight areas of technology will be investigated:

. Detection systens: R&D in technologies facilitating better species identification and localisation of stock:

. autommatisation and robotisation of fishing maneuvres;

.fish processsing on board: automatisation; improvement of production and distribution of ice on board.

These developments should improve product quality.

Equipment and systems integration; development of new concepts apt to reduce energy requirements and the cost of fishing.

. Navigational aids and communications: application of telematic systems to improve information availability on board; data processing and utilisation in order to increase operational efficiency and safety on board.

. Ship and human safety: Automatic management of ship security parametres and of fishing equipment.

. Ship's quarters and energy efficiency: improvement of

qualitity of life of crew,

The results of these technological developments will be applied to new ship protctypes so as to make them:

- safer;

-better performing;

- more profitable;

- more comfortable.

The total cost of R&D is estimated as 120 million FF, plus the cost of three prototype ships (one in France, two in Spain) for FF 210 million.

The second project, entitled EUROMAR, is devoted to the development and application of modern technologies for the exploration of ecological relations and cause-and-effect chains in the Seas of Europe.

In cooperation with marine researchers, designers and industry, EUROMAR will formulate the scientific problems of monitoring natural and man-made changes in the physical, chemical, and biological characteristics of the Seas of Europe, and will identify research strategies and technological solutions.

EUROMAR addresses the problems relatead to the vertical flux of matter between atmosphere, sea, and sea-bed in the Seas of Europe. It also takes into account the lateral exchange between the open ocean, the shelf sea and the coastal zone. EUROMAR shall further provide the scientific and technological basis for identifying and monitoring biological changes caused by natural oscillations and man-made pollution.

EUROMAR means a cooperative activity for the development of new technologies or adaptation of otherwise

existing technologies for remote-sensing or direct recordings of physical, chemical and biological parameters at sea and their variability in space and time.

Participating in the project are: Belgium, Denmark, Finland, FR of Germany, Greece, Ireland, Italy, Netherlands, Norway, Spain, Turkey, United Kingdom, and the EC.

The technological development ensisaged include development and improvement of new technologies to determine physical, chemical and biological quantities from space, aircraft and land with remote-sensing techniques; moored systems for continuous recordings of nutrients, gases, dissolved and particulate organic and inorganic pollutants.

The time scale for the project is 1986 - 1995.

The third project, finally, is devoted to research and development of acoustic control systems for trawlers for

. the position of the trawl in relation to the ship;

. The depth capacity of the instruments;

. the water temperature;

. the opening of the trawl

. the speed of the trawl:

. The rope tension of the trawl;

. The length of the trawl ropes

. the number of captors

. the visualisation of the trawl, the images obtained through acoustic signals.

The French partners of the project will be: ALMA

Marine; OCEANO Instrument; CNRS, and IFREMER; the Spanish partners will be HYCOM; SA E. VIERAA and Pescanova, as well as the State Secretariat for Fisheries. The present R&D cost estimate is close to 20 million FF, of which France will pay approximately two-thirds, Spain, one-third.

A Protocol of agreement among all the participants is being elaborated; it will determine the roles of each and the division of labour of the whole programme.

Obviously, these are immensely useful projects and they do include a part of the Mediterranean countries; but, like practically all existing R&D consortia, they exclude the South. They are restricted to industrialised countries. Less than 3 percent of all money spent globally on R&D is spent in developing countries while over 90 percent of all scientists and technologists live in industrialised countries and 93 percent of all patents are held in developed countries. In marine industrial technologies this imbalance is even more pronounced than in other sectors. Clearly, the R&D gap is the worst of all development gaps, and considering the enormous importance of R&D for industrial development and national security: considering, also, its impact not only on the present but on the future, it is essential that this gap be closed. With its built-in training component, and the assurance that the technology thus developed will be appropriate, the sharing of R&D is the most effective and least costly method of "technology transfer." It is a way to extend the principle of the Common Heritage of Mankind, not to existing technologies whose ownership is determined by past investments, but to future technologies to be developed and owned in common. And it is the principle of the Common Heritage that may give rise to economic theories harmonising economics and ecology and reconciling vital development priorities with a healthy Mediterranean environment.

The Mediterranean basin, bordered by developed as well as developing countries: countries of different social and economic systems, provides an ideal setting for a pilot

project in the sharing R&D. The Regional Seas Programme with its Action Plan offers a concrete framework.

4. Project Structure

The most modern and most cost-effective design for R&D is undoubtedly that of EUREKA or ESPRIT, providing, as it does, the broadest basis for cost and risk sharing. It is suggested that the Mediterranean Centre for Research and Development in Marine Industrial Technology be constructed on similar principles, with the cost to be shared between Industry, States and regional institutions.

Each member State would appoint its own national Co-ordinator, to whom industrial enterprises would submit their project proposals. The national Co-ordinators would meet probably up to 4-6 times a year to discuss these projects and make a semi-final selection. As the technical/advisory body, they would propose this selection to the Conference of Ministers which would be the decision-making organ and make the final selection. The Conference of Ministers would also appoint the Director General of the Centre and determine its general policy. Projects adopted by the Conference of Ministers would be financed half by the industrial enterprises that made the proposal, and half by the Governments of participating States with the assistance of regional organisations (Trust Fund for the Mediterranean Action Plan) or regional divisions of international organisations (UNEP, UNIDO, Regional Economic Commissions and Banks, etc.): It is these latter that should facilitate the participation of the developing countries of the Southern Mediterranean in the projects.

5. Project Scope

The Centre itself, when fully developed, should be spacious enough to accommodate 300 professionals and support staff most of whom would be seconded by their firms or Governments. The Centre's indirect effect on local industry

could be in terms of 500–1000 jobs in all manufacturing and service sector industries. The Centre should be furnished with some basic equipment such as a deep, free surface diving tank for development and testing of underwater equipment; a pressurized diving tank for deep water system developmepnt; a large cavitation tunnel for propellor research and instrument calibration, ship construction facilities, etc.

The Centre might specialise, inter alia in the following sectors of R&D:

. aquaculture technologies;

. biotechnology applied to aquaculture, marine-based pharmaceuticals, protection of marine vessels and structures from biodeterioration, and clean-up of chemical and microbial pollution;

. alternative energy technologies;

. production and utilisation of by-products and wastes from fish and macroalgae processing (e.g., chitin from shellfish wastes);

. technologies concerned with and development of new products such as unusual sugars, polysacchharides, carotenoids and algal lipids;

. Desalination technologies;

. design, construction and operation of transportation systems;

. technologies concerned with the land/sea interface, including port and harbour development, erosion protection and near-shore engineering;

. measurement and instrumentation development, coastal engineering and data acquisition, ship operation and

engineering, computer-aided ship design and manufacture; ship and structure model tests, and performance evaluation.

This list is merely illustrative. Initially, the Centre would concentrate on some of these aspects, as determined by the Conference of Ministers

Training, information and publication as well as the organisation of regional conferences and symposia, in accordance with Art. 277 of the U.N. Convention on the Law of the Sea would be part of the responsibilities of the Centre. These activities can in fact best be carried out in conjunction with research and development.

The basic facilities would be offered by the host country; All projects would be financed in accordance with the scheme described above.

6. Project Procedure

The first step would be a feasibility study. It is suggested that one of the marine-oriented EUREKA projects be used for the purpose Particularly suitable for the purpose might be EUROMAR as it deals with technologies directly relevant for the Mediterranean Action Plan: technologies that are to be applied in all the Seas of Europe. These seas, undoubtedly include the Mediterranean; but it is impossible to deal with the Mediterranean marine environment without the partipation of non-European countries. It might therefore be practical to organise one sector of EUROMAR with the participation of non-European Mediterranean States. The feasibility study thus could utilize a completely ready framework: The Mediterranean Plan of Action; EUROMAR; and the United Nations Convention on the Law of the Sea.

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ANNEX II

Professor S. Busuttil, director general of the Foundation for International Studies, concluding the international conference with (left to right) Ambassador Rachid Driss of Tunisia, Judge Mohammed Bedjaoui of the International Court of Justice, and Mr. D. Momovic of the Regional Oil Combating Centre.

GOVERNMENT APPROVES PROPOSAL FOR MEDITERRANEAN CENTRE

By a Staff Reporter

The Government has accepted a draft proposal for the establishment in Malta of a Mediterranean Centre for Research and Development in Marine Industrial Technology submitted by Professor Elizabeth Mann Borgese of the board of trustees of the International Ocean Institute (IOI).

The proposal was discussed at a two-day international conference on the Mediterranean in the New Law of the Sea which was held by the Foundation for International Studies in collaboration with the Malta Oceanographic Commission and the Institute.

The conference at the Foundation in Valetta, which was attended by, among others representatives of the International Court of Justice, IOI, UNCTAD, UNEP and FAO, was brought to an end yesterday afternoon by Professor Salvino Busuttil, director general of the Foundation.

Mr. J. Scicluna, from the Malta Oceanographic Commission of the Office of the Prime Minister, said in a paper he read out yesterday that the Government particularly welcomed the proposal by the IOI for the Mediterranean Centre and pledged its support.

The Government, he said, would make available an appropriate building for the centre on concessional terms. It would also extend its diplomatic support on a bilateral basis as well as through its membership of those international organizations that could contribute towards the realization of the project.

Mr. Scicluna said that having pledged this support the Government would at the same time make it clear that it was in full agreement with the suggestion in the IOI document that, before any further project initiatives were taken and prior to any commitments, a study on the feasibility of the project should be carried out.

A comprehensive assessment is required and UNIDO and UNEP should be encouraged to undertake the study jointly either out of available resources or under a funds-in-trust agreement with one or more of the developed European Mediterranean states.

Mr. Scicluna said the Government welcomed the proposal as a potential important addition to an increasing set of cooperative activities in support of a national and integrated development of the Mediterranean region.

Government, he added, also shared the views of the IOI on the worthiness of the project, and, once its feasibility was ascertained, it would not fail to give a significant measure of support. The further development of the proposal itself presented a challenge and the Government was confident that there were a number of parties who would be willing to take it up.

FOUNDATION FOR INTERNATIONAL STUDIES

INTERNATIONAL CONFERENCE

THE MEDITERRANEAN IN THE NEW LAW OF THE SEA

23-24 FEBRUARY, 1987

DRAFT PROPOSAL

FOR THE ESTABLISHMENT OF A

MEDITERRANEAN CENTRE FOR RESEARCH AND DEVELOPMENT

IN MARINE INDUSTRIAL TECHNOLOGY

INTERNATIONAL OCEAN INSTITUTE

A REACTION BY THE GOVERNMENT OF MALTA

FEBRUARY, 1987

1 BACKGROUND

1.1 The commitment of the Government of Malta to the development of Mediterranean co-operative activities is now a well known fact. Indeed, although Maltese inspired activities of a political nature may have been more widely publicised, the Government's interest in Mediterranean development co-operation has been an equally persistent one.

1.2 The Mediterranean Chapter in the Final Act of the Conference on Security and Co-operation in Europe, adopted in Helsinki during 1985, is a landmark for the concept of Mediterranean co-operation and the Government of Malta is certainly proud of having been instrumental in its achievement. That document not only recognised the importance of co-operation between the participating CSCE States and the non-participating Mediterranean States on matters of interest to their mutual security but also registered the intention of the participating states 'to contribute to a diversified development of the economies of the non-participating Mediterranean countries, whilst taking due account of thier national development objectives, and to co-operate with them, especially in the sectors of industry, science and technology, in their efforts to achieve a better

/ ....

utilisation of their resources, thus promoting a more harmonious development of economic relations'.

1.3 Regretably, this declaration of intent, however well-meaning it must have been, has only to a very limited extent been translated into concrete results because, apart from the well-known co-operative activities on the protection of the Mediterranean marine environment which had been envisaged in another paragraph of the above-mentioned Mediterranean Chapter, co-operative projects 'in the sectors of industry, science and technology' have been conspicuous by their absence and have as a matter of fact been limited to a few small-scale projects under the UNDP European Regional Programme for 1982-86.

1.4 The situation, however, now shows signs of improvement. The task forces which, in May 1986, were mandated by the Geneva Inter-Governmental Consultation on the UNDP European Regional Programme for 1987-91 to identify appropriate regional projects under the five selected priority programme areas (ie. energy, transport and communications, environment, science and technology, management) have approved a number of projects having a distinctly North/South Mediterranean dimension in areas of particular relevance

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to the development requirements of the region. Indeed, the Government of Malta is pleased that Maltese delegations had meaningfully participated in this exercise with the specific task of encouraging this type of co-operation.

1.5 It is worthwhile noting that, under the transport and communications sector of the Programme, the largest approved project (one third of the total budgetary allocation for the sector has been earmarked for it) is a project for the development of Mediterranean transport . The project is to be executed jointly by the Economic Commission for Europe and by the World Bank in co-operation with the Economic Commission for Africa and the Economic and Social Commission for Western Asia and, by the end of its projected three-year duration period, it is expected to provide the following outputs for transport planning and operational purposes:

(a) an integrated collection of transport data for development planning, with the capability of providing an up-to-date picture of traffic flows emanating from the region and from adjacent regions; and

(b) the development and facilitation of multimodal transport through the improvement of interfaces, particularly in ports, and the development of basic harmonised procedures.

1.6 The approved Programme also includes a number of other Mediterranean projects as outlined below and it is significant that the budgetary allocation for these five Mediterranean projects is equivalent to around 13% of the total resources available for the overall Programme:

Mediterranean Aquaculture Development
Malta Mediterranean Environment Centre
Mediterranean Forest Fires Measures
Mediterranean Seismic Risk Reduction.

This is an encouraging development and is presumably indicative of a more positive perception of the logic and the usefulness of Mediterranean development cooperation.

2 GOVERNMENT SUPPORT FOR THE PROJECT PROPOSAL

2.1 It is against this background that the Government of Malta particularly welcomes the proposal by the International Ocean Institute for the setting up of a Mediterranean Centre for Research and Development in Marine Industrial Technology and generally pledges its support for the proposal.

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2.2 In particular, the Government wishes to point out that it would be prepared to:

(a) HOST THE PROPOSED CENTRE IN MALTA;

(b) MAKE AVAILABLE AN APPROPRIATE BUILDING FOR THE CENTRE ON CONCESSIONAL TERMS;

(c) POSITIVELY CONSIDER EXTENDING TO THE CENTRE, AS APPROPRIATE, TERMS SIMILAR TO THOSE APPLICABLE TO UNITED NATIONS ORGANISATIONS UNDER THE 'CONVENTION ON THE PRIVILEGES AND IMMUNITIES OF THE UNITED NATIONS'; UNLESS OF COURSE THE CENTRE IS SET UP UNDER THE AUSPICES OF ONE OF THE SPECIALISED AGENCIES OF THE UN, IN WHICH CASE THE TERMS OF THE CONVENTION WOULD APPLY AUTOMATICALLY;

(d) FACILITATE THE UTILISATION BY THE CENTRE OF THOSE LOCAL FACILITIES, PARTICULARLY THE ONES IN WHICH THE GOVERNMENT HAS A DIRECT OR INDIRECT INTEREST, THAT COULD BE REQUIRED TO SUPPORT ITS RESEARCH AND DEVELOPMENT ACTIVITIES; and

(e) EXTEND ITS DIPLOMATIC SUPPORT, ON A BILATERAL BASIS AS WELL AS THROUGH ITS MEMBERSHIP OF THOSE INTERNATIONAL ORGANISATIONS THAT COULD CONTRIBUTE TOWARDS THE REALISATION OF THE PROJECT.

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2.3 Having pledged this support, however, the Government would at this same time like to make it clear that it is in full agreement with the suggestion in the IOI document that, before any further project initiatives are undertaken and certainly prior to any commitments, a study on the feasibility of the project should be carried out. The Government, in fact, does not feel that this feasibility can be assessed simply by examining the results of an extension of one of the marine-oriented EUREKA projects, preferably EUROMAR, to include the participation of the non-European Mediterranean States. While such an approach could be useful, it would in effect only partly tackle the complex set of issues that need to be investigated. A much more comprehensive assessment is required and perhaps UNIDO and UNEP, who have already addressed the problems associated with the development of marine industrial technology, should be encouraged to undertake the study jointly either out of available resources or under a funds-in-trust agreement with one or more of the developed European Mediterranean States.

3 SOME OF THE ISSUES REQUIRING ATTENTION

3.1 The IOI document itself, directly or indirectly, raises a number of issues or questions that the indicated

study would need to clarify or answer and, whilst not attempting to make an exhaustive evaluation of the project proposal at this stage, it is felt that some of these issues and questions should be pointed out:

- the document proposes that the Centre should, more or less, follow the same organisational structure developed for the EC EUREKA project. Inter alia, therefore, once a project has been accepted by the Conference of Ministers, half of the necessary investment in R & D would be made by the industrial enterprises submitting the proposal while the other half would be issued by the Governments of participating States. Technolgies resulting from research and development undertaken under the auspices of the Centre and financed jointly would be the property of the Centre and would be accessible to all participating States and industries. The question arises therefore as to what could motivate industrial enterprises to finance 50% of a particular project, when the resultant technology could eventually be made available to others;

- the document significantly points out that 90 per cent of all scientists and technologists live in

the industrialised countries, that 93 per cent of all patents are held in the developed countries and that this imbalance is even more pronounced in marine industrial technologies than in other sectors. In the circumstances, would the participating non-European Mediterranean States be in a position to participate in what is a distinctly high-tech project, in a really meaningful and effective way? Would the project help to bridge the existing technology gap between the two groups? On the other hand, what effective alternatives could be resorted to for the bridging of this gap?

- would the developing countries in the region be prepared to financially support a project in which their effective participation would be inherently limited?

- to what extent are the indicated areas of research and development that could be covered by the proposed centre not already being carried out elsewhere?

- the document points out that the technology that would be developed under the auspices of the Centre would be an 'appropriate' one for the developing

country participants. But could we actually attach 'appropriate' or 'inappropriate' labels to such areas of high-technology as micro-electronics, bio-technology, remote sensing, computer-aided design, and robotics?

- do we perhaps, on the other hand, underestimate the technological capabilities available in the developing countries of the Mediterranean and of other regions? ; has the lack of technological initiatives in these countries been the result of a combination of lack of resources and adequate organisation?

3.2 The suggested feasibility study, if carried out properly, should indeed provide answers to these and to the many other issues that need to be addressed before a decision is taken as to whether or not the proposed project should move forward to another stage.

4 FACILITIES IN SUPPORT OF A CENTRE LOCATED IN MALTA

4.1 A research and development centre on the lines being proposed cannot function effectively in any location. Its activities would, on many occasions and particularly at the stage when prototypes are being developed, need to be supported by infrastructural facilities of a scale that very often could not be

made available by the Centre itself and the existence of external supporting facilities, therefore, ought to be a major consideration in the decision on the location of the Centre.

4.2 In this respect, it has to be pointed out that, should the Centre be located in Malta, such facilities are readily available and appropriate arrangements could be made so that they could be utilised in support of the activities of the Centre. Indeed, over the past years, the Government of Malta has implemented a large-scale investment programme for the construction of a number of maritime related projects and a network of facilities now exists which could contribute towards the realisation and the success of the proposed project.

SHIPYARD FACILITIES

4.3 Extensive shipyard facilities are available both at Malta Drydocks as well as at the new Marsa Shipyard which is managed by the Malta Shipbuilding Company Ltd. and the two organisations are currently engaged on a large-scale shipbuilding programme.

4.4 Although Malta Drydocks has been traditionally associated with ship repair work and the ancillary electrical and mechanical engineering services, it is

now increasingly involved in new-building activities. It has a capability of building vessels of up to 15,000 DWT of all types and has in fact delivered harbour and oceangoing tugs, coasters, minibulkers and product carriers as well as specialised items such as pipe laying craft, derrick laying craft, pile driving pontoons, barges, pontoons and floating docks. It is moreover equipped, and has in fact delivered, a wide range of construction and industrial engineering work including cranes, single point mooring buoys and storage installations, pressure vessels and storage tanks. Its versatility and experience is certainly beyond doubt.

4.5 One of the docks at Malta Drydocks is specifically allocated for new-building activities. This is Dock No 7 and its specifications are set out in the attached Appendix A together with details on the other docks available at the yard. It may also here be pertinent to point out that Malta Drydocks has a tank cleaning installation which enables it to carry out disposal of all slops, deballasting, tank washing, purging, inerting, gas freeing and cargo tank upgrading.

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4.6 The Malta Shipbuilding Co. Ltd. on the other hand, is in a position to build larger ships, of up to 120,000 DWT, and is likewise capable of carrying out structural steelworks as well as off-shore and on-shore marine engineering projects. The Marsa Shipyard is located on a total site area of 20 hectares and facilities include the following:

DRYDOCK	Size - 290 x 50 m Capacity - 120,000 DWT
PLATE SHOP:	2323 m^2
FABRICATION SHOP:	3717 m^2
ASSEMBLY HALL:	2100 m^2
QUAYS:	6 quays (total length: 800 m) mainly for outfitting operations
DOCK-SIDE CRANES:	2 x 250 t; 2 x 75 t; 2 x 25 t

4.7 In order to maximise and to enhance the range of new-building services available in Malta, arrangements exist for the two shipyards to pool their resources, as necessary, both in terms of expertise and manpower as well as with regard to engineering and construction facilities.

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PORT FACILITIES

4.7 Apart from the facilities in the Grand Harbour, some of which were upgraded or newly constructed during the past few years, a new deep-water port complex is being developed on one of the sides of Marsaxlokk Bay, located in the south-eastern part of Malta. Although foreign engineering expertise has been engaged at various stages of project construction, most of the work has been carried out by Maltese personnel and, in the process, new skills have been acquired which the country should find useful in the future.

4.8 The Marsaxlokk Port Project is being developed in three stages and while the first two stages, i.e. the construction of a container terminal and of a breakwater, have now been completed, the third phase is in an advanced stage of construction. The facilities developed under the first stage are listed in the attached Appendix B and it should be pointed out that the Terminal is now operated by a commercial company, the Malta Containers Terminal Co. Ltd. The third stage of the project is earmarked primarily as a bulk-handling terminal and the projected berthing facilities, which would be adjacent to a stacking area of around 25 hectares with possibilities of extension, are as follows:

- a RO-RO/container quay having a length of 300 m with a depth alongside of 17 m

- a container/dry bulk quay having a length of 515 m with a depth alongside of 22 m that would enable the facility to accommodate the largest bulk carriers now in operation

- a dry bulk quay having a length of 436 m with a depth alongside ranging between 12.76 m and 17 m.

4.9 The ICI project proposal indicates that one of the R & D sectors in which the Centre might specialise is that in respect of 'technologies concerned with the land/sea interface, including port and harbour development, erosion protection and near-shore engineering'. The experience that has been acquired and the facilities now available in Malta would be significantly relevant to this possible area of activity.

MANPOWER RESOURCES

4.10 As indicated in the draft proposal, a Centre of the type envisaged would need, directly or indirectly, to find in the location where it is set up, a readily available source of qualified and trained manpower. Training and education for industry has been a priority

development objective in successive Maltese Development Plans but the current Plan (1986-88) lays a special emphasis on this area of activity. In line with this provision, therefore, a project is in hand for the upgrading of the specialised industrial training institutions and large inputs of modern training equipment are being made available to an existing training institute in industrial electronics as well as to an established precision tool training centre. As a result, it would not only be possible to increase the yearly intake of students in these institutions (all the successful trainees have easily been absorbed in local industry and the demand for their services is an ongoing one) but also to introduce new high-tech subjects in their curricula, including power electronics, robotics, micro-processors and fibre optics in the case of the industrial electronics institute and computer numerically controlled (CNC) machines in the case of both institutions. To enable these innovations to take off on a sound basis, foreign specialists are being engaged. These would be responsible for the introduction of the new high-tech training programmes and for the training of local counterparts who will also be sent for periods of attachments in appropriate foreign institutions.

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4.11 Another input in this national programme for the upgrading of the country's capability for modern industrial training is the setting up of a micro-CAD facility that would enable local technicians and engineers to gain experience in modern methods of design analysis and draughting. This facility is, at least initially, to be located at the above-mentioned training institute for industrial electronics and would specifically provide training opportunities in:

- 2 and 3 dimensional draughting
- setting up interactively and type of drawing
- basic stress analysis for engineering components
- the understanding and development of the design process.

4.12 At the same time a project has already been set in motion for the introduction of a comprehensive computer education programme throughout the Government school system. The programme, which will provide separate courses in 'computer literacy' and the more advanced 'computer studies' will, for obvious reasons, be introduced in phases, and activities are in hand so that the programme can commence at the beginning of the

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forthcoming scholastic year in the senior classes of the secondary schools.

5 CONCLUSION

5.1 In conclusion, the Government reiterates that it welcomes this project proposal as a potential important addition to an increasing set of co-operative activities in support of a national and integrated development of the Mediterranean region. It shares the views of the International Ocean Institute on the worthiness of the development objective of the project and, once its feasibility is ascertained, it will not fail to give a significant measure of support. In the meantime, the further development of the proposal itself presents a challenge and the Government is confident that there are a number of parties who would be willing to take it up.

MALTA DRYDOCKS

DOCKING FACILITIES

NUMBER	LENGTH	INSIDE BEAM	DEPTH	CRANES AND LIFT	ELECTRICAL SUPPLY	OTHER FACILITIES
1	153.92m	21.64 m	5.57 m	1 x 50 Tons 1 x 5 "	415 TP&N 50 H2 110/220 V DC 220 V AC 3PH 380/440 V AC50 – 60Hz 3PH 110 V AC TEL	A – S – FW – SW
2	169.6 m	24.68 m	9.96 m	1 x 4 Tons 3 x 5 " 1 x 20 "	415 V AC 60Hz 3PH 110 V AC TEL 110/220 V DC	A – S – FW – SW
3	142.9 m	17.67 m	9.55 m	1 x 4 Tons 2 x 5 " 1 x 10 " 1 x 20 "	415 V AC 60 Hz 3 PH 110 V AC TEL 110/220 V DC	A – S – FW – SW
4	262.5 m	39.6 m	10.3 m	2 x 5 Tons 1 x 10 " 1 x 50 "	110/220 V DC 380/440 AC 50 – 60 Hz 110 V AC TEL 3.3 KV 50 Hz	A – S – FW – SW
5	216.4 m	28.04 m	10.52 m	2 x 5 Tons 1 x 10 " 1 x 50 "	110/220 V DC 380/440 V AC 50 – 60 Hz 110 V AC TEL	A – S – FW – SW
6	360.0 m	62.0 m	10.72 m	1 x 150 Tons 2 x 30 "	110/220 V DC 380/440 V AC 50–60 Hz 110 V AC TEL	A – S – FW – SW O – P
7	100 m	35.35 m	4.32 m	1x50 Tons	110 V AC TEL 240 V 50 Hz 3PH	FW – SW – A – O – P

DESIGNATIONS: A = COMPRESSED AIR – S = STEAM – FW = FRESH WATER – SW = SALT WATER – O = OXYGEN – P = PROPANE

Appendix B

FACILITIES AT THE MARSAXLOKK CONTAINER TERMINAL

- A MAIN CONTAINER QUAY, HAVING A TOTAL LENGTH OF 548 M WITH A DRAFT ALONGSIDE OF 13.5 M

- A SECONDARY BERTH, HAVING A LENGTH OF 168 M WITH A DRAFT ALONGSIDE OF 10 M

- TWO SMALLER BERTHS, ONE HAVING A LENGTH OF 80 M WITH A DRAFT ALONGSIDE OF 5 M, THE OTHER 101 M LONG WITH A DRAFT RANGING BETWEEN 3.26 M AND 6.26 M

- RO-RO FACILITIES

- A CONTAINER STACKING AREA OF 10 HECTARES

- WAREHOUSING FACILITIES WITH A TOTAL AREA OF 2,500 M^2

- 72 SUPPLY POINTS FOR REFRIGERATED CONTAINERS. OF THESE, 60 POINTS ARE 415 V THREE PHASE 50 HZ WHILE 12 POINTS ARE 220 V THREE PHASE 50 HZ

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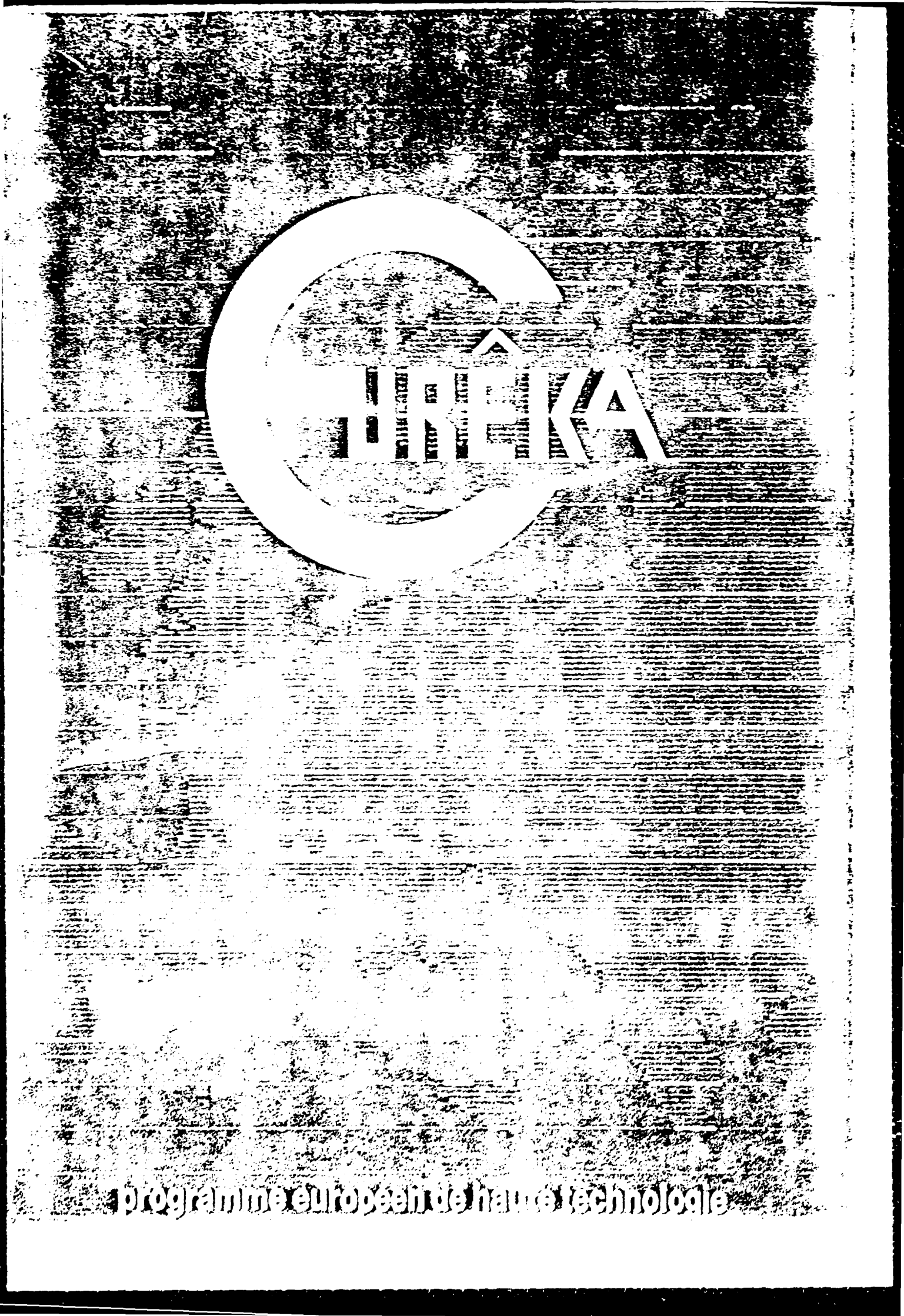
ANNEX III



programme européen de haute technologie

Qu'est-ce qu'Eureka ?

Le programme EUREKA est né au printemps 1985 d'une initiative française. Son objectif est de promouvoir dans les domaines de la haute technologie un vaste réseau d'alliances entre industriels européens.

Il associe 19 pays européens et la Commission des Communautés Européennes. Sa Présidence est tournante sur une base semestrielle. Les quatre premiers pays ayant assumé ce rôle sont : la France, la RFA, le Royaume-Uni et la Suède.

EUREKA est autant un programme qu'un état d'esprit. Il est destiné à placer dans les 5 à 7 ans qui viennent l'industrie européenne dans une position compétitive sur le marché mondial civil des produits de haute technologie.

Faire travailler ensemble pour demain les concurrents d'aujourd'hui, suppose des projets suffisamment vastes et ambitieux pour que la nécessité de s'associer efface les rivalités et implique une dynamique administrative qui soutienne l'esprit d'entreprise des industriels.

A la différence des programmes communautaires *(RACE, ESPRIT, BRITE)* qui fonctionnent par appels d'offres et sont basés sur un financement centralisé, le principe d'EUREKA est de favoriser l'initiative industrielle en complétant les financements propres des entreprises par un apport de fonds publics sur une base nationale.

En France, l'aide publique est dispensée par les contributions du Ministère de l'Industrie, des PTT et du Tourisme (DGI, DGT), du Ministère de la Recherche et de l'Enseignement Supérieur (FRT) et de l'Agence Nationale de Valorisation de la Recherche (ANVAR). Plus généralement, l'action des Départements Ministériels est coordonnée par un Comité Interministériel présidé par le Premier Ministre. Le Coordinateur National, Secrétaire Général du Comité, prend, en accord avec les administrations concernées, les décisions relatives au soutien et au financement publics des projets. Il en informe le Comité et veille à leur exécution.

Toute entreprise, quelle que soit sa taille, PME ou grand groupe industriel, peut proposer un projet dans le cadre EUREKA dès lors qu'il entraîne une avance technologique notable et qu'il implique au moins un partenaire étranger.

Les projets EUREKA peuvent se référer à tous les secteurs de la haute technologie.

Les coûts des projets vont de quelques dizaines de millions à quelques milliards de francs et leur durée s'étend sur une période de 5 à 10 ans.

Les projets doivent être lancés à deux étapes avant leur mise en œuvre : nationales, au niveau des Coordinateurs de chaque pays ; internationales, lors des Conférences des Représentants de Haut Niveau et des Conférences des Ministres.

Les projets ainsi lancés à chaque étape bénéficient du label EUREKA. Ils sont également susceptibles de bénéficier de financements publics et facilite l'ouverture du marché européen. L'intégralité des droits de propriété industrielle est acquise aux entreprises partenaires au sein des projets.

La marche à suivre pour présenter un dossier de projet est développée dans cette brochure.

Les secteurs technologiques

- INFORMATIQUE
- ENERGIE
- ROBOTIQUE
- PRODUCTIQUE
- BIO-TECHNOLOGIES
- MATERIAUX NOUVEAUX
- MICROELECTRONIQUE
- TECHNOLOGIE LASER
- COMMUNICATION
- TRANSPORTS
- OCEAN
- URBANISME
- ENVIRONNEMENT

EUREKA

Les étapes d'un projet

INITIATIVE INDUSTRIELLE	TRANSMISSION AU COORDINATEUR NATIONAL	TRANSMISSION AU SECRETARIAT EUREKA	LABEL EUREKA
- Définition technique du projet - Recherche de partenaires - Constitution du dossier	- Instruction par les administrations - Evaluation du projet aux plans national et international	Annonce officielle du projet par au moins 2 délégations impliquées, 45 jours avant la Conférence des Ministres	Attribution par les gouvernements impliqués dans le projet lors de la Conférence des Ministres

L'organisation Eureka

Les Coordinateurs Nationaux. Ils reçoivent les dossiers de projets. Ils font la liaison avec les Pouvoirs Publics pour l'instruction des dossiers et l'attribution des aides, en coordination avec leurs homologues européens. Ils s'assurent du bon déroulement des projets. Ils participent à la Conférence des Représentants de Haut Niveau.

Les Représentants de Haut Niveau. Ils sont mandatés par leur gouvernement. Ils se réunissent en assemblée plénière pour établir l'ordre du jour des Conférences Ministérielles.

La Conférence des Ministres. Elle se réunit tous les 6 mois. Elle est l'organe central d'EUREKA ; en particulier elle officialise l'attribution des labels EUREKA aux projets.

Le Secrétariat EUREKA. Situé à Bruxelles, il est placé sous l'autorité de la Conférence des Ministres. Il est chargé de rassembler et de diffuser l'information sur les projets, de faciliter les contacts entre partenaires (industriels, Instituts de Recherche), d'organiser les Conférences des Ministres et des Représentants de Haut Niveau.

Montage d'un dossier de projet

Le dossier projet doit être commun aux différents partenaires et cosigné par eux. Il doit être déposé auprès de chaque Coordinateur National concerné par le projet. Il est constitué de deux documents distincts :

1 - *Le « Dossier complet »*
Il développe :

- l'aspect technique du projet
- l'aspect commercial (évaluation du marché)
- l'aspect financier : coût global, répartition par pays, échancier global et celui de la part française, niveau d'appel à fonds publics.

En France, ce document est à déposer en cinq exemplaires dont un non relié. Il fait l'objet d'une instruction menée par les rapporteurs des administrations compétentes, désignés par celle-ci en accord avec le Coordinateur National.

2 - *Le « Canevas »* officiel du projet en 18 points tel que présenté dans cette plaquette.

A qui présenter le dossier ?

Le Coordinateur National instruit les dossiers des projets en étroite concertation avec les experts des ministères techniques. Il reste l'interlocuteur des entreprises et établit la liaison entre les administrations de chaque pays participant à EUREKA.

Le Coordinateur informe l'ensemble des délégations des projets existants via *le Secrétariat EUREKA* implanté à Bruxelles.

Comment intégrer un projet existant ?

Tout industriel peut s'informer auprès de son Coordinateur National ou du Secrétariat Eureka des projets existants ou en préparation, dans les domaines technologiques de sa compétence. Un industriel intéressé par un projet en informe son Coordinateur National qui le mettra en contact avec les industriels initiateurs. Il appartient à ces derniers de donner ou non une suite favorable à cette demande.
Un industriel accepté dans le cadre d'un projet pré-existant doit constituer le dossier mentionné ci-dessus et le communiquer à son Coordinateur National.

Le canevas officiel en 18 points

Ce document constitue la présentation officielle des projets EUREKA.
C'est un résumé en 4 ou 5 pages, à fournir en plus du dossier complet. Destiné à être diffusé pour information au niveau européen, il ne comporte pas d'informations confidentielles. Il est rédigé en français et/ou en anglais et doit être déposé auprès du Coordinateur National en deux exemplaires non reliés.

1ère PARTIE : DESCRIPTION DU PROJET

1 - Titre du projet
2 - Description du projet ou de son domaine technologique
3 - Participants au projet (nom de l'entreprise, pays)
4 - Personnes à contacter dans l'entreprise concernée par le projet (nom, adresse, tél., télex, télécopie)
5 - Contribution de chaque participant au projet
6 - Progrès technologiques envisagés (objectifs...)
7 - Rapports du projet avec d'autres projets de coopération technologique européenne
8 - Qualifications pertinentes des participants
9 - Statut de l'accord entre les participants (protocole...)

2ème PARTIE : MESURES ADDITIONNELLES

10 - Mesures additionnelles (normes communes)
11 - Autorités compétentes pour les mesures demandées
12 - Autorités responsables du rapport d'avancement au groupe des Représentants de Haut Niveau

3ème PARTIE : RENSEIGNEMENTS COMPLÉMENTAIRES

13 - Coûts estimatifs (phase de définition et exécution).
14 - Marché : marché international visé.
15 - Calendrier (phases du projet : définition, exécution, date de lancement sur le marché).
16 - Localisation des travaux de développement
17 - Où et par qui doit être exploité le développement au départ ?
18 - Associés recherchés (préciser éventuellement les domaines de spécialisation).

Le canevas officiel en 18 points

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Royaume-Uni
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[illegible] Ministère du Commerce et de l'Industrie

[illegible]

[illegible]

[illegible] Conseil pour la Recherche Scientifique et Technique

[illegible]

ANNEX IV

BASIC QUESTIONS AND TENTATIVE ANSWERS

The Maltese position paper raises a number of basic questions. Additional questions were raised in a letter received from IFREMER, the French national organisation in charge of ocean development, as well as by participants in the seminar. In this Annex an attempt is made to answer them.

1. *The question arises therefore as to what could motivate industrial enterprises to finance 50 percent of a particular project, when the resultant technology could eventually be made available to others.*

The motivation is risk sharing and cost sharing. There is, by now, a vast literature on the subject bearing this out. E.G., the Harvard Business Review published a special report (Nov./Dec., 1985) on "Cooperative R&D for competitors: "Joint activities are transforming how and why companies undertake research." The introduction to this issue reads:

> Global competition and limited resources have changed the way companies engage in R&D. Gone are the days when a technology-based company -- even the largest -- could rely on internally generated and financed research projects alone. Gone, as well, is company reliance on the traditional trade organization that usually limited its R&D activities to noncompetitive issues.
>
> Today, new forms of cooperative R&D are emerging. Industry groups with large research budgets are responding to global pressure by focusing on "precompetitive" projects. Moreover, joint research activities are no longer simply a part of companies' research programs -- they are integral to companies' strategies.

Journals like Research Management (an International Journal Dedicated to Enhancing the Effectiveness of Industrial Research) or Technology Review abound in articles documenting with facts and figures this new development in research and development.

In the marine industries, in particular, it has been understood since the early seventies that major breakthroughs would require not only cooperative research among companies, but cooperation between the private and the public sector. See Miller B. Spangler, New Technology and Marine Resource Development, New York: Praeger, 1970).

The willingness of private companies to participate in cooperative R&D thus is not an hypothesis in need of proof. It is a fact of life. The very success of EUREKA gives not only proof but also practical guidelines as to how it is done.

2. Given the current R&D gap between North and South, as documented in the proposal, *would the participating non-European Mediterranean States be in a position to participate in what is a distinctly high-tech project, in a really meaningful and effective way? Would the project help to bridge the existing technology gap between the two groups? On the other hand, what effective alternatives could be resorted to for the bridging of this gap?*

In contrast to the answer given to question 1, which was based on facts, the answer to this question must necessarily be hypothetical. A factual answer will have to await the completion of the feasibility study. Because, as of today, the fact is that R&D in high technology is restricted almost exclusively to industrialised countries. This is where the private sectors has directed its R&D investments. Public international financing is needed to extend the system to include developing countries. Regional development banks, the World Bank, bi-lateral agencies like SIDA and CIDA and IDRC should begin to direct their attention to this need. If 50 percent of the R&D investment

were to come from these sources, this would be an enormous incentive of risk and cost sharing for the industrialised countries and their companies. At the same time, it is on the basis of this public international funding that the developing countries can be brought in to participate in the project. Once the financial basis is established, there is no doubt that scientists and technicians from developing countries could participate. Participation in reserch and development itself would provide a most effective form of training, a point that was stressed repeatedly during the seminar discussion.

In the case of the Mediterranean, in particular, it should be kept in mind that a great deal of expertise already exists. None of the Mediterranean countries belongs to the group of "least developed countries." There are excellent research institutes, in Algeria, Morocco, Tunisia, Egypt, Turkey, to name only some of the most important ones. The Mediterranean in this respect is an ideal region to initiate North-South cooperation in high-tech R&D.

If successful, the project for a Mediterranean Centre for R&D in Marine Industrial Technology thus would indeed help to bridge the existing technology gap between the two groups. There may be other ways of achieving this end, but I cannot think of a more effective alternative. Of course one could try to start in other industrial sectors, but what is so attractive about the marine sector is that the institutional framework is already in place, and all we have to do is to use it.

3. *Would the developing countries in the region be prepared to financially support a project in which their effective participation would be inherently limited?*

In view of the answer given to question 2, I do not think that the effective participation of the developing Mediterranean countries would be inherently limited. On the basis of their own financial participation, of which they undoubtedly are capable, combined with public international

funding, their participation should be as strong as that of the industrialised countries.

4. *To what extent are the indicated areas of research and development that could be covered by the proposed centre not already being carried out elsewhere?*

Some of these projects are already being carried out by EUREKA, but, thus far, without participation of developing countries. The draft proposal suggests that discussions with EUREKA should be initiated to examine whether some sub-projects of EUROMAR could not be organised with the inclusion of developing countries, under the auspices of the new Centre, and in cooperation with UNEP, UNIDO and others who might wish to participate.

Research is needed, and being carried out, in all the areas mentioned, but the developing countries are not included. Industrialised countries, through risk and cost sharing, developing countries, through access to high-tech R&D, and the international community, would all gain from expanding and developing this research within the proposed framework.

5. *The document points out that the technology that would be developed under the auspices of the Centre would be an 'appropriate' one for the developing country participants. But could we actually attach 'appropriate' of 'inappropriate' labels to such areas of high-technology as micro-electronics, bio-technology, remote sensing, computer-aided design, and robotics?*

None of the high technologies are "appropriate" in the sense, attributed by a school of economists, that "appropriate" means "small," and that "small is beautiful." I do not believe that there are two kinds of technology, one for developed, and one for developing countries. What has been observed in many factual cases, however, is that technologies imported ready-made, e.g., in the sector of aquaculture or agriculture, turned out in the end not to be

"appropriate" in the sense that it did not suit specific local physical circumstances (e.g., blades of a ploughing machine cut too deeply for certain soils; aquaculture cages may not have taken due account of local hydrological conditions, etc.). The participation of the interested country in the R&D generating such technologies would avoid such misfits between imported technology and local circumstances. It would "internalise" the technology from the beginning. The necessary environmental impact assessment would be site-specific and carried out on the basis of inside knowledge of the situation. North-South cooperation in R&D would be a mutual learning experience.

6. *Do we perhaps, on the other hand, underestimate the technological capabilities available in the developing countries of the Mediterranean and of other regions? Has the lack of technological initiatives in these countries been the result of a combination of lack of resources and adequate organisation?*

Basically, in the Mediterranean, it has been a lack of adequate organisation. As pointed out above, technological capabilties in the developing countries of the Mediterranean are available, and so are resources. The proposed Centre would provide the organisational framework that has been missing. In other words: In the Mediterranean, the situation is mature for the pilot experiment suggested in the proposal.

7. A question, raised by IFREMER, is that of the "centralisation" or "decentralisation" of the "Centre." *How much "brick and mortar," how much new building, how much new bureaucracy is really needed? How many projects can be carried out in existing laboratories? What kind of scientific facilities are really needed at the "Centre"?*

The flexibility of the EUREKA projects certainly highly recommends itself. Many of the projects could be carried out, under the cooperative arrangements, in existing laboratories. New facilities, at the Centre, should be built

only in areas where presently no facilities exist. This is dictated by cost-effectiveness. It responds to the spirit in which EUREKA projects are carried out among industrialised countries.

A number of ship construction R&D projects, and projects in the field of port & harbour development could certainly be carried out in Malta, considering the facilities enumerated in the Maltese position paper. Others could be carried out both on the Northern and on the Southern shore of the Mediterranean. It is essential, however, that the distribution of projects between North and South must be equitable, so that the pattern of R&D concentration in the North is broken. R&D in the bio-industrial sector and its application to aquaculture would seem particularly suitable for the warmer climate of the southern shores. The same might apply to desalination projects, considering that the end users will be, above all the countries of the more arid eastern and southern shores.

The "Centre" thus should contain (a) the Secretariat; (b) one or two research facilities in sectors in which the host country is specialised; and (c) a growth segment able to accommodate research facilities which at present do not exist.

More definite answers will be formulated after the completion of the feasibility study.

The proponents of the Mediterranean Center for Research and Development in Marine Industrial Technology have no illusions about the difficulties of realising the project. Nor do they think the estblishment of such a Centre would solve all problems for all times and bring instant wealth to everybody. The establishment of the Centre would be one step in a long and painfully difficult series of steps needed to bridge the R&D development gap, to implement the U.N. Convention on the Law of the Sea, and to advance cooperation and peaceful and environmentally sound development in the Mediterranean.

ANNEX V

FEASIBILITY STUDY

1. Three technologies, of particular relevance for Mediterranean countries, have been selected for detailed study.

. a technology in the area of scientific problems of monitoring natural and man-made changes in the physical, chemical, and biological characteristics of the Mediterranean;

. a technology in the area of aquaculture in the Mediterranean;

. a technology in the area of desalination, fresh-water production and the utilisation of brine.

2. In all three areas, the study will comprise

(a) an overview of the state of the art of the technology and its application;

(b) an analysis of research and development trends and needs, including also social/attitudinal problems arising from R&D operations of technology transfer;

(c) a survey of companies working in this sector and of existing R&D facilities;

(d) market surveys;

(e) interviews with companies to explore the potential of cooperative arrangements;

(f) public international funding requirements and potentials.

(g) a comparison with a very select sample of other centres that have been established and might provide

lessons.

3. With regard to project on environmental technology, the feasibility study will be carried out in consultation with EUROMAR and EUREKA, and, obviously UNEP.

4. A consulting firm will be engaged to carry out the feasibility study between April and July, 1987. SNC of Montreal and G. Hitch, Toronto, have been recommended. A rough estimate for the over-all cost of the study is $ 100,000. These should be provided by UNIDO, UNEP and, especially if a Canadian firm is involved, by CIDA, ICOD, or IDRC.