



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

08680

UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

Distr.
LIMITED
UNIDO/EX.58
31 October 1978
ENGLISH

TECHNICAL ASPECTS AND PROPOSALS FOR THE
PROMOTION AND IMPLEMENTATION OF THE
"MARINE-BASED INDUSTRY PROGRAMME" *

by

S. P. Padolechia
UNIDO Official

* This document has been reproduced without formal editing.

14.78-7634

I N D E X

	<u>Page No.</u>
Introduction	2
Recommendations	4
General norms concerning the rights and duties of States in the use of the marine space	8
The U.N. Contribution in Marine Activities	10
MOCSOC Resolution 1802 (LV) Paragraph 1 (b) - Marine Co-operation and Technology	12
Strategy and Objectives	14
Conclusions	21
Appendix 1 - Past UNIDO's Projects Relating to the Marine-based Industry programme	

INTRODUCTION

While the oceans have historically influenced the destiny and the economic progress of nations, only recently has there been a consciously sought nexus with the sea, its resources and their impact on human and economic progress and a marked transition has evolved from random exploration and casual exploitation of marine resources to a thoughtful appraisal of the economic value of the oceans.

Several factors have set the stage and pace for this change which can be expected to acquire a spectacular momentum in the decades to come. First, scientific oceanography has supplied information and data providing a deeper comprehension of the economic importance of the marine resources. Second, the development of technologies has permitted to undertake activities that were somewhat impeded by the hostile or unknown marine environment. Third, as the world population increases and the land resources are diminishing in terms of food supply, energy, minerals, etc., the oceans are regarded as a new frontier to maintain and improve the economic plans and to fulfil some of the major requirements of mankind. Fourth, as all developing countries are strenuously engaged in the effort of industrializing, and the land resources, as above mentioned, are becoming increasingly scarce and expensive, the marine resources represent a valuable substitution for industrial purposes and to grant economic development.

As the industrial exploitation of marine resources is reaching an important economic dimension for the developing countries, the complexity of operations, the technologies and the financing of the relating projects do call for effective and immediate participation of UNIDO, in terms of technical assistance and supporting activities, also in accordance with the mandate of Lima Declaration and Plan of Action.

In accordance with the decisions of the meeting of 13 February 1978, the scope of this report is specifically to draw attention upon;

- (a) the nature and value of the industrial exploitation of the marine resources to accelerate the process of expansion of the industrial marine sector in the developing countries;
- (b) the technical and economic implications of the choice of certain priority areas, and of the establishment of relevant initiatives and projects relating to marine-based industry and marine technology to the benefit of the developing nations and in view of the Lima targets.

This report provides information concerning the actual state-of-art and achievements in the field of marine-based industry and marine technology, at UNIDO level, at United Nations level and at international level, which would serve as guidelines for strategy planning and implementation purposes. It includes various recommendations for mobilizing and coordinating technical and financial resources and to possibly secure the support of governmental and non-governmental institutions and their contribution in initiatives or projects to be undertaken by UNIDO in the developing countries.

As the institutional mandate of UNIDO is to assist the developing countries in accelerating their industrial progress, it is evident that its activities are not merely focusing upon the land-based industry sector, but also to the marine-based industry as well as to any other industrial sector, which can be expected to contribute to the socio-economic expansion of the developing countries, in accordance with the objectives of their respective national plans.

Recommendations

The seas cover about 362 million square kilometers, or approximately 72% of the planet surface.

Directly profitable economic uses of the resources of the seas include:

- (a) Extractive uses
- (b) Manufacturing uses
- (c) Services

Extractive uses concern the location and exploitation of specific international resources, including minerals and energy.

Manufacturing uses refer to the industrial and commercial exploitation of living and non-living animal and vegetable resources including the water itself and its chemical components.

Services include, above all, shipping, navigation, ports, installations, safety systems etc.

The gradual extension and diversification of industrial activities in the marine environment are actually involving an expansion of the interest of coastal states and have been accompanied by an intensive activity in terms of research and development. The economic exploitation of the resources of the oceans is accordingly proceeding at an accelerated pace and involves a large series of initiatives carried out by both some developed and some developing countries as well as by intergovernmental, regional and non-governmental organisations to foster the expansion of the marine industry sector. Ocean space is today regarded as a new territory which is gradually opening to profitable economic utilisation and intensive exploitation, in which all countries are vitally interested with a view to strengthening their economic and industrial capabilities.

In order to meet the effective requirements of the developing countries and accelerate the expansion of their marine-based industry sector, it is recommended to proceed to the creation of a consistent machinery and infrastructure, having the following major functions:

- (1) To provide a forum for the discussions of priorities and problems relating to the economic exploitation of marine resources, taking into consideration the multiplying effects of the expansion of the marine industry sector,
- (2) To assist the Governments of the developing countries in their effort of designing appropriate policies dealing with ocean resources and their industrial exploitation, taking into account priorities and requirements of specific countries and regions, as appropriate,
- (3) To foster the co-operation between technologically advanced countries and the developing countries in the implementation of industrial marine projects

- (4) To promote the development and transfer of appropriate technologies, necessary to the progressive expansion of the marine industry sector as well as the flow of technical information between the industrialised and the developing countries, as well as among the developing countries themselves.

In accordance, the following recommendations are submitted for consideration:

- (i) Co-operation should be strengthened and developed by UNIDO with all relevant organisations of the UN system operating in the area of marine affairs and ocean economics, as well as with any other intergovernmental, regional, governmental and non-governmental organisation involved in industrial activities relating to the sea. In particular, co-operation should be established with the International Ocean Institute of Malta, the Oceanographic Institute and the European Oceanic Association of Monaco.
- (ii) An Expert group-meeting should be organised, during 1979, eventually in co-operation with the above-mentioned specialised institutions, with the participation of representatives from governments and institutions of both the developed and developing countries, with a view to exchanging ideas and experiences and receiving guidance concerning the factual implementation of our Marine-based Industry programme.
- (iii) The Industrial Development Board and the Permanent Committee should be informed about the objectives and purpose of the Marine-based Industry programme, with a view to receiving guidance and support.
- (iv) A consistent documentation should be collected by the Industrial Information Section (Data Bank) and made available to users of the developing countries, concerning marine-based industry.
- (v) An effective promotion campaign should be carried out, in particular by means of the SIDFAs, in order to illustrate to the governments and institutions of the developing countries about the opportunities and advantages relating to the newly established Marine-based Industry programme and to assist them in identifying priorities and requesting UNIDO technical assistance, accordingly.
- (vi) A well-coordinated action, involving particularly the SIDFAs network, should be initiated, relating to the formulation and appraisal of projects of technical assistance in the area of Marine-based industry, and to encourage the specific requests by governments.
- (vii) In addition to the efforts of the SIDFAs, in the field, the technical officers of the I.O.D. and ICIS, as well as the programme officers of the Division of Policy Coordination should cooperate in the formulation, appraisal and approval of UNDP-financed projects, while the officers of the G.I.O.R., the NCO and the Public Information Sections should devote some effort in promoting the technical, financial and public support towards specific projects of the newly launched Marine-based Industry programme.

All this calls for a well-coordinated effort to promote and systematize the programme planning phase, to explore programme opportunities and advantages, and to set medium and long-term objectives and priorities, not only at sectoral or national level but also at sub-regional, regional and inter-regional levels.

Country and regional programming activities, including exploratory and consultative missions, briefing to governments, institutions, UNDP offices, Regional offices, Economic Commissions, etc., should be carried out, particularly during 1979. It should be noted that in view of the complementarity of UNDP and UNIDO resources, these missions would serve as an over-all programme development function, regardless of the sources of financing, from which specific industrial marine projects might be later financed and implemented during the biennium 1980-1981.

While it is hard to predict the geographical distribution pattern of governments' requests for technical assistance in the marine-based industry sector, some indications may be retained by the analysis of past and recent activities carried out by UNIDO in this specific area (see Appendix 1) - Moreover, the expected growth of the Marine-based Industry programme, may well be determined by a significant increase of international interest, derived by the promotional and information activity of the relevant UNIDO's units, as well as by an increase of resources made available to UNIDO to respond effectively to its mandate, in the respect of priority requirements of the developing countries and of the LDCs, for which, in particular, specific technical assistance projects will be formulated and implemented, as appropriate.

On the basis of exploratory and advisory missions carried out during 1979, it may be expected that a certain number of pilot plants and industrial marine infra-structures will be established in a series of developing and LDC's, with the assistance of UNIDO, at national and sub-regional levels. Other specific projects aimed at developing the marine-industry sector, and tailored to the specific needs of each country, would be formulated and implemented as a follow-up of feasibility studies to be carried out during 1979 and 1980 in approximately ten developed countries and seven LDC's. These projects may be implemented in co-operation with other intergovernmental or non-governmental institutions, as well as with the participation of the joint UNIDO/Romania Centre and the joint UNIDO/Yugoslavia Centre.

As the international community attaches increasing importance to the promotion of cooperation between the developed and the developing countries as well as among the developing countries themselves, the strategy proposed to develop, on a medium term basis, the above-mentioned plan for the expansion of the marine-industry sector, should be designed in view of fostering such cooperation at regional, sub-regional and inter-regional levels.

On the long term basis, the strategy relating to the expansion of the Marine-based Industry programme, will be necessarily influenced by the experiences of the first biennium of operation as well as by the findings and recommendations emanating from industrial studies and the governments or institutions themselves, concerning the identification of priority areas and the improvement of the processes of technology transfer and development, including the supply of equipment, the consultancy and R&D services and the training.

This work-plan shall necessarily reflect the recommendations of the Expert group-meeting which will take place, as above-mentioned, in the beginning of 1979, as well as of the experience gained through exploratory and advisory missions or contacts with governments and institutions both in the developing and in the developed countries.

General norms concerning the rights and duties of states in the use of the marine space

The Geneva Convention of 1958 contains a series of general norms, rules and regulations concerning the right and duties of States in the use of the marine space. Major innovations have, since then, been introduced in the form of general norms, requiring States to co-operate in various ways, particularly with regard to (a) the protection of the marine environment (b) scientific research and transfer of marine technology and (c) technical and commercial exploitation of marine resources. This represents a significant development in the Law of the Sea, in view of the benefits which may derive to the national communities and the international community by the legitimate intensive uses of the resources of the sea.

General provisions of the Single Negotiating Text also establish the obligations of all States " to co-operate in the active promotion of the development and transfer of marine technology and to implement accepted guidelines for the location, use and exploitation of marine resources with particular regard to developing countries ". Further obligations are established " to ensure that international organizations co-ordinate their activities in this field " in order to stimulate and advance the appropriate use of marine resource, particularly in view of the socio-economic advantage of the developing countries.

Many of these provisions are constructive and constitute a considerable development of the present Law of the Sea, particularly with regard to the principle that all States have the obligation to promote the development and transfer of marine technology at fair and reasonable terms and must co-operate in this connection. UN Document A/CONF. 62/WP8/Part III, indicates that " States have the sovereign right to exploit their natural marine resources and they shall, in accordance, protect and preserve the marine environment, taking into account their economic needs and their programmes for economic development ".

With the penetration of the technological evolution into the marine space, the seas are going to continue to a rapidly increasing proportion of the produce to the world economy, playing an even more vital role in the development process of nations. It is therefore, impossible to build a new international economic order without including the seas, as it was stated in the sixth and seventh Special Sessions of the UN General Assembly.

In accordance and in view of co-ordinating efforts and initiatives, at United Nations level, inter-secretariat mechanisms have been established in connection with specific, usually regional, projects where, for example in the Mediterranean area, more than one subsidiary organ is concerned with co-operative studies or technical assistance. Each UN organ or agency has also granted consultative status to a large number of international organizations or institutions active in the marine field, in order to encourage and strengthen co-operation and exchange of information and expertise.

In the last five years the whole situation has improved, stimulated by the need to prepare for UNCLOS, even if some serious impediments to effective action were determined by the actual organizational and operational structure of some UN agencies, and an effective co-ordination and exchange of information at UN system and at international levels.

New arrangements are, however, envisaged to promote functional co-ordination and the appropriate restructuring of organizational and operational mechanisms, in view of keeping under constant review the relevant activities and achievement of the UN system relating to marine affairs and to provide a forum for consultation and discussion of emerging problems relating to marine space. This new strategy, as recently emphasized by the Secretary General, would open new perspectives for the work of the UN organs, particularly with regard to an effective management of the marine space and the utilisation and preservation of its resources.

THE U.N. CONTRIBUTION IN MARINE ACTIVITIES

The gradual conversion of the oceans, which constitute the major surface of our planet, from a rather unknown economic element to an exploitable area of scientific and economic activities to the advantage of all world nations, has been sponsored, with enthusiasm and energy, by all relevant bodies of the U.N. system especially during the past decade.

The economic importance of the oceans is basically determined by firstly, the kind of resources actually or potentially available for economic exploitation and, secondly, the technical accessibility to these resources in terms of depth, geological and chemical structure of the sea. The international interest for a rational exploitation of the marine resources is the inevitable consequence of the constant acceleration in the demand for mineral, chemical, vegetal and animal products of organic or inorganic nature. The research and development of technological devices is, accordingly, increasing with a parallel multiplication of appropriate infrastructures and specialized enterprises, as gradually the seas will be farmed, mined and industrially exploited, like the land.

The significance of this development goes, however, far beyond the practical issue of the expansion of marine-based industry, as it is evident that a new kind of potential thinking and new aspects of economic pressure are prevailing in the contemporary scene.

To implement this new and complex programme, a number of specialized agencies have been created within the framework of the United Nations confirming the aspiration towards an increasing international co-operation to achieve the concrete objectives and accelerate the socio-economic progress of the developing nations. Together with FAO, IMCO, UNEP, UNESCO, who are among the most active Agencies operating in marine affairs, also UNIDO is presently joining, by means of its new programme aiming at the development of the marine-based industry sector in the developing countries.

One of the more active arms of the United Nations is UNESCO, whose marine programme is mainly concerned with stimulating and co-ordinating oceanic research and associated scientific work throughout the world, and with providing relevant technical assistance to the developing countries. The Marine Sciences programme is conducted by a specialized Division of UNESCO, which also serves as Secretariat for the Intergovernmental Oceanographic Commission (IOC).

The Food and Agriculture Organization (FAO) has established since 1961 an Advisory Committee on Marine Resources Research and is extremely active in the areas of fishery and mariculture. The sea and air interface is the target of extensive research and scientific observation co-ordinated by the World Meteorological Organization (WMO) on a global basis. The International Atomic Energy Agency has acknowledged competence in marine affairs with specific regards to pollution problems relating to the discharge or release of radioactive materials in the sea. The Inter-governmental Maritime Consultative Organization (IMCO) has the international mandate to prevent and control oil pollution in the sea through the International Convention for the Prevention of Pollution of the Sea by Oil, and it is additionally concerned with the safety aspects of ships, drill rigs, buoys, and other such platforms at sea and marine technology. The environmental aspects of the oceans are one of the main programme UNEP.

All United Nations organizations concerned with marine activities co-ordinate their programmes through the Subcommittee on Marine Science and Its Applications, or the Administrative Committee on Coordination, which strictly reports to the Economic and Social Council, as well as to the U.N. Office of Ocean Economics and Technology.

The following ECOSOC Resolution 1802 (LV) illustrates relevant aspects of Marine Cooperation and Technology.

ECOSOC RESOLUTION 1802 (LV) PARAGRAPH 1 (b) -

MARINE CO-OPERATION AND TECHNOLOGY

The subject of marine technology comprises wide fields based on physical, chemical, metallurgical and oceanographic aspects. Even as the connexions between marine technology and industry are important, they have indirect as well as direct implications for developing countries; the latter have paid very little attention to the subject of marine technology although some developing countries such as Brazil, India, etc. have established important centres for the transfer of technology in marine fields. In many countries and regions it would be fair to state that marine technology has received no attention. With this background, the following aspects of marine technology are highlighted, whose transfer can be promoted by the activities of UNIDO in relevant fields:

1. Physico-chemical factors associated with fouling in marine areas and harbours

The intensity of settlement of organisms in relation to other ecological conditions both in natural and modified environments needs to be studied. For example, a survey undertaken in the waters around Goa beaches and harbours and round the local estuary system in India have revealed that in certain regions, especially in shallow depths, considerable enrichment of organic matter takes place which promotes the growth of sessile organisms. These subjects are important to develop anti-fouling technology and promote measures for anti-fouling systems in the harbours and ports in which the developing countries have still to establish requisite facilities.

2. Metallic contents (iron and copper contents) in marine estuaries and off-shore waters

Iron is an important growth-promoting trace element for marine organisms and plays an important role in the geochemical processes controlling the concentration of other elements of biogeochemical importance. In cases where iron ore deposits occur in proximity to sea, it is expected that iron levels will be influenced in the estuary of coastal waters and vary considerably in space and time, causing an impact on the biological

and geochemical conditions of marine waters. Analysis of particulate fraction of iron in both the estuary and in-shore regions in such cases shows high values with considerable variations. The proximity of the iron ore deposits of such a region is presumably responsible for the high and erratic distribution of the particulate iron in the waters.

Likewise, high concentrates of copper in the estuary and in-shore waters in identical cases have been noticed. These factors are responsible for ecological conditions of the marine in-shore and off-shore regions and depths. Studies in these respects will lead to an understanding of the environmental conditions in the marine areas.

3. Studies of the waves in marine coastal areas

Sea waves play an important role in shipping and in coastal processes such as beach erosion and sedimentation in harbours. The study and knowledge of waves in marine areas in developing countries is practically non-existent today. These aspects have started to receive attention only in the recent past in the case of some of the developing countries. However, reliable data on the waves off-shore are important for the promotion of technology for the installation and operation of deep sea harbours and ancillary installations. For example, studies on the wave data collected with wave recorders at 16 - 20 m depth have been systematically undertaken along western marine waters in the case of India, with useful technological results and implications.

4. Study of sedimentology and geochemistry of off-shore shelf sediments in coastal areas

The objectives of this study which has started in the recent past in some developing countries is to understand in detail the sediment load; its mineralogical composition, distribution, fossile content and their variations from the coast seawards and the environmental conditions prevailing in these marine regions. These studies are carried out along 0-100 m width along the coastal waters, and are useful in examining the extensions of the sand layers and sand-silt-clay matter. The organic matter contents are equally important at various depths as also the patterns of phosphorus concentrations in these sediments.

Strategy and Objectives

Experience to date suggests that:

- (a) the global and regional action-plans relating to the development of the marine-based industry should be developed in co-operation with the governments concerned, taking into account their needs and priorities;
- (b) the elements of action-plans should be conceived as mutually dependent, so as to provide sound management-tools based on realistic assessment of the potentials and requirements of the region or of a single country and the socio-economic feasibility and advantages of implementing these elements;
- (c) the action-plans should contain:
 - i. a study and research component
 - ii. a training component
 - iii. technical assistance components (including experts, equipment, etc.)
 - iv. an information component and,
 - v. a mechanism for transfer of technology and data evaluation.

In the light of the above, it is proposed that the following objectives and strategy should be considered for possible approval:

- (1) Objectives:
Comprehensive action-plans should be designed and implemented, in accordance with the mandate of Lima, in view of accelerating the development of the marine-based industry sector in the developing countries, and to favour the transfer, application and adaptation of appropriate marine technology from the industrialized to the developing countries as well as among the developing countries themselves.

(2) Strategy

The strategic approach for planning and implementing the Marine-based Industry programme should be, in principle, based upon the following factors;

- (i) Assessment of the state-of-art, conditions and perspectives of the actual industrial exploitation of vegetal, animal and mineral resources of the seas, and of the foreseeable impact on the socio-economic pattern of the developing countries, at medium and long term;
- (ii) co-ordination and monitoring of relevant initiatives at national, regional, sub-regional and inter-regional level, to foster the creation and expansion of marine-based enterprises, infrastructures and research facilities, including the transfer and development of appropriate marine technology;
- (iii) collection and dissemination of relevant industrial information to interested governments, institutions or enterprises, concerning techniques, achievements and experiences relating to marine industry affairs;
- (iv) assistance to develop research and training facilities and skills, so as to enhance the interest and the ability of the developing countries in the area of marine-based industry and marine technology;
- (v) promotion of cooperation and of exchange of experiences between developed and developing countries, as well as among the developing countries themselves, on relevant technical, economic, scientific, administrative and managerial aspects concerning the industrial exploitation of marine resources.

The implementation of these objectives and strategy will call for the creation of appropriate infrastructures, the qualitative improvement of local technical skills and the mobilization of investment capitals. At the same time, in order to obtain the maximum benefit from the activity of the marine industries, a considerable amount of studies and research will be necessary, which may eventually go beyond the scientific, technical, managerial and financial capability of individual countries, calling therefore, for a higher degree of co-operation at regional and international level.

The main factors which may be expected to affect the implementation of this strategy, would be, in principle, the following:

- the new developments in the regime of the seas, which are an element of major importance in the changing of international economic and political relations,
- the need of full operational and economic participation of the developing countries in the exploitation of their seas resources and in the benefits which can derive to them from this participation;
- the desirability of the developing countries to be self-reliant and to ensure that the development of their marine industry sector would contribute to accelerate their socio-economic progress.

All these factors should be considered in relation with the framing of policies and the implementation of strategies in order to achieve the above-mentioned objectives. Accordingly, the action plans for the development of viable initiatives relating to the establishment or expansion of the Marine-based Industry programme in the developing countries, appear to be in full harmony with the targets and mandate of UNIDO.

Priority should be given to projects having a multiplying effect and which would focus on the economic and social aspects which may derive by the industrial exploitation of animal, vegetal and mineral resources of the sea, with particular regard to human utility as well as to the establishment of appropriate relevant infrastructures. Accordingly, Governments and industries will be advised on the

planning, establishment, operation and marketing of marine-based enterprises, with particular emphasis on small-scale ones. Services to marine export industries will be strengthened, in terms of product improvement, quality development, plant layout, management, preservation system and sanitation, so as to upgrade raw material usage.

Regional marine-based industrial information services would be promoted and created, to assist government and producers to strengthen their operational activities and to cope with international competition, particularly in Africa, Latin America, Indo-Pacific region and the Mediterranean area, in the framework of the "Regional Seas Programme".

Assistance in all regions will also concentrate on strengthening the capacity of existing national and regional training and management institutions through joint programmes aiming at developing new skills and standards, introducing appropriate methodologies and techniques, developing instruction materials relating to industrial marine subjects and upgrading technicians and executives of local marine enterprises.

Each government or institution will be assisted in adopting relevant administrative and operational policies for the marine-based industry sector, in consideration of the specific characteristics of ocean resources, the conditions in which these resources are exploited, the nature of the industrial marine operations and the regional and international relations which generally prevail in marine situations.

Proposed work-plan:

The activities proposed in this chapter are related to the above mentioned objectives and strategy. They are grouped around two initial projects corresponding to the purpose of the development of the scientific and operational basis of the marine-based industry sector in the developing countries, with a view to the advancement of knowledge and the rational management of the marine environment and of its resources, through the creation and improvement of national and regional industrial marine infrastructures, the research, the training, the technical assistance and the promotion of international co-operation and investment.

This tentative work-plan takes into account the objectives of Lima Declaration and Plan of Action, the United Nations World Plan of Action

for Science and Technology, the conclusions of the Third United Nations Conference on the Law of the Sea, those of the Scientific Committee on Oceanic Research (S.C.O.R.), the International Councils for the Exploration of the Sea (ICES - Copenhagen and CIESM - Monaco).

It also refers to the medium-term plan designed by the Ocean Economic and Technology Office, to some conclusions of the ACC Sub-committee on Marine affairs and the Inter-Secretariat Committee on programmes relating to Oceanology (ICSPRO) and to the "Note by the Secretary General" (E/5972) on Marine Questions, addressed to the 63rd Session of ECOSOC.

The proposed work-plan is designed to strengthen the capability of the developing countries in the sector of Marine-based industry and related technology and will also provide a foundation for UNIDO to undertake operational projects and supporting activities financed from UNDP, from UNIDF and other sources.

Project 1. Development of national and regional infrastructures and trained management and manpower in Marine-based industry.

This is a multi-disciplinary project, consisting mainly of four dimensions:

- (i) assisting governments and relevant institutions in formulating and implementing programmes and strategies, in the framework of the National Development Plan, to create and develop an economically and socially viable marine-based industry sector.
- (ii) fostering a regional/inter-regional co-operation in all aspects of industrial marine research and development as well as in the planning and implementation of specific relevant projects;
- (iii) carrying out projects and studies, with finance from UNDP, the UNIDF or other sources, for the creation and/or expansion of the marine industry sector, the implementation of relevant supporting activities and the establishment of an appropriate industrial marine infrastructure;

- (iv) providing specialised training and in-plant specialisation programmes for management or technicians from the developing countries, as well as the collection and dissemination of relevant data and information.

For the realisation of this project, UNIDO may work in co-operation with other agencies of the UN system (IMCO, FAO, UNESCO, ILO), as well as with some specialized non-governmental or intergovernmental organizations.

Project 2 Development of the scientific and technological basis of the marine-based industry and transfer of marine technology.

This project will focus upon the problem of transfer and adaptation of appropriate marine technology to foster the progress of the developing countries on key technological issues. Teams of scientists and experts from both the industrialised and the developing countries would be mobilised in areas such as the exchange of experience and the transfer of technology, through consultations, working group-meetings and workshops, and relevant collection and dissemination of data and information. Particular attention would be given to the preparation and publication of directories on marine-based industry affairs, including information on relevant research and technological institutions, material supplies sources and the compilation of standardized terminology.

For the realisation of this project, UNIDO may work in co-operation with the other agencies of the UN system (IMCO, FAO, UNESCO, the Intergovernmental Oceanographic Commission - IOC, etc.) as well as with some specialized non-governmental or intergovernmental organisations.

A central feature for the execution of this work-plan will be the strengthening of linkages and the co-ordination of feedback between the various substantive activities and functions of UNIDO, both at the Headquarters and in the field, in order to avoid duplications and interferences, and to effectively respond to identified needs or governments' requests for technical assistance or information, in the field of marine-based industry.

The importance of this co-ordination and team-work has been repeatedly emphasised by the Executive Director, by the Permanent Committee and by the Industrial Development Board.

The amount, substance and geographical orientation of technical assistance activities relating to the Marine-based Industry programme, in the biennium 1980 - 1981 are difficult to predict with accuracy. Nevertheless, on the basis of the promotional and exploratory work which is expected to be carried out during 1979, it could be foreseen that the demand for UNIDO technical assistance, relating to the expansion of the marine-industry sector, will be considerably important.

Conclusions

In the light of the above information, collected in occasion of the survey carried out within UNIDO, as well as through the contacts with relevant bodies of the UN system and various specialised institutions, as it was decided by the meeting of 13 February 1978, it can be concluded that important advantages may derive to the developing countries by the establishment and/or expansion of their activities in the marine-industry sector.

The factual implementation of the Marine-based Industry programme and relating supporting initiatives, by UNIDO, represents a unique opportunity to effectively contribute in the acceleration of the socio-economic progress of the developing countries, in accordance with the Lima targets.

The implementation of the UNIDO Marine-based Industry programme can be expected to assume, since its starting in the biennium 1980 - 1981, an effective important dimension, as an increasing number of Governments and institutions of the developing countries as well as of the developed countries, adequately informed about the characteristics and opportunities of this programme, would tend to increasingly allocate higher priority to their participation in marine projects, in the framework of their national objectives. This development will be possibly reflected in the results of a well co-ordinated preparatory work to be carried out during 1979, determining a valuable momentum in the over-all UNIDO programme of technical assistance and placing our organization in the front-line of the UN sponsored campaign to look upon the ocean space as a new territory gradually opening to profitable economic utilization, in the interest of the developing nations.

On this basis the technical assistance which would be provided by UNIDO in the area of marine-industry will place substantial emphasis on:

- (a) The industrialization of coastal areas
- (b) The integration of traditional marine activities and industrial activities
- (c) The development of new sources of economy for local coastal populations
- (d) The creation of new skills and facilities relating to marine industry

- (e) The increased cooperation and connection between industrialized and developing countries as well as among the developing countries themselves.

In conclusion, this report is submitted for consideration, also with the purpose of receiving instructions and guidance for the factual implementation of the Marine-based Industry programme.

APPENDIX 1

List of UNIDO projects concerning
Marine-based Industry

PROJECTS IN MARINE-BASED INDUSTRY AND
MARINE TECHNOLOGY CARRIED OUT BY UNIDO

In the field of non-metallic minerals and building material two particular technologies have been dealt with in the form of exploratory missions:

Dredging of Sand and Gravel from the Sea

TS/CYP/77/001

A plan was developed in Cyprus for the sea dredging of sand and gravel for construction purposes with a view to avoid further exploitation of land based deposits and thus preserving areas of environmental and recreational value. The Government is now executing the plan on its own.

Production of Sea Water Magnesite

TS/THA/75/002

Following the discovery of large high quality land based dolomite deposits in Thailand advice was given on the possibility of producing magnesite from sea water and dolomite for use in the manufacture of basic refractories. The Applied Scientific and Research Council of Thailand (ASRCT) is now working on a detailed specification of the technology (with some UNIDO support).

Both projects will in due course be followed by assistance in the actual implementation of the projects, and we believe that the accent placed on the matter through the publication of the above mentioned paper will promote the establishment of these and other similar projects.

Shipbuilding, Ship-Repair and Marine Engineering

In the field of Engineering Industries a number of projects and supporting activities were implemented in the area of marine-based industry and marine technology, with specific reference to marine engineering, ship-repair and ship-building.

The Engineering Industry Section also recently elaborated a proposal for an action-oriented study in the above mentioned sector, for future possible implementation.

Agro-Industry

In the field of Agro-Industry the following projects were actually planned and are implemented :

Project ID	Description	US.\$
IS/33A/73/026	Industrial Processing of crab meat	7.500
DF/ICE/73/009	Research in fish industry	70.403
DP/KOR/70/533	Feasibility study for a fish protein concentrate plant	53.521
UP/ECU/77/064	Hydrogenation of fish (shark) meat	18.700
UF/SLI/78/026	Creation of a processing centre for fish and marine vegetal resources surplus	30.000
DP/EX/72/002	Pilot plant for the production of Spirulina Platans Algae	131.850
VC/NEA/76/090	Technological development of proteins from Spirulina Algae production	24.000
SIS/67/225	Feasibility study for the establishment of an integrated tuna-fish processing industry, in Mauritius	
SI/IEA/78/008	Development of fish-canning industry	
DP/SEN/75/016	Pilot centre for dried salted fish	
	Sub-contracted	
		13.650
		29.200

CHEMICAL INDUSTRY SECTION

Morocco	IS/MOR/70/805	Assistance to salt industry	expert 3 m/m and fellowships	10,030
Dahomey	IS/DAH/70/802	Solar salt industry	expert 1 m/m	2,500
Senegal	IP/SEN/70/514	Study for potential 50,000 ton/year solar salt production complex	consulting firm	15,300
Congo	IS/PAC/71/806	Feasibility study on the extraction of sodium chloride and other chemicals from potash residues	consulting firm	10,000
Mauritius	IP/MAR/72/002	Salt industries adviser	expert 2 m/m	5,000
Gabon	IS/GAB/73/005	Prefeasibility study of salt production	expert 3 m/m	7,300
Togo	IS/TOG/73/008	Salt production	expert 6 m/m	15,000
Zambia	IS/ZAM/74/009	Salt production and iodisation	expert 3.5 m/m	15,600
Cape Verde Islands	IS/CVI/75/002	Preliminary study for increase of salt production	expert 2 m/m	6,000
Gambia Gambia	RP/GAM/76/002 RP/GAM/76/002	Assistance to the Karaman salt unit	expert 8 days	1,700

				US\$
<u>Asia</u>				
Fiji	TS/FLJ/70/001	Assessment of salt industry	consulting firm	4,300
Tonga	IS/TOM/73/005	Assistance in establishment of solar salt	expert 1 m/m	2,500
Sri Lanka	DP/SML/73/029	Salt production from seawater	fellowships	2,750
Papua New Guinea	TS/PNG/76/005	Assistance in solar salt production	expert 1.5 m/m	6,055
<u>Latin America</u>				
Ecuador	IS/HON/72/002	Solar salt production	expert 3 m/m	7,500
Costa Rica	TS/COS/74/001	Solar salt production	expert 1 m/m	2,500
Grenada	IS/GHA/74/017	Production of salt and iodine	expert 0.5 m/m	1,500
Panama	IS/PAN/75/012	Exploratory mission on salt production	expert 2 m/m	8,000
<u>Europe and Middle East</u>				
Yemen	SIS/71/1100 (SOY-13)	Techno-economic and market study for solar salt production in the Aden area	consulting firm	10,000
Qatar	DP/QAT/71/503	Solar salt production	expert 4 m/m	10,000
Turkey	DP/TUR/72/011	Assistance in planning a 1-1.5 million tons/year solar plant	consulting firm	36,240
Cyprus	IS/CYP/73/005	Modernization and expansion of salt production	expert 2 m/m	5,000
Yemen	IS/CYP/75/004 TS/PDY/75/005	Establishment of a salt plant Setting up a 50,000 tons/year solar salt plant	expert 4 m/m	12,000
			expert 1 m/m	4,000

Interregional

Expert group meeting on modernization and mechanization of salt industries, Rome, 25-29 Sept. 1968

3. CURRENT PROJECTS

<u>Africa</u>				US\$
Benin	SI/NEB/77/001	Development of solar salt production	expert 6 m/m	27,300
Cocos Islands	SI/COI/78/001	Preparatory Assistance in salt production	expert 2 weeks	2,275
Tanzania	IP/UNT/74/015	Development of salt production	expert and fellowships	153,436
Zambia	VC/ZAM/77/017	Establishment of a salt iodization plant	expert 6 m/m equipment (\$ 50,000)	74,000
<u>Europe and Middle East</u>				
Cyprus	SI/CYP/77/001	Examination of alternative site for setting up a solar salt plant	expert 6 m/m	27,300
Syria	SI/SYR/77/002	Assistance in rock salt exploitation and processing	expert 1 m/m	5,650
Yemen	SI/YEM/76/011	Techno-economic assessment of the salt plant at Aden	consulting firm	50,000
<u>Asia</u>				
Western Samoa	SI/WES/77/002	Development of solar salt production	expert 6 m/m	26,500

/s/

PIPELINE PROJECTS

	US\$	US\$
EGYPT	Assistance in solar energy desalination	expert 6 m/m
Gambia	Establishment of a modern solar salt plant	equipment
Tanzania	Assistance to the State Mining Corporation (STAMICO) (1979-1981) for production of salt	expert equipment and fellowships
Interregional	Three technological workshops on solar salt production in developing countries (to be held in India, Tunisia and Venezuela)	
		27,300 (SIS)
		27,000 (VC)
		239,200 (IP)
		84,000

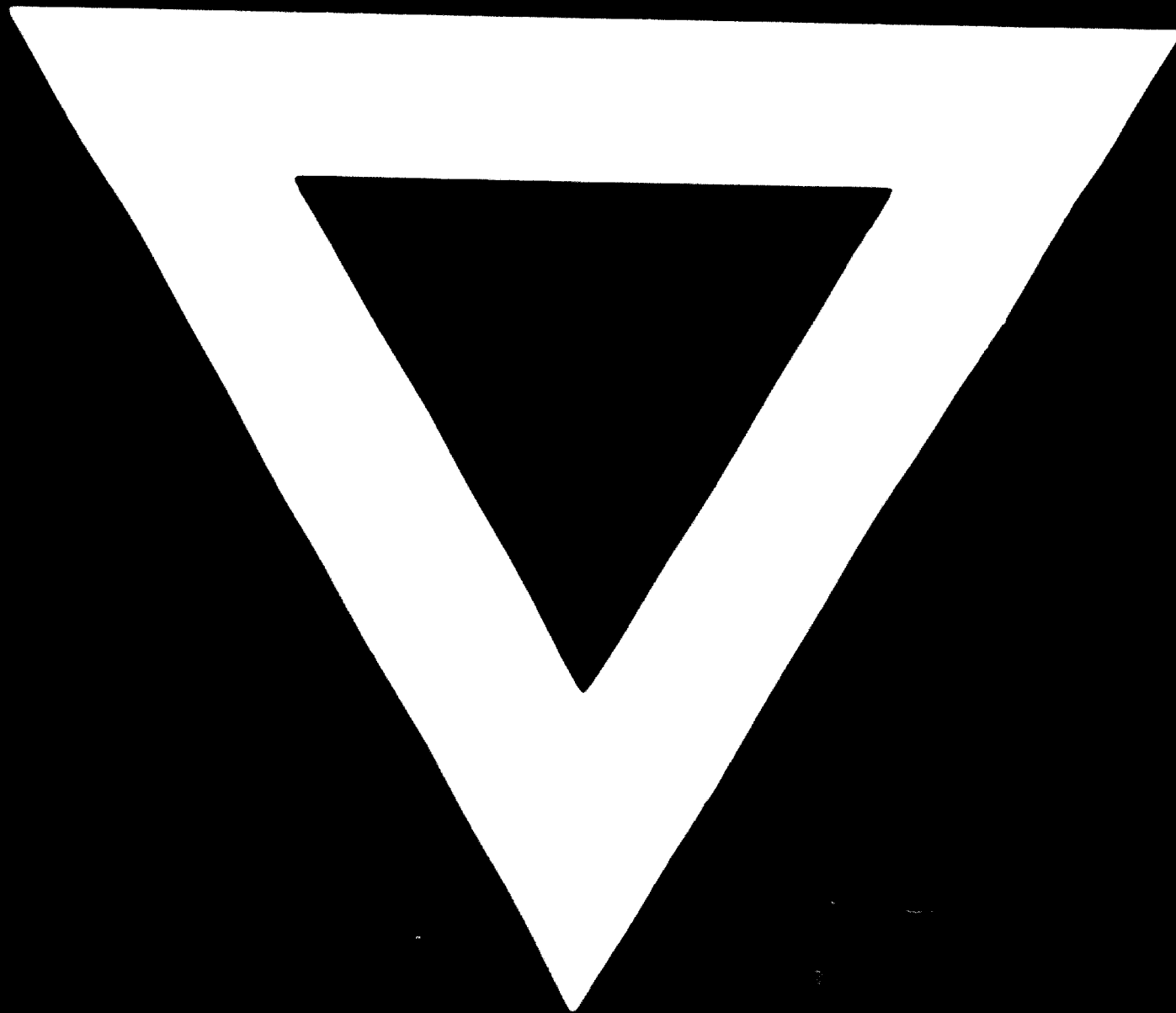
UNIDO'S Experts Roster for Marine-Based Industry

In accordance with the implementation of projects relating to marine-based industry the Project Personnel Recruitment Section has established a Roster comprising Experts specializing in specific areas of the above discipline:

1. Solar Salt 33 experts
2. Chlorine-Alkali and Sodium Hydroxide production 42 "
3. Other Inorganic Salts (Magnesium Chloride/Salt) 27 "
4. Sea Weeds/Agar-Agar, Pectin, Alginates and Jellies, etc. 11 "
5. Beach sands, gravels and Minerals Various "

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.

C-108



80.02.25