



# REGIONAL SEAS

UNITED NATIONS ENVIRONMENT PROGRAMME

*Achievements and planned development  
of UNEP's Regional Seas Programme  
and comparable programmes  
sponsored by other bodies*

*UNEP Regional Seas Reports and Studies No. 1*

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## PREFACE

It is now almost ten years since the United Nations Conference on the Human Environment (Stockholm, 5-16 June 1972) adopted the Action Plan for the Human Environment, including the General Principles for Assessment and Control of Marine Pollution. In the light of the results of the Stockholm Conference, the United Nations General Assembly decided to establish the United Nations Environment Programme (UNEP) to "serve as a focal point for environmental action and co-ordination within the United Nations system" (General Assembly resolution (XXVII) of 15 December 1972). The organizations of the United Nations system were invited "to adopt the measures that may be required to undertake concerted and co-ordinated programmes with regard to international environmental problems", and the "intergovernmental and non-governmental organizations that have an interest in the field of the environment" were also invited "to lend their full support and collaboration to the United Nations with a view to achieving the largest possible degree of co-operation and co-ordination". Subsequently, the Governing Council of UNEP chose "Oceans" as one of the priority areas in which it would focus efforts to fulfil its catalytic and co-ordinating role.

The Regional Seas Programme was initiated by UNEP in 1974. Since then the Governing Council of UNEP has repeatedly endorsed a regional approach to the control of marine pollution and the management of marine and coastal resources and has requested the development of regional action plans.

The Regional Seas Programme at present includes ten regions<sup>1/</sup> and has over 120 coastal States participating in it. It is conceived as an action-oriented programme having concern not only for the consequences but also for the causes of environmental degradation and encompassing a comprehensive approach to combating environmental problems through the management of marine and coastal areas. Each regional action plan is formulated according to the needs of the region as perceived by the Governments concerned. It is designed to link assessment of the quality of the marine environment and the causes of its deterioration with activities for the management and development of the marine and coastal environment. The action plans promote the parallel development of regional legal agreements and of action-oriented programme activities.

Problems related to the marine environment have not altered greatly in the past decade, but general perceptions of the main threats and corresponding solutions have markedly changed on the basis of knowledge accumulated during that period. Although there is still an interest in levels of contamination in the open ocean and in major oceanic processes, the danger of the open ocean becoming severely polluted is now considered to be less acute, and it is evident that existing problems, and the first effects of new ones, are most likely to arise in waters close to land.

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<sup>1/</sup> Mediterranean, Kuwait Action Plan Region, West and Central Africa, Wider Caribbean, East Asian Seas, South-East Pacific, South-West Pacific, Red Sea and Gulf of Aden, East Africa and South-West Atlantic.

Attention is therefore being concentrated on protecting the health of the coastal waters, especially in enclosed and semi-enclosed seas. The continued growth of human settlements along the coast, the increase in coastal recreation, the concentration of industrial development in coastal areas and the wealth of exploitable living marine resources in coastal waters, all justify the concern currently felt for the quality of the coastal marine environment and its resources.

The application of environmentally-sound management practices in coastal and maritime activities is now accepted as the key to safeguarding the marine environment. By this means, unplanned or ill-planned land-use practices and the irrational exploitation of natural resources and the pollution to which they incidentally give rise can be avoided. Emphasis on the concept of management reflects a critical change from earlier concern that the oceans had to be preserved unchanged. Management implies use: rational use. For example, when deciding on appropriate waste treatment and disposal practices, the waste receiving capacity of the sea is clearly recognized as an asset which may be used for certain types of waste.

Bearing in mind the considerable experience that has been accumulated in the protection and development of regional sea areas, the Governing Council of UNEP decided at its eighth session in May 1980 (decision 8/13 A) that the achievements and planned development of UNEP's Regional Seas Programme, as well as of comparable programmes sponsored by other bodies, should be reviewed by a government expert group. The Meeting of Government Experts on Regional Marine Programmes was convened by the Executive Director of UNEP in Nairobi, 18 - 21 January 1982, in co-operation with relevant international and intergovernmental organizations.

The meeting recognized that regional programmes are an effective way to protect and develop the marine environment, including coastal areas, and to provide a sound basis for global action. The meeting adopted a set of recommendations concerning the further development of UNEP's Regional Seas Programme (UNEP/WG.63/4, annex II), among them the following:

- An approach should be adopted that consists of evaluating and trying to resolve on a regional basis the environmental problems generated by the use of marine and coastal resources, since, in so far as regional co-operation exists among States, it provides an effective means of achieving global management of the marine and coastal environment ... (Recommendation No. 1).
- The network of regional action plans (including the development of related regional agreements) should be extended so as to include, as appropriate, enclosed or semi-enclosed seas as well as marine and coastal areas of regions with well-defined common problems ... (Recommendation No. 2).
- For regions where no regional action plan or regional agreement exists at present, UNEP should consider, in accordance with its central catalytic role, initiating the establishment of regional programmes. (Recommendation No. 3).
- All international and regional efforts for the protection, management and development of the marine and coastal environment should be based on the full mobilization of the national capabilities of States involved to control marine pollution at its sources and to develop rationally marine and coastal resources ... (Recommendation No. 6).
- Particular attention should be given to the need for continued provision of scientific and technical assistance in regions involving developing countries, ... (Recommendation No. 8).

- UNEP, as the focal point for environmental action and co-ordination within the United Nations system, should provide a framework for consultations and co-operation among States and the various organizations with regard to their efforts to protect and manage the marine and coastal environment. UNEP should also provide a framework for an exchange of information and a sharing of experiences between regions. (Recommendation No. 9).
- ... In implementing such co-operation, due account should be taken of the respective mandates and programmes of competent international and intergovernmental organizations. (Recommendation No. 10).
- The ways and means of co-ordination and co-operation should be directed towards measures (such as intercalibration) which will, in due course, promote the synthesis of regional activities into a global picture ... (Recommendation No. 11).

The basic document for that meeting (UNEP/WG.63/3) was prepared by UNEP with the assistance of a consultant (J. Portmann) whose contribution is gratefully acknowledged. The present publication is a revised version of that document.

Programmes which are organized on a purely national or bilateral basis are omitted from the document, even though in some cases their geographical coverage is quite large. Brief details are given of the nature and quality of the scientific data and products available through, or being yielded by, the programmes reviewed. However, it is not the purpose of this document to summarize actual data. Rather, emphasis is placed on the co-ordinating and legislative frameworks associated with, or integral to, the scientific and management programmes. Attention is also paid to the overall level of co-ordination achieved in the development and implementation of these programmes as well as the mechanisms of co-ordination between international, intergovernmental and regional organizations in the field of protection and development of the coastal and marine environment.

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## DEVELOPMENT OF THE REGIONAL APPROACH

1. The International Council for the Exploration of the Sea (ICES) is certainly the oldest (established in 1902) international organization involved in the study of the marine environment. The organization is active primarily in the North Atlantic and Baltic Sea areas. It is a purely scientific organization with no regulatory powers, although it has been accepted as a scientific advisory body by a number of Commissions with such powers. Consequently a basic characteristic of ICES is the combination under its auspices of purely scientific studies with investigations which have distinctly applied objectives, e.g. in relation to the exploitation of marine living and non-living resources.

2. As concern over the actual and potential impact of pollution grew, ICES became involved in marine pollution studies. As early as the 1960s it had a committee charged with a specific interest in marine pollution matters. Several working groups have also been established to co-ordinate and pursue marine pollution orientated investigations. The first major co-operative investigation on marine pollution initiated by ICES commenced in 1967 when a working group was established "for the purpose of assembling factual data regarding substances harmful or potentially harmful to fisheries, being discharged or likely to be discharged into the North Sea and adjacent seas." This investigation was to be followed by further regional investigations in the ICES area.

3. The idea of a regional approach is not new within the United Nations system as witnessed by the early establishment of regional commissions of the Economic and Social Council (ECOSOC) for Europe (ECE), Asia and the Pacific (ESCAP), Latin America (ECLA), Africa (ECA) and Western Asia (ECWA). Several of the United Nations bodies, such as the United Nations Industrial Development Organization (UNIDO), UNEP, the United Nations Development Programme (UNDP), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Intergovernmental Oceanographic Commission (IOC) of UNESCO and the Inter-Governmental Maritime Consultative Organization (IMCO) have regional programmes, and offices, or staff members in individual States dealing with ocean-related subjects. These arrangements provide an effective means of ensuring that their assistance meets local requirements.

4. Probably the first positive step towards a globally co-ordinated study of the quality of the marine environment was taken in 1969 when FAO, UNESCO and the World Meteorological Organization (WMO) sponsored a series of meetings which led to the development of the Long-Term Expanded Programme for Oceanic Exploration and Research (LEPOR) with the aim of extending man's knowledge of the oceans, and one of its goals is the enhanced utilization of the ocean and its resources for the benefit of man.

5. The following year, FAO organized a major Technical Conference on Marine Pollution and its Effects on Living Resources and Fishing which was preceded by a Seminar on Methods of Detection, Measurement and Monitoring of Pollutants in the Marine Environment. These meetings provided impetus to the development of field investigations into the extent of marine pollution on a collaborative basis. They were, for example, an undoubted spur to ICES baseline studies in the North Sea and Baltic Sea. Additionally, they had a considerable influence on the development and final pattern of the regional conventions on marine pollution such as the Oslo and

Paris Conventions, and later the Helsinki and the UNEP regional seas conventions (see paragraphs 16-110 below). Many of the pollutants over which concern was expressed at the FAO Conference were subsequently named in the annexes to these conventions.

6. The IOC was established in 1960 as an autonomous body within UNESCO to promote, plan and execute, through the concerted action of its member States, international co-operative marine research and monitoring programmes and to provide ocean services.

7. The LEPOR referred to above became the framework for the scientific activities of IOC. It included, as a major component, the Global Investigation of Pollution of the Marine Environment (GIPME). The IOC established an International Co-ordinating Group charged with the development of a Comprehensive Plan which was adopted by IOC in 1975. The Plan is global in scope but recognizes that from a practical standpoint pollution is concentrated in inshore areas, and that the particular type of pollution will vary from area to area. It also takes account of the fact that there are different levels of ability, histories and experience in co-operative work, as well as different interests, problems and priorities existing in various areas of the world. The Comprehensive Plan, therefore, suggests that the best way of achieving global investigations is to work on a regional basis.

8. By the time the GIPME Plan was complete (summer 1974) ICES had carried out the first of a series of marine pollution baseline studies. The IOC therefore worked jointly with ICES to produce Baseline Study Guidelines on how to start investigations on a regional basis.

9. Despite the basic soundness of the plan and the detailed guidance provided on initial implementation, GIPME has been unable to gain much direct support for the programme, except in those areas such as the North Atlantic, where investigations were already under way. However, at a recent meeting of the Working Committee for GIPME a number of countries reconfirmed their interest in GIPME. Although probably not the only reasons, major factors in this lack of support must be a failure to identify and demonstrate regional interests and concern at a level of detail which would ensure that action would be taken to promote investigations appropriate to the particular region concerned; and the severe limitations which exist in terms of the technical capacity of many countries to implement the Plan.

10. The United Nations Conference on the Human Environment (Stockholm 1972) adopted, inter alia, the principle that "the marine environment and all the living organisms which it supports are of vital importance to humanity" and recognized that "proper management is required and measures to prevent and control marine pollution must be regarded as an essential element in this management". Furthermore, the Conference recommended that Governments take early action to adopt "effective national measures for the control of all significant sources of marine pollution, including land-based sources, and concert and co-ordinate their actions regionally and where appropriate on a wider international basis" (recommendation 92).

11. The subsequent meetings of the UNEP Governing Council repeatedly endorsed the regional approach to the control of marine pollution and requested the development of regional action plans for the parts of the ocean where such plans do not yet exist. Consequently, in 1974 the Regional Seas Programme of UNEP was initiated.

12. The Regional Seas Programme at present includes ten regions and has over 120 coastal States participating in it. It was conceived as an action-oriented programme encompassing a comprehensive, transsectoral approach to marine and coastal areas and to environmental problems concerning not only the consequences but also the causes of environmental degradation. Each regional programme is shaped according to the needs

of the region concerned. All of the regional seas programmes contain elements related to environmental assessment and environmental management. Decisions on management must ideally be based on the assessment of an environmental situation so as to determine what kind of action may best be taken either to correct the situation or to forestall its deterioration. The assessment component of the United Nations Environment Programme is code-named Earthwatch, and one of its elements is GEMS which is a set of internationally co-ordinated activities for the collection and evaluation of data, the comparability of which should be assured as a basic requirement for global assessment. Data generated through the regional monitoring and research activities contribute to GEMS. The regional programmes promote the parallel development of regional legal agreements and of action-oriented programme activities as embodied in the action plans. The overall strategy to be followed was defined by UNEP's Governing Council as:

- promotion of international and regional conventions, guidelines and actions for the control of marine pollution and for the protection and management of aquatic resources,
- assessment of the state of marine pollution, of the sources and trends of this pollution, and of the impact of the pollution on human health, marine ecosystems and amenities,
- co-ordination of the efforts with regard to the environmental aspects of the protection, development and management of marine and coastal resources,
- support for education and training efforts to make possible the full participation of developing countries in the protection, development and management of marine and coastal resources.

13. Since each regional programme is aimed at benefiting the States of that region, Governments are involved from the very beginning in the formulation of the action plan. After acceptance, the implementation of the programme is carried out, under the overall authority of the Governments concerned, by national institutions nominated by their Governments.

14. Although the Regional Seas Programme is implemented predominantly by Government-nominated institutions, specialized United Nations bodies, as well as the relevant international and regional organizations, contribute to its formulation and may provide assistance to these national institutions. UNEP acts as an overall co-ordinator for the development and implementation of regional action plans although, in some cases, this role is limited to the initial phase of the activities. In the framework of UNEP a Regional Seas Programme Activity Centre has been established (1977) to co-ordinate the efforts of those involved in the Regional Seas Programme. Financial support to the regional programmes is initially provided by UNEP and other international and regional organizations. However, it is expected that, as a programme develops, the Governments of the regions will assume increasing financial responsibility for its implementation, through specific regional trust funds or other suitable mechanisms. Additional assistance continues to be made available by other bodies within the United Nations system, e.g. for technical assistance, provision of expert advice, training and technical support. These organizations are encouraged to provide this assistance as part of their normal programmes and to support them through their own funding mechanisms.

15. Since the Regional Seas Programme was initiated in 1974, action plans for the Mediterranean, Kuwait Action Plan Region, Wider Caribbean, West and Central Africa, East Asian Seas and South-East Pacific have been adopted, while action plans in four additional regions are being developed. UNEP was designated as the secretariat

(co-ordinator) for four of the adopted action plans and of the legal agreements associated with these action plans, and was entrusted with the management of regional trust funds.

## ACHIEVEMENTS AND PLANNED DEVELOPMENT OF REGIONAL PROGRAMMES

### North Sea - North Atlantic

16. As mentioned earlier, the first regionally co-ordinated investigation into marine pollution problems began in 1967 when ICES set up a working group to assemble factual data on substances which might be discharged to the North Sea and which might be harmful to fisheries interests. The group's report reviewed the extent of national controls on pollution and their legislative backing in each member country around the North Sea. The report also included information on the main sources and causes of pollution and the main types of industry discharging wastes directly or indirectly to the North Sea.

17. The report formed the basis for more detailed studies of the pollution of the area. These were planned through a series of ad hoc meetings during 1970 and 1971 and were given added impetus at the FAO Technical Conference in late 1970. A new working group was established on Studies of Pollution of the North Sea and its Effects on Living Resources and their Exploitation. This new group undertook two major tasks. Priority was given to a baseline study of the level of pollutants in fish and shellfish, but the first steps were also taken towards determining the distribution of pollutants in water and sediments. The second major undertaking was a study on the input of pollutants into the North Sea from land-based sources. Intended to be all-embracing, it actually produced data for all sources other than river inputs. The initial proposals for the baseline study included surveys of the input of petroleum, metals, chlorinated hydrocarbons such as DDT, dieldrin and PCBs and the halogenated hydrocarbons arising as waste products from the manufacture of PVC. In the event this proved to be beyond the resources then available. A baseline study was however organized with appropriate intercalibration, on the levels of metals, pesticides and PCBs in fish and on metals in sea-water.

18. While these studies were being planned and undertaken by the scientific community within ICES - and it must be emphasized that they were developed from a long history of collaborative scientific study under the auspices of that organization - political moves were under way to promote regional co-operation in the control of pollution in the North-East Atlantic. Following the wreck of the Torrey Canyon in 1967, the coastal States of the North Sea adopted the Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil (Bonn, 1969). The agreement lays down procedures for oil pollution combating measures in the case of grave and imminent danger to the coast or related interests of one or more Contracting Parties. The basic concept of this agreement has been used subsequently in the drafting of similar regional agreements (Helsinki Convention and the UNEP-sponsored Barcelona, Kuwait, Abidjan and Lima Conventions and associated protocols).

19. In 1972, the States of the North-East Atlantic adopted the Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (Oslo, 1972). The objective of the convention is to regulate the dumping into the sea of harmful substances from ships and aircraft. Dumping of materials in a "black" list is prohibited, while dumping of materials in a "grey" list is allowed in each individual case only by special permit.

20. In 1974 agreement was reached on co-operative efforts to control pollution from land-based sources when the Governments bordering the North-East Atlantic adopted the Convention for the Prevention of Marine Pollution from Land-Based Sources (Paris, 1974). The Paris Convention calls on the parties to eliminate pollution of the maritime area from land-based sources due to substances on a "black" list and to limit strictly pollution by substances on the "grey" list. Substances may only be discharged after approval has been granted by an appropriate national authority. Parties are also to endeavour to forestall any new pollution from land-based sources.

21. Under the various conventions, standing technical working groups such as the Oslo Commission's Standing Advisory Committee on Scientific Advice, the Paris Commission's Technical Working Group, and the Joint Monitoring Group of the Oslo and Paris Commissions were established to consider scientific and technical matters in order to facilitate the implementation and operation of the conventions.

22. Early contacts between ICES and the Oslo and Interim Paris Commissions developed steadily, and ICES is now accepted by both Commissions as an independent source of scientific advice on a number of topics and is the formally recognized source of scientific advice on fisheries aspects of pollution to the Oslo Commission. Both the Oslo and Paris Conventions place a monitoring obligation on their signatories and advice on how the monitoring can most effectively be conducted has been sought of ICES. Although the data are interpreted separately by the Commissions and ICES, almost all are collected according to guidelines developed by ICES. These guidelines take due account of experience gained by ICES in early baseline and monitoring studies and are continually updated as the body of experience extends.

23. Contacts with the Oslo Commission led ICES to extend its studies to cover the whole North-East Atlantic from the Barents Sea and East Greenland to Gibraltar. At the same time Canada and the United States expressed interest in participating in the studies and a new Working Group on Marine Pollution Baseline and Monitoring Studies in the North Atlantic was established. This Working Group conducted a new and extended study of inputs of pollutants and an extended baseline study for the whole North Atlantic. The Working Group has steadily extended its activities to include a wider range of pollutants and the analysis of water, sediments and living organisms. The question of whether the concentrations found are actually having any biological effects is also being examined. In those areas where the extended baseline study had identified higher than normal concentrations, monitoring is being conducted and a repeat survey of the whole area is planned for 1982/1983. Sampling and analysis techniques have been refined so as to ensure that the data produced make possible the detection of trends.

24. Projects developed under the auspices of ICES are carried out entirely at national expense. Monitoring carried out in fulfilment of obligations undertaken upon ratification of the Oslo and Paris Conventions is also funded by the countries concerned. ICES has a small secretariat based in Copenhagen and financed by its member States. The joint secretariat of the Oslo and Paris Conventions and the Bonn Agreement is based in London and is funded by the parties to the three agreements.

25. Within the first and second environment action programmes (1973 and 1977) of the European Economic Community (EEC), several directives related to the prevention and reduction of pollution of the marine environment, particularly the aquatic environment, have been adopted by the Council of Ministers. A framework directive concerning pollution caused by certain dangerous substances discharged into the aquatic environment defines for the different families and groups of dangerous substances included in the "black" list general provisions concerning limit values which the emission standards should not exceed and quality objectives. The directive also provides for programmes for the reduction of substances on the "grey" list.

26. The Council of Ministers of EEC has also adopted directives which define water quality objectives based on the usage of the water: these are related to bathing waters and areas in which shellfish are grown. A directive has further been approved which lays down minimum requirements for the discharge of wastes from the titanium dioxide industry. In 1981 another directive concerning discharges of mercury from chlor-alkali plants was approved.

27. Following the Amoco Cadiz accident, EEC adopted, in 1978, an action plan on the prevention and reduction of pollution caused by hydrocarbons discharged at sea in order to minimize the harm caused by spills and to facilitate international co-operation. The action plan also provides for a community information system concerning the prevention and combating damage caused by oil pollution.

28. Fisheries resources of the area have been managed through the International Commission for North-West Atlantic Fisheries (ICNAF) and the North-East Atlantic Fisheries Commission (NEAFC). ICNAF was replaced in 1973 by the North-West Atlantic Fisheries Organization (NAFO). ICES acts as scientific adviser to these Commissions on the status of stock, and the Commissions formulate fisheries policy on sustainable yields and total allowable catches, etc.. In the North Sea and adjacent seas, EEC has for the last six years striven to find a Common Fisheries Policy (CFP) which will serve to regulate catches of all major species in the EEC area.

29. In relation to sea-bed resources, median lines have been agreed for much of the area exploration, and exploitation of resources is carried out on a national basis. Discharges from platforms involved in offshore oil and gas exploitation are regulated through the Paris Convention. A code of practice for the exploitation of sand and gravel has been drawn up by ICES which, although not binding in the sense of a convention, is followed by most countries. It seeks to minimize the effect of such operations on the environment generally and on fisheries resources in particular.

#### Baltic Sea

30. In 1968 the concern over pollution of the Baltic Sea led ICES and the Conference of Baltic Oceanographers to establish a Working Group on Pollution of the Baltic, with terms of reference similar to those of the ICES North Sea Group established a year earlier. The Baltic Group concentrated much of its effort on collecting information on the input of pollutants to the Baltic Sea from land-based sources, and produced its report in 1969. Subsequently, contacts were established with the Scientific Committee on Oceanic Research (SCOR), and in 1971 a SCOR/ICES Working Group for the Study of Pollution of the Baltic and its Effects on Living Resources was established.

31. This new Group undertook three main tasks: an extended study of the input of pollutants to the Baltic, a baseline study of the levels of pollutants in living resources of the Baltic, and a co-ordinated scientific programme aimed at understanding the processes governing the distribution and fate of pollutants in the Baltic. The study of input, which was conducted in 1974/75, produced an improved set of data compared to that collected in 1969, but, not surprisingly, gaps remained. The baseline study, also conducted in 1974/75, made it possible to draw a number of general conclusions and represented a significant contribution to the factual knowledge of pollution in the Baltic Sea area. It also represented an important step towards international monitoring in the area.

32. While these scientific investigations were being undertaken, the Governments of the area were responding to the outcome of the 1972 Stockholm Conference. Early in 1973 the Government of Finland hosted a Government Expert Meeting which in 1974 led to the signing of the Convention on the Protection of the Marine Environment of the

Baltic Sea Area (Helsinki Convention).

33. By the time the Helsinki Convention was signed it was possible to draw on the experience gained in the North-East Atlantic, where agreements on pollution reduction and control had been developed progressively as a result of the Bonn Agreement, the Oslo and Paris Conventions and the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL Convention) relating to oil and chemical discharges and spillages from ships. The Helsinki Convention thus became the first Regional Convention to embrace several sources of pollution. The Convention includes the following substantive topics: land-based sources of pollution, prevention of pollution from ships, a general prohibition of dumping with the exclusion only of dredge spoils, and an agreement to limit pollution from the exploration and exploitation of sea-bed resources. It includes an agreement on co-operation for combating marine pollution by oil and other harmful substances and provisions for the allocation of responsibility for damage and the settlement of disputes. There is also a general agreement to the effect that measures taken to avoid pollution of the Baltic Sea should not cause an increase in pollution elsewhere. The Convention entered into force in 1980 after having been ratified by all the coastal States of the Baltic Sea.

34. Between 1974 and 1980 the Interim Baltic Marine Environment Protection Commission initiated several forms of co-operation aimed at implementing the goals of the Convention, one of the most significant of these being a compilation of information on the assessment of the effects of pollution on the natural resources of the Baltic Sea. Phase one of this activity is now complete. Not all the data are comparable but it has been possible to establish that the concentrations of a few pollutants, e.g. mercury, DDT, PCBs, in the organisms of the area are beginning to decline. In 1981, the Convention's provisions concerning the discharge of oil, sewage and garbage from ships and the establishment of reception facilities for these wastes came into force. These provisions are the same as the requirements for special areas in the International Convention for the Prevention of Pollution from Ships.

35. ICES has provided assistance to the Commission in the following areas: development of the Baltic Monitoring Programme and guidelines on sampling procedures, sample preparation and analysis of contaminant levels in Baltic organisms, preparation of a biological data reporting format and species code list, and the conduct of a pre-monitoring assessment of the effects of pollution in the sea. In addition, ICES has pursued its own programme of basic scientific investigations of the processes that govern water movements and turnover in the area. These investigations have involved all the Baltic countries using eleven research vessels in extensive physical and chemical observations and biological and pollution studies. Attention is now being directed to the coastal zone and estuarine environments, where inputs of most polluting substances and the impact of man's activities are greatest; studies of dynamic processes are under way and modelling of physical, chemical and biological parameters and processes is being attempted.

36. The Helsinki Convention is serviced by a small secretariat paid for by the member States. These various activities related to the Convention are carried out at national expense.

37. A three-year investigation related to radioactive contamination of the Baltic Sea began in 1981, involving institutes in seven coastal States and the International Laboratory of Marine Radioactivity (ILMR) in Monaco. The main objectives of this programme are: studies to determine the radioactive contamination of the Baltic Sea (including intercalibration of sampling and analytical procedures); establishment of a co-ordinated monitoring programme; and improvement of the exchange of information



on the studies related to the problems of radioactive contamination in the Baltic Sea States, including data on radioactive releases into the Baltic Sea.

38. Fisheries resource management in the Baltic is undertaken through the International Baltic Sea Fisheries Commission (IBSFC), which in turn is advised on the status of the various fish stocks by ICES. It seeks to set total allowable catches (TACs) for fish stocks as necessary. As in the North Sea area, several of the countries involved in the IBSFC are members of EEC but so far EEC has not been allowed to accede to the Convention. It has, however, observed that where TACs are allocated nationally by IBSCF, it would propose to manage these as a single TAC for the whole EEC fishing zone under its Common Fisheries Policy (CFP), once that has been agreed.

39. The EEC directives on pollution control mentioned in the section on the North Sea - North Atlantic also apply to those countries bordering the Baltic Sea which are members of EEC.

#### Mediterranean

40. The International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM) was founded in 1919 on the model of ICES, in order to provide a regular forum for exchange of data between interested scientists. A committee on control of marine pollution was established by ICSEM in 1970 and since 1972 it has organized, lately in co-operation with UNEP, biennial workshops to present and discuss problems related to the pollution in the Mediterranean.

41. Concern had been expressed on numerous occasions during the late 1960s over the state of the Mediterranean Sea, and in 1972 FAO's General Fisheries Council for the Mediterranean (GFCM), in co-operation with ICSEM and IOC, prepared the first comprehensive review of the state of marine pollution in the Mediterranean.

42. 1974 proved to be an important turning-point for the Mediterranean. Two intergovernmental consultation meetings on the protection of living resources and fisheries from pollution in the Mediterranean were organized by FAO(GFCM), but by then it had become obvious that fisheries were not the only interests likely to be affected by pollution. Later in the same year, an International Workshop on Marine Pollution in the Mediterranean was held in Monaco. This workshop, organized by IOC, FAO(GFCM) and ICSEM, with the support of UNEP, reviewed major pollution problems of the area and recommended co-operative projects. At a meeting of the GFCM working party on Marine Pollution, which immediately followed this workshop, plans were drawn up for the implementation of four of these pilot projects dealing with protection of living resources and fisheries. These were subsequently included in the seven projects pursued under MEDPOL (see below). *incorporated into Action Plan*

43. In late 1974 UNEP established a "task force" of selected scientists, experts and government officials who joined with representatives of several United Nations organizations to draw up the elements of an action plan for the region. In early 1975 an Intergovernmental Meeting was convened by UNEP, in co-operation with FAO and IMCO, which was attended by 16 coastal States. The action plan was approved and plans were made for its implementation, which included four main aspects:

- integrated planning of the development and management of the resources of the Mediterranean Basin;
- co-ordinated programme for research, monitoring, and exchange of information, and assessment of the state of pollution and of protection measures (MEDPOL);

- framework convention and related protocols with their technical annexes for the protection of the Mediterranean environment; and
- institutional and financial implications of the action plan.

44. A Conference of Plenipotentiaries took place in Barcelona early in 1976 at which the 16 participating States and EEC adopted the Convention for the Protection of the Mediterranean Sea against Pollution, a Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft and a Protocol concerning co-operation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in Cases of Emergency. This became known as the Barcelona Convention and entered into force in 1978. UNEP was designated as the secretariat of the action plan and the Barcelona Convention. The Convention includes articles on monitoring co-operation in emergencies, scientific and technological co-operation, and liability and compensation. In furtherance of these articles, plans were laid for a Regional Oil Combating Centre.

45. Like the Helsinki Convention, the Barcelona Convention can be regarded as an umbrella agreement. While the provisions of the Helsinki Convention are elaborated upon and implemented through the adoption of new or amended annexes and recommendations, in the case of the Barcelona Convention real implementation is achieved through ratification of the separate protocols. By ratifying a protocol, States accept more specific obligations to control pollution, e.g. from dumping, or to co-operate on certain aspects of environmental management. The Mediterranean States felt that the Barcelona Convention was too general to provide sufficient protection on its own, consequently no State may become a contracting party without also becoming a party to at least one of the protocols.

46. In 1980, in Athens, a third protocol, the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources, was adopted and signed by twelve Mediterranean States and EEC. Other protocols under preparation or discussion by the coastal States of the Mediterranean region are:

- The Protocol concerning Mediterranean Specially Protected Areas (adoption expected in 1982); and
- The Protocol concerning Pollution resulting from Exploration and Exploitation of the Continental Shelf, the Sea-bed and its Subsoil (governmental experts to begin negotiations in 1983).

47. It should be noted that whilst every effort was made to avoid conflict between the Barcelona Convention and its Protocols and the obligations undertaken by contracting parties through their adoption of other conventions, some members do have to observe additional rules. In particular, this applies to the members of EEC, which are obliged to honour the same directives that were mentioned above in the context of the North Sea and North Atlantic.

48. The "Blue Plan" and a Priority Actions Programme were initiated in 1979 as parts of the integrated planning component of the Mediterranean Action Plan. The Blue Plan calls for systematic surveys of major development and environmental protection activities and for the development of action-oriented alternative development policies based on the findings of the surveys. The Priority Actions Programme focuses on the application of sound environmental practices which require immediate action in selected priority areas, e.g., protection of soil; management of water resources, and of living resources and aquaculture; development of renewable sources of energy; human settlements and tourism.

49. The pilot phase of the Co-ordinated Mediterranean Pollution Monitoring and Research Programme (MEDPOL) included several projects: baseline studies and monitoring of oil and petroleum hydrocarbons in marine waters; baseline studies and monitoring of metals, particularly mercury, in marine organisms; baseline studies and monitoring of DDT, PCBs and other chlorinated hydrocarbons in marine organisms; effects of pollutants on marine organisms and their populations; effects of pollutants on marine communities and ecosystems; problems of coastal transport of pollutants; coastal water quality control. A thorough survey of pollutants from land-based sources was prepared and was used in negotiating the Protocol of the Mediterranean Sea against Pollution from Land-Based Sources. Through the ILMR, the intercalibration of analytical methods used for organochlorine residues and metals was organized, as was the maintenance (regular and emergency services) of oceanographic and analytical equipment. Through MEDPOL, environmental quality criteria, needed for harmonized, Mediterranean-wide management of environment and pollution control, or requested by the Barcelona Convention and its protocols, are being developed. They include microbiological criteria for recreational and shellfish-growing waters and criteria on mercury in seafood. Both, as they stand today, recommend a less stringent standard than applied (theoretically) in most of the Mediterranean States.

50. The pilot phase of MEDPOL was co-ordinated by UNEP with the co-operation of ECE, UNIDO, FAO, UNESCO, IOC, WHO, WMO and IAEA. It involved more than 80 national research centres in 16 Mediterranean States and was made possible by massive financial support from UNEP. The pilot phase of MEDPOL is being completed by the end of 1981 and the evaluation of its results is expected during 1982. Training courses and workshops organized by UNESCO on subjects such as modelling marine ecosystems contributed to strengthen co-operation of Mediterranean scientists on projects requiring joint efforts in the region.

51. In 1981 the contracting parties to the Barcelona Convention endorsed a long-term (1981-1991) pollution monitoring and research programme (MEDPOL - PHASE II), covering four different and complementary monitoring activities: monitoring of sources of pollution; monitoring of coastal areas including estuaries; monitoring of offshore reference areas; monitoring of transport of pollutants through the atmosphere. Twelve research projects ranging from the development of reference methods and of environmental quality criteria to studies of basic oceanographic processes and of toxicity, carcinogenicity and epidemiology of selected pollutants of special relevance to the Mediterranean region were also approved as part of MEDPOL - PHASE II. The work will be co-ordinated by UNEP in co-operation with the relevant specialized United Nations bodies, ICSEM and the International Union for Conservation of Nature and Natural Resources (IUCN).

52. In 1976 the Regional Oil Combating Centre (ROCC) was established in Malta by UNEP and IMCO to further the objectives of the Protocol on Co-operation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in Cases of Emergency. The objectives of the ROCC are to facilitate co-operation among the Mediterranean States in order to combat massive pollution by oil, to assist the States in the development of their own national capabilities, and to facilitate information exchange, technological co-operation and training. The ROCC has a small staff which is technically and administratively supported by IMCO.

53. A preliminary study was undertaken in the framework of the action plan on the feasibility of establishing a Mediterranean Inter-State Guarantee Fund on Liability and Compensation for Damage resulting from Pollution of the Marine Environment. A meeting of government experts will be convened in 1982 to begin consideration of the issues raised in the study.

54. In line with the general objective that each action plan of the Regional Seas Programme should become financially self-supporting, a trust fund was established in 1979 by the contracting parties to the Barcelona Convention. UNEP was entrusted with the management of the trust fund, and it continues to contribute to the programme on a project funding basis.

#### Kuwait Action Plan Region

55. A regional UNDP-assisted fisheries management programme has been carried out by FAO since 1974, with headquarters in Bahrain.

56. The first step towards the formulation of a regional marine science programme was a consultation organized by UNESCO in Paris in 1975. The objective of this meeting was to define the marine science needs and priorities of the Region. These were developed and adopted by a Conference of Ministers meeting in Rabat in August 1976.

57. Co-ordinated action within the United Nations organizations began when UNEP organized a fact-finding mission co-sponsored by the United Nations, UNIDO, UNDP, FAO, UNESCO, WHO and IMCO, which visited the eight States of the region during 1976. The objective of the mission was to identify and define environmental problems of the region with a view to the development of an action plan, as requested by the Governments of the region through the UNEP Governing Council.

58. Proposals for the elements to be included in the action plan were developed by four UNEP-sponsored meetings during 1976 and 1977. The first was an inter-agency meeting, involving the United Nations bodies mentioned above, with the addition of IOC, the United Nations Conference on Trade and Development (UNCTAD) and WMO, at which the first draft of an action plan prepared by UNEP was reviewed. This was followed by three meetings of experts from the region which reviewed and revised the drafts of the action plan, of a regional convention and of a protocol on co-operation in pollution emergencies.

59. The Kuwait Regional Conference of Plenipotentiaries on the Protection and Development of the Marine Environment and the Coastal Areas was convened by UNEP in 1978. The Conference adopted the action plan, the Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution, and the Protocol concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency. Interim institutional and financial arrangements for the implementation of the action plan covering the first two years of its operation were also agreed upon. The action plan takes account of the marine science needs and planned programmes identified by the 1976 Consultation meeting in Rabat.

60. The Convention provides for a Regional Organization for the Protection of the Marine Environment (ROPME) to be established to manage the future development and implementation of the action plan.

61. A trust fund was established by the States of the region and UNEP was entrusted with its management for the interim period. In addition, UNEP was requested to set up an interim secretariat in Kuwait and to co-ordinate the implementation of the activities identified in the action plan.

62. By the formal establishment of the Regional Organization in 1981 the role of UNEP as the interim co-ordinator of the action plan has terminated. The catalytic function of UNEP activities and funds in this region was achieved. The Regional Organization has, however, requested UNEP to continue supporting the further

development and implementation of the action plan, in particular by co-ordinating the assistance of the United Nations bodies in carrying out certain activities, such as training and workshops. Several of the United Nations organizations are already providing this sort of assistance. IMCO has given advice on establishing a Marine Emergency Mutual Aid Centre (MEMAC) in Bahrain and has assisted UNEP in an environmental impact assessment of coastal complexes in the area. Similarly, the IAEA's ILMR has carried out preliminary surveys of petroleum hydrocarbons, trace metals and chlorinated hydrocarbons in part of the area.

63. Although modified somewhat to cater for the particular needs of the region the Kuwait Convention bears a marked resemblance to the Barcelona Convention. It was developed as an umbrella convention and provides for specific protocols dealing with various types or sources of pollution. Its relatively rapid entry into force (in 1980) and essential independence from UNEP must in part at least be a reflection of the similar rapid state of development of the eight States involved and the ready availability of funding within the region. The first projects of the action plan were begun in 1979 and included surveys of environmental problems, baseline studies of pollution and oceanographic studies. These are currently being implemented during a pilot phase which covers a period ending in December 1983. For the co-ordination of each project a task team of experts from the region and a national focal point have been established. Steps have been taken, as appropriate, to ensure compatibility of data generated through these projects with data developed in other regional programmes, through the adoption of common methods of sampling and analysis, as well as through the intercalibration of analytical methods.

64. Through a number of funds in trust projects, UNESCO is working with national administrations and consultants to assist in establishing marine science centres in a number of States in the region, e.g. United Arab Emirates, Oman and Qatar.

#### West and Central African Region

65. During 1963-1964 IOC initiated, organized and implemented a programme of International Co-operative Investigations of the Tropical Atlantic (ICITA). This involved studies of the physical oceanography and currents on both sides of the Atlantic but also included surveys of sediment structures along the entire west coast of Africa and a survey of fisheries resources in the Gulf of Guinea. These investigations were undertaken mainly by States from outside the region although a number of West African States were also involved. The results added greatly to the marine science data base for the area.

66. Despite this early start, the first positive steps towards the development of a comprehensive programme for the protection and development of the West and Central African Region were taken in 1976 when UNEP sent an exploratory mission to 14 States in the region to produce an overview of the marine and coastal areas environmental problems and identify national pollution control capabilities. This preliminary mission was followed during the latter half of 1977 and in early 1978 by a more comprehensive review of these topics and an assessment of alternatives for regional legal actions and complementary activities prepared by FAO at UNEP's request. In 1977 IMCO organized with UNEP a workshop on the problem of oil pollution from ships and in 1978 an international workshop was jointly organized in Abidjan by IOC, WHO, FAO, and UNEP to review marine pollution problems in the area.

67. Based on the findings of these workshops and various other preliminary activities, a draft action plan was drawn up by UNEP with the help of several United Nations organizations and the advice of UNDP resident representatives in the region. This draft was revised in the light of comments from the Governments of the region and considered by a meeting of government experts in late 1979. A year later, the

first meeting of legal experts from the region was held to prepare a draft regional convention and protocols which would provide the formal commitment and legislative support to the proposed action plan.

68. In 1981, UNEP convened in Abidjan a Conference of Plenipotentiaries on Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region. The Conference adopted the action plan and signed two legal agreements:

- Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region; and
- Protocol concerning Co-operation in Combating Pollution in Cases of Emergency.

69. The Abidjan Convention is a comprehensive, umbrella agreement for the protection and management of the marine and coastal areas. Like the Barcelona and Kuwait Conventions, it foresees the development of additional protocols which will elaborate upon detailed obligations for the control of pollution and management of resources. A trust fund was proposed and UNEP was entrusted with its management and was designated as the secretariat of the Convention.

70. The Steering Committee established by the Conference met in mid-1981 and identified four priority projects: establishment and co-ordination of national contingency plans, control of coastal erosion, monitoring of marine pollution, and various supporting measures, e.g. training, legislation, exchange of data and a public awareness campaign.

71. Far from being an enclosed sea, the region is an example of how an area becomes defined according to the wishes of the States involved. Initial thoughts on the boundaries of the region envisaged an area essentially centred on the Gulf of Guinea, but the region was finally defined as including the marine and coastal environment from Mauritania to Namibia. The States involved face many common problems, particularly problems of oil pollution and those of pollution arising from municipal and agricultural wastes as well as from discharges of developing industries. The area has a history of involvement in marine science affairs by outside countries, and although, as with all other UNEP Regional Seas Programmes, the emphasis is on regional participation, the countries of the region have indicated that they will continue to welcome appropriate assistance from outside.

72. UNEP, in developing the action plan for the West and Central African Region, has had support from several United Nations bodies. IMCO assisted in relation to ship source pollution and the measures necessary to combat oil pollution; UNDP advised on the first proposals for the action plan; training courses were conducted by IMCO and FAO, a review of information on river inputs was prepared by UNESCO; surveys of marine pollution from industrial sources and on oil pollution were conducted by UNIDO and IMCO, respectively. UNESCO is assisting in the development of marine science capabilities in the region, e.g. by providing guidance on the establishment of a marine sciences centre in Mauritania, extension of the Nigerian Institute of Oceanography and the organization of a workshop on mangroves and coastal lagoons (Dakar, 1979). FAO also has a project advising on fishery resource management in the region, based in Dakar.

#### Wider Caribbean

73. The Wider Caribbean Region is a geographical entity made up of States and Territories with different economic and political structures, natural resources, social systems, environmental ecological characteristics and potential capabilities.

Most are developing countries and suffer from environmental problems resulting from under-development or from the side effects of development which neglected to take into account its environmental consequences.

74. Although most of the region's environmental and development concerns are to be dealt with by the individual nations, the value of regional and subregional co-operation has long been recognized at many regional fora, particularly in reference to common or shared resources. For example, in spite of their striking diversity, the States of the region share a common body of water and are exposed to many of the same natural and man-made hazards.

75. The idea of co-operative investigations of the Caribbean Sea was first proposed in 1966 and in 1967 IOC established an International Co-ordinating Group for Co-operative Investigations in the Caribbean and Adjacent Regions (CICAR). This functioned from 1967 to 1976, involved 14 States and focused on co-operative research projects concerning fisheries, marine biology, physical oceanography, chemical oceanography, marine geology and geophysics, and sea-air interactions. An International Biological Sample Reference Collection was established and data collection and exchange were put on to a sound footing. CICAR was replaced, for a trial period of six years, by an IOC Association for the Caribbean and Adjacent Regions, IOCARIBE. There is now a proposal that IOCARIBE should be established as a sub-commission of IOC and the Association has been conducting a project on oil pollution as part of IOC's MARPOLMON programme.

76. FAO, through its Western Central Atlantic Fishery Commission (WECAFC), initiated in 1977 an inter-regional project for the development of fisheries in the Caribbean and Central Atlantic regions.

77. In late 1976 a jointly sponsored IOC/FAO/UNEP Workshop on Marine Pollution was held in Trinidad. This workshop reviewed problems relating to marine pollution and made recommendations regarding the assessment of existing levels and trends in pollutant levels in the marine environment.

78. In 1976, a number of Caribbean States requested UNEP's assistance in the assessment of the environmental situation and in the development of guidelines which would incorporate environmental criteria in the development process of the region. Following this request a joint project to develop an action plan for environmental management for the Wider Caribbean Region was launched in 1977 between ECLA and UNEP.

79. The action plan was developed with the Governments of the region and with substantive assistance from the United Nations system and other international and regional organizations. UN/DIESA, the Office of the United Nations Disaster Relief Co-ordinator (UNDRO), UNIDO, FAO, UNESCO, IOC, IMCO, the Pan-American Health Organization (PAHO) of WHO, and IUCN were involved in the preparation of sectoral overviews assessing the relationship between environment and development in energy production and consumption, agriculture and fisheries, human health, human settlements, coastal area development and natural disasters as well as an analysis of the marine pollution problems of the region.

80. The findings and recommendations of the sectoral overviews were reviewed and synthesized by a panel of high-level experts from the region which, in collaboration with UNEP and ECLA, produced the first draft of the action plan. The draft action plan, which concentrates on the implementation of sound environmental management practices, was then reviewed and revised by two meetings of government-nominated experts (Caracas 1980 and Managua 1981) and formally adopted by an intergovernmental meeting held in Montego Bay, Jamaica, in early 1981. The meeting established a trust fund to support activities envisaged according to the action plan, entrusted its

management to UNEP, designated UNEP as the secretariat responsible for co-ordinating its implementation and requested the development of regional legal agreements to provide its legal framework.

81. If carried out successfully the action plan will be a major achievement for the area, which, for many reasons, is extremely complex. It is therefore particularly significant that the action plan contains 66 specific projects ranging from combating oil spills to mitigating the effects of natural disasters, protection of endangered species and the assessment of the impact of tourism on the region. Priority programmes have been selected from this list and action on most of them is expected to begin in 1982.

#### East Asian Seas

82. Discussions among marine scientists are not new in the Western Pacific. At the second meeting of Marine Science Experts in South-East Asia organized by UNESCO in 1962, a proposal was made for a Co-operative Study of the Kuroshio and Adjacent Regions (CSK). This proposal was adopted as an official IOC programme, planned for 1965 to 1977. It improved the basic understanding of the physical oceanography of the sea and added much to the knowledge of biological productivity and fisheries oceanography. Upon completion of the CSK programme, IOC established the Working Group for the Western Pacific (WESTPAC) to assist in the development of national marine science capabilities and to organize further basic marine science programmes on a national and regional basis. The group is expected to have its own regionally based commission, responsible to IOC headquarters. Current proposals for investigations include a petroleum monitoring programme as part of IOC's MARPOLMON programme and a study of pollutant distributions using commercially exploited shellfish as determinants. Other programmes being organized by WESTPAC include studies of ocean dynamics, coastal transport of pollutants, biological resources, marine pollution research, marine geology and geophysics.

83. In 1976, IOC, FAO's Indo-Pacific Fishery Commission (IPFC) and UNEP convened an international workshop in Penang. This workshop reviewed major environmental problems related to marine pollution and identified activities which might contribute towards pollution control. A number of regional projects were proposed, but the workshop, recognizing the very large geographical dimensions of the region, suggested that the area should be divided up into six subregions. One of the proposed subregions, covering the five member States of the Association of South East Asian Nations (ASEAN), became the region known as the East Asian Seas in the context of UNEP's Regional Seas Programme. This region partly coincides with the WESTPAC area.

84. The strong interests of FAO, UNESCO, IOC, IMCO and IUCN in the area have been reflected in the subsequent involvement of these organizations in UNEP's efforts to develop an action plan for the East Asian Seas region. FAO, through its IPFC, has identified a number of environmental problems related to fisheries interests, and has, with the assistance of the Swedish International Development Authority (SIDA), organized training courses on management of aquatic pollution in relation to the protection of marine resources and on analytical methods. UNESCO has organized a seminar on the uses of the mangrove environment and management implications and, with FAO, UNEP and IUCN, an assessment of the impact of pollution on such environments. IMCO has prepared studies on existing contingency planning, on development of regional contingency plans and on research into the impact of oil dispersants on tropical and sub-tropical species.

85. A regional action plan was first drafted in 1979 and was eventually adopted by the five ASEAN States in early 1981 at an intergovernmental meeting convened by UNEP in Manila. The action plan consists of environmental assessment and environmental



management components, the latter concentrating on control of pollution from oil and from land-based sources. Subsequent to the adoption of the action plan, a trust fund was established and UNEP was entrusted with its management. The East Asian Seas action plan does not at present include a legal component. Preparatory action on a few priority topics is likely to start early in 1982. The action plan represents a start in the area and if successful the South-East Asian region is expected to act as a nucleus for development of a wider programme for the adjacent regions identified at the Penang Workshop.

86. Protection of the marine environment has been accorded priority within the ESCAP environment activities. Since 1979, ESCAP has carried out a project to improve environmental management practices in the region, to develop regional capabilities, and to strengthen the institutional and legislative framework for environmental protection.

#### Red Sea and Gulf of Aden

87. Although comparatively unpolluted at present, parts of the area are undergoing a rapid development particularly in oil exploitation, production and shipping. The area is characterized by very high sea-water temperatures and salinities and has a unique flora and fauna with a rather low species diversity. Following a scientific workshop organized early in 1974 by UNESCO, a preparatory meeting was organized later the same year by the Arab League Educational, Cultural and Scientific Organization (ALECSO) in Jeddah. This meeting discussed the development of an action plan for the region and, in early 1976, an action plan for the protection of the Red Sea and Gulf of Aden was adopted at a further meeting, again organized by ALECSO. This action plan became known as the Red Sea and Gulf of Aden Environment Programme (PERSGA). Under the existing arrangements, the co-ordination of all activities is the responsibility of ALECSO, and UNEP acts solely in an advisory capacity on matters related to environmental assessment.

88. Since 1976 a number of seminars, training courses and workshops have been held in the framework of PERSGA with support from UNEP and UNESCO.

89. In early 1981 a meeting of legal and environmental experts from the region, held under the aegis of ALECSO, finalized the drafts of a new and more comprehensive action plan for the conservation of the marine environment and development of coastal areas in the Red Sea and Gulf of Aden, a regional conservation convention and a protocol on regional co-operation for combating marine pollution by oil and other harmful substances in cases of emergency. The experts also made proposals on such matters as the establishment of a regional organization to oversee the implementation of the action plan and serve as a secretariat to the convention. A conference of plenipotentiaries, convened by ALECSO in February 1982, adopted the action plan, the legal agreements, and the proposals. UNEP is expected to continue to act in an advisory capacity. Other United Nations bodies are expected to co-operate in a similar capacity, either directly with the regional organization or via ALECSO and, for example, IMCO has already been asked to assist in advising on the establishment of a regional oil combating centre.

#### South-East Pacific

90. The Permanent Commission for the South Pacific (CPPS) represents most of the States in the area and is a well-established mechanism for regional co-operation. A number of the United Nations organizations have close, long-standing relations with CPPS, especially IOC and FAO, both of which have been involved in major projects in the area, e.g., IOC in investigations of the phenomenon known as El Nino and FAO in relation to the highly productive fisheries of the region. These two organizations

co-operated with CPPS and UNEP in organizing an international workshop in late 1978 to review major environmental problems related to marine pollution as the first step in developing a comprehensive regional seas action plan. Guidelines were formulated for a convention on the protection of the marine environment against pollution in the South-East Pacific, and the first draft of an action plan for pollution research and monitoring was prepared. Plans were also laid for the establishment of a mechanism to co-ordinate the implementation of the proposed regional activities.

91. Since that workshop, CPPS, in association with UNEP, and with the co-operation of IMCO and FAO, undertook to assess the extent of marine pollution in the area and the main sources of pollutants. In the framework of the planned regional action plan, a seminar and training course on the prevention and abatement of marine pollution by petroleum hydrocarbons, and a seminar on the legal aspects of existing international conventions were organized by IMCO in co-operation with CPPS and UNEP.

92. A joint CPPS/UNEP expert meeting was held in 1981 which reviewed and revised the action plan for the protection of the marine environment of the South-East Pacific, the draft of a regional convention, the draft of an agreement concerning co-operation in pollution emergencies, a plan for the implementation and management of the action plan including the establishment of a regional trust fund and a workplan for implementation covering the triennium 1982-1984.

93. A conference of plenipotentiaries in late 1981 in Lima adopted the action plan, adopted the regional Convention for the Protection of the Marine Environment and the Coastal Areas of the South-East Pacific and the Agreement on Co-operation in pollution emergencies, and agreed on the financial arrangements to support the activities called for in the action plan. A trust fund was proposed to support the action plan, CPPS was designated as the secretariat of the action plan and the Convention and was entrusted with the management of the trust fund. The United Nations organizations are expected to have an important role in the execution of the plan, as various forms of technical assistance will be required.

#### South-West Pacific

94. At the XIII Pacific Science Congress (1975) the convening of a South Pacific Conference on the Human Environment was suggested, in order to review the environmental problems of the region. Shortly after this Congress the development of the South-West Pacific regional seas action plan, known as the South Pacific Regional Environment Programme (SPREP) was initiated. The South Pacific Commission (SPC), the South Pacific Bureau for Economic Co-operation (SPEC), ESCAP and UNEP provided the organizational framework for the development of the action plan through a joint co-ordinating group.

95. The participating countries are all islands and share a common environmental heritage and similar problems. Although they have limited environmental expertise and little scientific infrastructure they have a long tradition of regional co-operation in many other fields. The major environmental problems involve the management of limited natural resources, both terrestrial and marine, and the avoidance of undesirable environmental effects in new and existing development. The development of national capabilities for environmental assessment, planning and management are therefore important aspects of the draft action plan.

96. The action plan is being developed on the basis of country reports prepared by the participating countries and expert reviews on regionally important topics. Assistance was given in this preparatory work by a number of United Nations bodies. The draft action plan which stemmed from these activities is to be submitted to the Conference on Human Environment in early 1982 for adoption, together with a draft

South Pacific Declaration on Natural Resources and the Environment. Support or assistance from United Nations bodies or any other international organizations will be encouraged and will be channelled through SPC which acts as the secretary of the co-ordinating group of SPREP.

97. The geographical area of the action plan overlaps with that of IOC's WESTPAC.

#### East African Region

98. In 1980, the Governing Council of UNEP identified East Africa as an area to be considered by the Regional Seas Programme. After preliminary consultations with the Governments concerned, a UNEP-sponsored joint UNEP/United Nations/UNIDO/FAO/UNESCO/WHO/IMCO/IUCN exploratory mission visited the the eight States of the area in order to identify the environmental problems of the region and to assess each State's interest in participating in a future programme. Sectorial reviews on several topics will be prepared by the mission and UNEP will prepare an overview of the environmental problems of the region. Based on these documents a workshop on environmental problems of the region is to be convened in mid-1982. Thereafter, the first draft of an action plan will be prepared by UNEP for review by the Governments. In preparing the draft action plan, the results of the UNDP/ECA/UNESCO/IOC Workshop (Addis Ababa, mid-1981) on the present state and future development of science and technology in Africa, will also be taken into account.

99. It is planned that further preparatory studies and activities expected to be identified by the mid-1982 UNEP workshop will be undertaken in 1982 and 1983, leading to the formulation and adoption of an action plan in late 1983.

100. As a contribution to the assessment of the existing infrastructure of institutions and personnel in the region, UNESCO, ECA and UNEP are preparing a Directory of Marine Research Centres in Africa which should be published in 1982.

101. FAO and SIDA organized a regional workshop on aquatic pollution in relation to the protection of living resources in Nairobi and Mombasa, Kenya in 1978.

102. Through its efforts to establish a Co-operative Investigation of the Northern and Central Western Indian Ocean (CINCWIO) IOC has experience of the organizational problems which might be encountered in the region.

#### South-West Atlantic

103. An international workshop on marine pollution in the South-West Atlantic was held in late 1980 in Montevideo by IOC. The meeting recommended the harmonization of marine activities of the three countries of the area through a standing scientific committee.

104. Development of a regional seas action plan in this area is at an early stage. The UNEP Governing Council in 1980 tentatively delineated the area as including the Atlantic coastal waters and adjacent coasts of Argentina, Uruguay and Brazil and recommended that a regional action plan should be formulated.

105. The Governments concerned have been approached by UNEP with a view to establishing their interest in such a plan and to organizing an interagency survey mission. If the replies are in the affirmative, UNEP plans to conduct a survey of the environmental problems of the region with the co-operation of selected United Nations organizations. In the mean time, a Directory of Marine Research Centres in South America has been prepared by UNESCO.

### Southern Oceans

106. The 1959 Antarctic Treaty defines this region as the area to the south of 60° latitude, including all ice shelves. None of the United Nations organizations are directly involved in any co-operative investigations or legal agreements for the area related to pollution and environmental management, although there is a Convention on the Conservation of Antarctic Marine Living Resources.

107. SCOR and the Scientific Committee for Antarctic Research (SCAR), the advisory bodies of the International Council of Scientific Unions (ICSU) have a major ongoing project entitled BIOMASS in the area, but this at present appears to represent the only major activity. IOC does have a Programme Group for the Southern Oceans but this group has not so far been particularly active, although through the IOC involvement in the Convention on the Conservation of Antarctic Marine Living Resources it may become more so.

### Indian Ocean

108. From 1959-1965 the area was the subject of an intensive co-operative investigation, which was known as the International Indian Ocean Expedition (IIOE). The IIOE programme was initiated and organized by SCOR but several United Nations bodies became involved, e.g. UNDP, UNESCO and WMO, and the then newly-formed IOC performed co-ordinating functions for several projects. Twenty-three States participated in the programme and up to 39 vessels were engaged in studies in the area which stretched as far south as the Cape of Good Hope and Tasmania and included the PERSGA and the Kuwait Action Plan Regions. Much new and valuable scientific information was obtained and a far better understanding of the monsoons and the potential for fisheries development in the area was gained. The programme also generated a fundamental understanding of plate tectonics in the area.

109. The Indian Ocean is not at present the subject of any co-ordinated environmental or resource management programme, although there is a well established marine sciences programme in India and there are the UNEP East Asian Seas and East African initiatives on the eastern and western boundaries. IMCO, with the financial support of SIDA, convened a meeting of government legal and technical experts (Colombo, early 1982) to consider co-operation in combating marine pollution in cases of emergency.

110. In early 1981, a Meeting of Ministers was held in Colombo to initiate the South Asia Co-operative Environment Programme (SACEP). Afghanistan, Bangladesh, India, Iran, Maldives, Pakistan, and Sri Lanka were represented at the meeting. The aims of SACEP are: to promote and support the protection, management and enhancement of the environment, both natural and human, of the countries of South Asia; to make judicious use of the resources of the environment; and to make the fullest use of organizational arrangements and facilities for co-operation under SACEP. The protection and development of the marine and coastal environment is one of the subject areas identified by the co-operative programme.

## GLOBAL PROGRAMMES

### Global Assessment Programmes

111. The Long-Term Expanded Programme for Oceanic Exploration and Research (LEPOR) adopted in 1969 by the IOC Assembly as the framework for the scientific activities of IOC is divided into two components, one dealing with the scientific content and the other with practical problems of implementation, e.g. training, data management, instrument needs, etc. As its name indicates, the programme envisages an execution period of decades rather than years but, apart from developing a basic understanding of oceanic systems, has the declared goal of "enhanced utilization of the ocean and its resources for the benefit of mankind". Investigations undertaken during the International Decade of Ocean Exploration (IDOE) represented a major contribution to LEPOR, and the GIPME programme is designed to answer questions related to one of the six main practical topics, viz. marine pollution. Unfortunately, the participation of developing countries in GIPME has been limited by their lack of trained scientists, technicians and equipment. GIPME is, however, entering a new phase and through a sub-group on methods, standards and intercalibration (GEMSI) it is producing advice which may be useful in the early phases of practical investigations in regional studies. In addition, some of the intercalibrations organized by this group include provision for the training of scientists and technicians from developing countries.

112. The Pilot Project on Marine Pollution (Petroleum) Monitoring (MAPMOPP) was an experimental use of the Integrated Global Ocean Services System (IGOSS) in marine pollution monitoring. It lasted six years (1974-1980) and was designed as global in scope. MAPMOPP involved: the reporting of oil slicks and other floating pollutants, the measurement of floating particulate petroleum residues (tar balls), the measurement of tar on beaches and the measurement of dissolved and dispersed petroleum hydrocarbons in surface waters. It proved that a wide variety of expertise can be harnessed from many countries for a co-operative study and that with care the results can be utilized to draw up a global picture. Arguably the main finding was predictable, i.e. most oil is found along or down-wind of shipping routes, especially tanker routes, but the data are amenable to quantification and both local and global estimates of quantities present have been made. The methods recommended for MAPMOPP were adopted and used with limited success in MEDPOL and are likely to be used in some other regional programmes. With the termination of MAPMOPP the marine pollution monitoring in the IOC now falls under GIPME. The first operational component of the IOC Marine Pollution Monitoring Programme (MARPOLMON) will be a follow-up of MAPMOPP.

113. The 1972 Stockholm Conference on the Human Environment defined Earthwatch (the global environmental assessment programme) as one of the three basic components of the Action Plan for the Human Environment. The Governing Council of UNEP subsequently defined Earthwatch as a "dynamic process of integrated environmental assessment by which relevant environmental issues are identified and necessary data are gathered and evaluated to provide a basis of information and understanding for effective environmental management". The Global Environmental Monitoring System (GEMS) is one of the four components of Earthwatch and the "assessment of the state of ocean pollution and its impact on marine ecosystems" was adopted as GEMS' task by the Governing Council of UNEP. The implementation of GEMS is seen by UNEP as a joint

undertaking of the relevant United Nations bodies with UNEP serving as focal point for its co-ordination.

114. Following the recommendations of the 1972 Stockholm Conference, and in particular the numerous decisions of the UNEP Governing Council, the monitoring of the quality of the marine environment as a component of GEMS is now implemented through the UNEP Regional Seas Programme. In accordance with the nature of this programme the environmental assessment components of the regional action plans reflect the priorities perceived by the States participating in the individual action plans. Therefore, the monitoring of marine pollutants does not necessarily cover the same substances in every region. In order to provide a global framework for the regional monitoring of pollutants UNEP, in co-operation with relevant specialized United Nations bodies, is developing reference methods for marine pollution monitoring and research (including methods for the assessment of the input from land-based sources to marine pollution), which should yield data that are comparable on a global scale. Likewise, there is a strong emphasis on the intercalibration of sampling and analytical methods as the best means of achieving an adequate quality control of the reported data. The processing (evaluation, storage, dissemination) of data obtained through the regional action plans is primarily done on a regional level according to agreed procedures, thus ensuring their input into existing global data processing mechanisms and use in assessment of marine pollution problems on a global scale.

115. A leading role in the assessment of marine pollution problems involving the interest of the United Nations system is played by the IMCO/FAO/UNESCO/WMO/WHO/IAEA/United Nations/UNEP Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP). Established in 1969 it serves today:

- to provide advice relating to the scientific aspects of marine pollution to its sponsors, to IOC, to other organizations of the United Nations system and to States Members of the United Nations; and
- to prepare periodic reviews of the state of the marine environment as regards marine pollution and to identify problem areas requiring special attention.

During its existence a large number of reports have been prepared by GESAMP on a variety of topics ranging from hazard evaluation of harmful substances carried by ships, problems associated with coastal area development, oil in the marine environment, biological monitoring, criteria for selection of dumping sites, and transfer of pollutants from the atmosphere into the sea. The first global report on the Health of the Oceans involving the participation of all relevant United Nations bodies (United Nations, UNEP, FAO, UNESCO, WHO, WMO, IMCO and IAEA) was prepared under the auspices of GESAMP and completed in late 1981. The definition of marine pollution, included (sometimes with slight modifications) in a number of conventions negotiated in the framework of the Regional Seas Programme and in the draft convention negotiated under the auspices of the Third United Nations Conference on the Law of the Sea (UNCLOS), was developed by GESAMP.

116. GESAMP and the Regional Seas Programme are not the only mechanisms contributing to the overall goal of GEMS in assessing the quality of the marine environment. The reports of SCOR, ICES, ICSEM, IGOSS, IODE and of many other intergovernmental organizations should also be acknowledged as an invaluable input into GEMS.

#### Global management programmes, including global legal agreements

117. As governmental and public awareness of environmental considerations has grown, the number of international agreements aimed at the protection and rational

management of the environment has increased.

118. Since the early 1970s, Governments have been participating in negotiations to establish a new legal regime for the oceans under the auspices of UNCLOS. Although a final, legal agreement has not yet been adopted, the UNCLOS negotiations have a bearing on many planned and ongoing marine activities, since they envisage a global policy for ocean management. The latest draft includes agreement on a general obligation of all States to protect and preserve the marine environment as a whole. The draft also includes general provisions and articles on almost all issues of ocean environmental management. While admirable in their general import, those general principles will require a great deal of concentrated and detailed future work at the global, regional and national level for their implementation.

119. The UNCLOS negotiations have certainly benefited from the legal agreements that have previously been adopted for the purposes of protecting the marine environment. Early international agreements mostly focused on pollution from ships, and in particular, on oil pollution. One of the first international marine environment agreements was the 1954 Convention for the Prevention of Pollution of the Seas by Oil.

120. In 1958, the Convention on the High Seas was adopted. Two articles of the agreement were concerned with the control of pollution: one with discharge of oil from ships or pipelines or resulting from the exploitation and exploration of the seabed and its subsoil, the other with radioactive waste.

121. Two important agreements concerned with compensation for ship-generated pollution were adopted in 1969 (Brussels): the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, and the International Convention on Civil Liability for Oil Pollution Damage. The latter Convention was later supplemented by the 1971 Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage.

122. In the early 1970s two additional global conventions were adopted aimed at controlling pollution by dumping and ship-generated pollution. The 1972 Convention on the Prevention of Marine Pollution by Dumping of Waste and other Matter (London Dumping Convention (LDC)) was negotiated under the auspices of the secretariat preparing the 1972 Stockholm Conference on the Human Environment as part of the preparation of the action plan adopted by the Conference. It groups substances into categories according to the gravity of the risks they present to the marine environment as was done in the Oslo Convention.

123. The 1973 International Convention for the Prevention of Pollution from Ships (MARPOL Convention) extends the 1954 Convention for the Prevention of Pollution of the Seas by Oil to all types of vessel-source pollution, with the objective of completely eliminating pollution of the marine environment by oil and other harmful substances caused by intentional discharges from ships. The MARPOL Convention has recently been extended and updated by a protocol adopted at the IMCO Conference on Tanker Safety and Pollution Prevention (London, 1978).

124. In parallel with the development of international agreements concerned with controlling pollution, States have also adopted several global conventions aimed at the management of living resources. In 1946 the International Convention for the Regulation of Whaling was adopted. The objective of the Convention is to protect all species of whales from overfishing and to establish a system of international regulation for the whale fisheries in order to ensure proper conservation and development of whale stocks.

125. With a view to contributing towards more effective measures for the proper conservation of whales and other badly depleted marine mammals, UNEP, in co-operation with FAO, is currently preparing a plan of action for conservation of marine mammals. Problems concerning them are, to a great degree, international because of the highly migratory character of marine mammals and call for co-operative solutions. Some of the proposed actions are urgent, as the threats to the survival and well-being of these valuable resources are increasing daily. In addition to being subject to insufficiently controlled hunting, they are being menaced by fishermen in many parts of the world owing to their destruction of nets and the competition for fish, and they are adversely affected by pollution of several kinds, by loss of critical habitat for breeding, and by the deterioration of other areas of the environment.

126. The Convention on Fishing and Conservation of the Living Resources of the High Seas was adopted in 1958 with the objective of solving, through international co-operation, the problems involved in the conservation of living resources of the high seas taking into account that the development of modern techniques for exploitation had placed some of these resources in danger of being over-exploited.

127. The objective of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, which was adopted in 1973, is to protect endangered species from over-exploitation through international trade by establishing an international system of import/export permits. The Convention's provisions are applicable to animals and plants, dead or alive, listed in the appendices, and any recognizable parts or derivatives thereof.

128. The 1972 Convention on Wetlands of International Importance especially as Waterfowl Habitat aims at stemming the progressive encroachment on and loss of wetlands, recognizing their ecological functions as regulators of water regimes and as habitats and their economic, cultural, scientific and recreational value.

129. In addition to promoting the adoption of international legal agreements, international organizations have been actively promoting global programmes to assist States in managing their marine and coastal resources.

130. UNESCO's Man and the Biosphere Programme (MAB) was officially launched in 1970. It represents an integrated approach to research, training and action aimed at improving man's partnership with the environment. In each State a MAB National Committee defines and organizes research activities, and the committees work together on a series of problems of common concern so as to provide comparable results capable of generalization and synthesis. Since the major focus of MAB projects is concerned with man's interactions with particular ecosystems or geographic units, much of this co-operative work is being developed at the regional and sub-regional levels. Fourteen project areas are now being implemented of which several are of direct interest to the marine and coastal environment.

131. In 1980, the World Conservation Strategy was launched. It was prepared by IUCN in co-operation with the World Wildlife Fund and UNEP and with the collaboration of UNESCO and FAO. The Strategy is intended to stimulate a more active approach to the management of living resources and to provide policy guidance on how this can be carried out. The Strategy addresses itself to several aspects of the protection and development of the marine and coastal environment.

132. The World Conservation Strategy has made a direct contribution to the formulation of a draft World Charter for Nature by the IUCN and UNEP with the co-operation of the Government of Zaire. The draft World Charter for Nature was submitted to the United Nations General Assembly for its consideration at its thirty-sixth session. The General Assembly took note of the draft, invited Member



States to communicate their views on the draft to the Secretariat, and requested the Secretary-General to submit a revised draft to the thirty-seventh session of the Assembly. The adoption of the draft Charter was recommended by the Council of Ministers of the Organization of African Unity at its thirty-seventh ordinary session in June 1981.

133. Under the auspices of UNEP, Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States were formulated, and the United Nations General Assembly has requested all States to use the principles as guidelines and recommendations in the formulation of conventions regarding such natural resources.

134. In addition, a study of the legal aspects concerning the environment related to offshore mining and drilling carried out within the limits of national jurisdiction was carried out by UNEP. The study includes conclusions referring to general provisions, authorization system, environmental assessment, appropriate environmental monitoring system, consideration of transfrontier environmental impact when authorizing operations, and procedures for information and consultation, safety measures, and liability and compensation.

135. UNEP convened an ad hoc Meeting of Senior Government Officials in Environmental Law in Uruguay in late 1981. The objective of the meeting was to assist in the development of the section on environmental law of the System-Wide Medium-Term Environment Programme (SWMTEP) by identifying subject areas where increased global and regional co-ordination and co-operation may encourage and further enhance progress in the field of environmental law, in particular with regard to the interests of developing countries, and setting out a programme, including global, regional and national efforts towards this end. The meeting designated three priority subjects for which detailed work is to be undertaken, one of which is marine pollution from land-based sources.

CONTRIBUTIONS OF REGIONAL PROGRAMMES TO GLOBAL ACTIVITIES

Contributions to the understanding of global problems of marine pollution

136. The very early concept of marine scientific investigations was that interested individuals went into the field and produced results which could then be regarded as a contribution to the common pool of knowledge. Experience and the growing need for more and more complex measurements have shown that only high quality, preferably collective, investigations are really useful. Collective here not necessarily meaning several groups working together at one time but meaning that they compare their methods and data to ensure common standards of quality. Regionally co-ordinated investigations provide an ideal forum for this and usually progress through a learning process to a gradual improvement in data produced by all concerned.

137. The regional studies on physical transport which may influence the distribution of pollutants by water mass movements are an important element in understanding the global transport of pollutants. The IOC-co-ordinated studies of the Kuroshio Current (CSK) and the phenomenon known as El Nino, the SCOR-inspired IIOE, the efforts by ICES in the Baltic and in the North Sea, the joint WMO/IOC programme on IGOSS and the MEDPOL project on coastal transport processes, are typical examples of such studies.

138. Regionally comparable pollution data so far only exist on any scale in three of the areas described above. Within the North Atlantic area, including the North Sea, ICES has, through a series of 17 intercalibration exercises, produced a substantial body of information. This covers metals, organochlorine pesticide and PCB residues in fish and some data on petroleum hydrocarbons and metals in sea-water, although in all cases, especially the latter, further development is necessary to ensure really high quality compatibility. The general pattern of pollutant distribution has been well established in the North Atlantic area; equally, the fact that most of the area is relatively clean is now apparent, as are the approximate boundaries of the areas which are most heavily contaminated.

139. Through the activities of the ICES/SCOR and Helsinki Commission a reasonable picture has also emerged of metal, organochlorine pesticides and PCB residues in organisms of the Baltic Sea. The activities have also indicated the levels and trends of nutrients and primary production as well as the oil content in the Baltic Sea area.

140. The Mediterranean Action Plan, through the pilot phase of MEDPOL (1975-1981), in which FAO, WHO, IOC and WMO played a significant role, has also produced data on metals, organochlorine pesticide and PCB residues in fish and shellfish, data on petroleum residues in and on sea-water, and on the microbiological quality of coastal recreational waters of the Mediterranean area. Data were collected according to an agreed plan and analysed according to agreed methods by a large number of laboratories participating in several times repeated mandatory intercalibration of their methods. Similarly to the experience of ICES and the Helsinki Commission, in this initial phase of MEDPOL, despite all the efforts at improving the quality of analytical and sampling procedures, complete comparability of results has not yet been achieved. However, the quality of the measurements of mercury levels in fish

attained so far is certainly sufficient to justify the statement that those levels are generally higher in Mediterranean fish than in similar species caught in the Atlantic. This appears to be a natural phenomenon not related to pollution, although particularly high values due to human inputs can, as expected, be observed in some coastal areas, primarily in the vicinity of large human settlements and major industrial complexes. These observations were a major consideration in recommending a relaxation of the national standards applied in most Mediterranean States. On the basis of this early experience steps are being taken towards the adoption of common reference methods and further inter-comparison for those pollutants which are of main concern.

141. In most of the other regions the first samples have yet to be collected under the Regional Seas Programme, although, in some cases, preliminary surveys for petroleum residues and for land-based and maritime sources of pollutants have been conducted.

142. The need for careful intercalibration of sampling and analytical methods is fully recognized in all regional programmes and the matter was the subject of detailed discussion at the Third Inter-Agency Meeting on Regional Seas as recently as September 1981. Organization of a successful intercalibration requires both an experienced laboratory and adequate funding. It also requires that all participants carry out the operation according to instructions given and that they be prepared to take part in a series of exercises, instituting changes at each stage if their performance indicates this necessity. Subsequently there will remain a continuing need for careful in-house quality control at each laboratory and occasional refresher intercalibration exercises with other laboratories. Within ICES it has so far proved possible to rely on the history of co-operative work to produce a suitable volunteer to organize and carry out the intercalibration. Elsewhere, external funding of a laboratory may prove to be the rule rather than the exception and it should be noted that it was on these terms that the ILMR in Monaco and the Duke University in the United States performed such service in the pilot phase of MEDPOL.

143. Bearing in mind the practical difficulties, the only feasible way of conducting intercalibration is probably on a regional basis, linking the regional intercalibrations through a few laboratories participating in several regional intercalibrations and using some laboratories (e.g. ILMR of Monaco) as global intercalibration centres for selected pollutants.

144. Intercalibration is also necessary for biological data, for example in species identification. The various natural biological specimen reference collections being established, e.g. with UNESCO assistance, are designed to help in this respect.

145. The assessment of the sources, levels and effects of marine pollutants is only one component of the UNEP Regional Seas Programme, but is considered of great importance in UNEP's general strategy as a major input into GEMS.

146. An examination of the information currently available from various regional seas programmes, within and outside the United Nations system, indicates that this is at present a source with much potential but scarce firm data, with the exception of the Baltic, the North Sea and the Mediterranean where varying amounts of reliable series of data are available. It is early to expect much solid information as these programmes are in their early formative stage, although the basic arrangements for handling of the data which should eventually be produced have been made. Data formats are being adopted and data exchange mechanisms are being identified, which will make possible the inter-regional comparability and use of data. Existing data exchange and depository mechanisms are planned to be used whenever possible, notably the IOC Working Committee on International Oceanographic Data Exchange (IODE), the

IOC Marine Environmental Data Information (MEDI) referral system, and the FAO/IOC/UN Aquatic Sciences and Fisheries Information System (ASFIS). UNEP is providing substantive financial assistance towards the functioning of these mechanisms.

Contributions to the control of global marine pollution and to global management policies

147. Regional programmes and legal agreements that they foster may provide an important middle step between global principles and national implementation of those principles. Regional co-operation, which often provides the most suitable framework for an exchange of information and experiences, assistance and training, and an established political perception of the benefits to be derived from concerted regional action, seems to permit more readily the translation of principles and objectives into concrete actions and commitments. Such a mechanism can usefully be called into play not only in the process of specifying the principles and objectives of the new ocean regime being developed by UNCLOS, but may also make an important contribution to the application of global economic and development policies as embodied in global resolutions on such issues as Technical Co-operation among Developing Countries and Science and Technology for Development.

148. Experience has demonstrated that regional legal agreements and co-operative activities may usefully strengthen, and sometimes serve to elaborate, global agreements and principles adopted by the international community. It is clear that if a State is party to both a regional and global agreement, the more stringent requirements would need to be applied.

149. The problem of pollution from normal operation of ships is clearly best regulated on a global basis, in view of the international nature of maritime transport. Therefore, States participating in regional programmes are usually encouraged to become contracting parties to global agreements in order to safeguard their region from this particular source of pollution. In addition, for certain regions the parties have seen fit to apply provisions prescribed at the global level through a regional agreement in order to ensure their enforcement at the regional level pending the entry into force of the global convention. This has been done under the Helsinki Convention where the coastal States of the Baltic Sea are already applying the special area provisions of the MARPOL Convention, which has not yet entered into force at a global level.

150. An issue directly related to pollution from ships is the co-operation of States in combating pollution in cases of emergency. An obvious example of an emergency is a tanker accident which may result in a serious threat of damage to the marine environment from oil pollution. An adequate response to such emergencies may best be ensured through advanced planning and mutual co-operation and assistance, and such co-operation may most appropriately be arranged on the regional level. Consequently, co-operative regional arrangements have been developed for responding to emergencies in the North Sea, Baltic, Mediterranean, Kuwait Action Plan Region, South-East Pacific, and West and Central Africa, thus contributing to the control of marine pollution on a global level.

151. The London Dumping Convention specifically calls for its parties "with common interests to protect in the marine environment in a given geographical area (to) endeavour, taking into account characteristic regional features, to enter into regional agreements ..... for the prevention of pollution, especially by dumping." The Helsinki Convention prohibits dumping, with the exclusion of dredge spoils and emergency cases, in the Baltic Sea. Regional agreements to control the dumping of waste and other matter are also in force for the North-East Atlantic and the Mediterranean. All these regional agreements call for more stringent technical

measures than those of the global agreement on account of the special geographic and biological characteristics of the region. In this way the Oslo and Helsinki Conventions and the dumping protocol of the Barcelona Convention strengthen the London Dumping Convention by ensuring its application by parties to the regional agreement, some of which have not yet assumed responsibility under the global convention.

152. It is feasible to imagine, although at present there is no concrete example, a regional agreement which, because of the characteristics of a given region, was less stringent in its technical regulations than the London Dumping Convention. Such an agreement could also contribute to the global control of dumping in that it would encourage Governments that might not view the technical provisions of the global Convention as applicable to their present economic situation to establish a national control system that would administratively reflect the mechanism adopted for the Convention. In this way States could take action to control pollution by dumping of wastes that might be a threat to them while not being obliged to accept the more onerous commitments that had been agreed under the Convention.

153. The management of fisheries is an activity that has both global and regional aspects. Although the recognition of 200-mile economic zones is extending national control of the world's coastal and island States over many of the fish resources, fishing remains a very international activity. While FAO's fisheries programme is global in scope, it is implemented through FAO's regional fisheries commissions established to deal with the Indian Ocean (IOFC), Indo-Pacific (IPFC), Mediterranean (GFCM), South-West Pacific (CARPAS), Eastern Central Atlantic (CECAF) and Western Central Atlantic (WECAFC). This programme is supported by a number of regional agreements which strengthen the management and exploitation of regional marine and inland resources, encourage training and promote joint investigation and research needed to assess and effectively manage stocks.

154. Some non-global agreements are based on living resources and not on geographic or political activities. Examples of these are the Inter-American Tropical Tuna Commission and the North Pacific Fur Seal Commission.

155. Regional agreements have also been directed at the elaboration of controls and programmes for management of ecosystems, species, and habitats. Thus, the objectives of the World Conservation Strategy, the Convention on Wetlands and the draft World Charter of Nature have been elaborated and further advanced by such agreements as the African Convention on the Conservation of Nature and Natural Resources, the Convention on the Conservation of European Wildlife and Natural Habitats, and the draft Mediterranean protocol on specially protected areas and by programmes that are being developed to assist States to implement those agreements.

156. UNESCO's Major Inter-regional Project for Research and Training on Integrated Management of Coastal Systems (COMAR) is inter-regional in scope. It is one of UNESCO's 'major projects' and provides the frame for some of UNESCO's involvement in programmes related to marine and coastal environment. Much attention is devoted to the understanding and management of systems such as mangroves, coastal lagoons, estuaries, coral reefs, etc. separately and as interdependent units. Several symposia and workshops have already been held in the regions and more are planned.

157. On the initiative of UNEP, six United Nations bodies (UN/DIESA, UNIDO, UNCHS, FAO, UNESCO, IMCO) have co-operated in the development of a model workshop on assessment of the environmental impact of coastal development projects. The model workshop package is based on actual problems that are typically encountered by developing States and could be used in teaching the basic approaches of environmental management which must invariably resolve several competing interests. The package

includes an instruction manual, a student manual, the case studies and a mini-library for reference and background reading. A series of regional workshops is planned to be convened, each adopted to the specific need of the regions where they will be held.

CO-ORDINATION BETWEEN ORGANIZATIONS INVOLVED IN THE PROTECTION AND DEVELOPMENT OF  
THE COASTAL AND MARINE ENVIRONMENT

158. From the information presented in paragraphs 16-110 it will be apparent that in most regions in which complex regional programmes exist, more than one organization is involved. Consultations between those concerned is therefore essential and, where a clearly defined central organization exists, it will have the duty to ensure that the various activities and their protagonists are co-ordinated and that, for the sake of economy and efficiency, there is no unnecessary duplication of effort. The following paragraphs are an analysis of the co-ordination mechanisms between organizations involved in various regional programmes, with only marginal reference to the co-ordination mechanisms used between these organizations and Governments or their institutions participating in regional programmes.

159. UNEP, in the framework of its overall mandate to serve as a focal point for environmental action within the United Nations system and according to the relevant decisions of its Governing Council, developed the Regional Seas Programme covering large geographic areas and involving 120 States, 14 bodies of the United Nations system, 12 global or regional intergovernmental and non-governmental organizations and numerous national institutions.

160. The Programme, though developed and implemented on a regional level, may be considered as global in scope because of the high degree of co-ordination exercised by UNEP through its Regional Seas Programme Activity Centre (RS/PAC). This co-ordination was achieved both within each of the ten regions of the Programme and between the various regions. Although the regional action plans differ in substance, reflecting the priorities of the region as defined by their Governments, the strategy in their development is common in all of them. One advantage of having a central co-ordination of the Programme is that the experiences gained in the development or conduct of one regional action plan can be utilized to the benefit of action plans in other regions both by avoiding similar mistakes and by passing on proven procedures. Therefore, there seems to be a continuing role for the RS/PAC even if regionally based units of UNEP or other organizations take over the day-to-day running of the action plans originally developed by RS/PAC as part of UNEP's Regional Seas Programme.

161. The general lines of co-operation between UNEP and the organizations of the United Nations system on environmental matters are reviewed by periodical meetings of the Designated Officials for Environmental Matters (DOEM), are pursued further through bilateral or thematic joint programming and are incorporated in SWMTEP, currently being developed for the period 1984-1989.

162. The specific co-ordination in the context of UNEP Regional Seas Programme is achieved through (a) inter-agency meetings on regional seas, (b) interagency consultations, and (c) bilateral contacts on specific projects.

163. Three Interagency Meetings on Regional Seas (1976, 1978, 1981) have been organized by UNEP to review the whole Regional Seas Programme, to discuss matters relevant to the implementation of regional activities and their co-ordination, and to refine the "Guidelines and Principles for the preparation and implementation of

comprehensive action plans for the protection and development of marine and coastal areas of regional seas", drawn up at the first meeting.

164. The meetings are attended by United Nations bodies co-operating with UNEP in the Regional Seas Programme. The 1981 meeting was also attended by a number of organizations not belonging to the United Nations system but involved in the Programme or acting as secretariat for regional programmes/conventions which are not part of the Programme (e.g. the Paris and Oslo Commissions, the Helsinki Commission, ICES, CPPS, etc.).

165. Interagency consultations devoted to a specific region are organized by UNEP on an ad hoc basis whenever a detailed programming of co-ordination, involving a larger number of organizations (members of the United Nations system and other intergovernmental and regional organizations), is felt necessary. Such consultations/meetings are usually convened for a specific regional action plan, to review its progress and to agree on the level of involvement of various organizations in its implementation.

166. Bilateral contacts between UNEP and the organizations co-operating in specific projects related to the Regional Seas Programme are the most frequently used mechanism for co-ordination. These contacts range from informal telephone calls, exchange of correspondence, exchange of memoranda of understanding (e.g. with IAEA), to the meeting of UNEP's Executive Director with the Executive Head of another organization.

167. In some regions, at the adoption of the action plan and the legal agreement, the Governments may designate, instead of UNEP, an existing regional organization as the secretariat of the convention and the action plan (e.g. CPPS in the South-East Pacific) or create a new regional organization to assume such a function (e.g. ROPME in the Kuwait Action Plan Region). However, in these regions UNEP is expected to remain associated with the action plans and in particular to co-ordinate the input of the United Nations system into their implementation, thus ensuring the continued presence of the action plans in the general framework of the Regional Seas Programme.

168. A yet unexplored possibility for co-operation, which may prove beneficial to the Regional Seas Programme, is the use of IOC regional bodies, such as WESTPAC and IOCARIBE, in the same way as ICES relates to the Oslo and Paris Commissions. The advice being generated through GEMSI may also be useful in the selection and harmonization of methods for regional baseline studies and pollution monitoring.

169. Although not co-ordinated with the Regional Seas Programme, UNESCO's efforts to enhance the national and regional marine science capabilities are an important factor contributing to the success of that Programme.

170. A problem hampering a more efficient co-operation of the United Nations organizations in the development of the Regional Seas Programme is its absence from the regular programme and budget of most organizations save UNEP's. It is, to a certain degree, the reflection of policies followed by the secretariats of these organizations but largely it is due to the lack of co-ordination on the national level; representatives of the same States which in the Governing Council of UNEP call for involvement of other organizations in the Programme, do not have the same opinion when attending the governing bodies of these organizations.

171. A very specific and important growing role is played by the ILMR of IAEA (the only research centre of this type in the whole United Nations system) as an intercalibration centre for analysis of the most important pollutants monitored or planned to be monitored through the Regional Seas Programme. The potential role of



ILMR in the intra-regional intercalibration is a key factor in linking the regional assessment into a global exercise.

172. FAO is one of the more important organizations co-operating with UNEP in the Regional Seas Programme. However, for reasons dictated by efficiency and past practices, the co-ordination of regional programmes related to management of fisheries, a subject in principle not covered by UNEP's Regional Seas Programme, is achieved through the Committee on Fisheries (COFI) of FAO which is open to all FAO Member States which express their intention to participate in it. Through regular meetings of COFI the general problems of fisheries management are periodically considered and the status of the world fishery resources and their exploitation reviewed.

173. The representatives of the United Nations, FAO, UNESCO, WMO and IMCO secretariats meet roughly once a year as the Inter-Secretariat Committee on Scientific Programmes Relating to Oceanography (ICSPRO). The committee provides a forum to review and co-ordinate activities of common or overlapping interests. IOC acts as the secretariat of ICSPRO and, in terms of the ICSPRO agreement, is a joint specialized mechanism of the five organizations involved for discharging certain of their responsibilities in the field of marine science. ICSPRO may be seen as a mechanism for broadening the base of IOC with involvement and support of the ICSPRO agencies.

174. The regional programmes and bodies of IOC are co-ordinated through the biennial meetings of the IOC Assembly and through more frequent meetings of the IOC Executive Council.

175. A further example of co-ordinated activity of the United Nations organizations is the joint sponsorship of GESAMP by the United Nations, UNEP, FAO, UNESCO, WHO, WMO, IMCO and IAEA. This group of about 20 experts, appointed in their personal capacity for a limited term, meets annually and advises either directly or through sub-groups (GESAMP Working Groups) with wider membership, the sponsoring organizations on topics related to the scientific aspects of marine pollution, many of them of great importance to global and regional programmes and legal agreements.

176. Apart from examples mentioned in the context of the Regional Seas Programme, co-operation between organizations which are, and which are not, part of the United Nations system, is quite frequent. The links between ICES and IOC which serve to avoid duplication of effort and competition in the North Atlantic region is mentioned here only as an example of a co-ordinated approach to regional problems.

177. In the preceding paragraphs, emphasis is placed on links between, and with, the United Nations bodies. However, it should be remembered that organizations which are not members of the United Nations have also a good record of co-operation. The collaboration of ICES with the Oslo and Paris Commissions and with the Helsinki Commission (for details see paragraphs 16-39) should be emphasized as a good example of efficient co-operation between intergovernmental organizations which are not parts of the United Nations system. The decision of the parties to the Bonn Agreement and the Oslo and Paris Conventions to establish a joint secretariat is another example of such co-operation. Although the agreements were adopted independently, the parties recognized the need for a comprehensive approach to pollution control and environmental management which a joint secretariat could help promote.

178. With the increasing number and diversification of the regional programmes, and as the conventions and protocols associated with these programmes come into force, the number of organizations involved in their co-ordination is mounting. Consequently, the need for a carefully exercised and flexible intra-regional

co-operation is growing in order to avoid conflicts in the development of regional programmes and to ensure that the global goals defined by the 1972 Stockholm Conference for the protection and development of the marine environment are fulfilled. UNEP's attempt to provide a general framework for the co-ordination of a number of regional programmes is a sound nucleus which may be broadened to encompass other programmes yet unrelated to this framework.

## CONCLUSIONS

179. International regional programmes related to the marine environment are not new. The first such programme (ICES) has operated since 1902. While in most cases early regional activities began as research programmes, they frequently became a foundation for the management of marine living resources and, approaching the 1970s, for the control of marine pollution.

180. The 1972 United Nations Conference on the Human Environment (Stockholm) outlined a "masterplan" linking environmental assessment, environmental management and supporting measures as basic and inseparable elements of environmental action plans and indicated the advantages of a regional approach in contributing to the solution of global problems. The development of UNEP's Regional Seas Programme since the action plan for the Mediterranean was adopted in 1975 demonstrated that the basic concepts formulated at Stockholm can effectively foster regional co-operation among interested States and may benefit from the support of the United Nations system as a whole.

181. The viability of any long-term regional programme requires the political and financial commitment of Governments concerned. Within the UNEP Regional Seas Programmes this commitment is usually formalized through binding regional legal agreements, and through an agreed set of activities periodically revised by the Governments involved. These activities are expected to be supported by financial resources put at the programme's disposal primarily by the Governments of the region.

182. Although the degree of co-ordination and co-operation generally achieved within the regional programmes reviewed in this document appears to be satisfactory it would be surprising if some difficulties did not arise from time to time. This applies especially to a complex venture such as the UNEP Regional Seas Programme, where, in many cases, an entirely new type of co-operation is involved and new activities are required in geographical areas with often limited facilities and only weak infrastructures. For the most part the Governments, their national institutions, international, intergovernmental and regional organizations involved are doing their best to work together. Their resources are, however, limited, and it is essential that they are utilized to the best advantage.

183. UNEP, as the major financial contributor to the initial phases of the action plans developed in the framework of the Regional Seas Programme and as their overall co-ordinator, has a difficult task if it is to see its early successes in the Mediterranean matched elsewhere with action and positive results.

184. In order to achieve its objective a regional programme needs both the technical and financial assistance of a number of United Nations organizations. However, these organizations have their own activities to pursue and, in most instances, they have not found it possible to reflect their involvement in the UNEP-sponsored Regional Seas Programme in their regular programmes and budgets. Some organizations have worked for many years to establish regional programmes under their own mandates. Where these coincide with UNEP regions, they may usefully contribute either to basic knowledge or to the overall regional seas concept. Unfortunately, not all such programme regions coincide with the UNEP regional seas areas and in such cases there may be a natural reluctance to abandon them in favour of a new scheme.

185. It is common for different United Nations or other intergovernmental organizations to have different national contact points within a country, resulting in disparate advice being given to these organizations through their governing bodies. This calls for co-ordination at a national level as well as between organizations, if duplication of effort is to be avoided. Co-ordination at national level is also important if the organizations are to be prevailed upon to co-operate to the maximum extent by the conduct of complementary rather than rival programmes.

186. An essential feature of the UNEP Regional Seas Programmes is that each regional action plan area should progressively become financially self-supporting, predominantly through regional trust funds. This is important as the funds of UNEP available for this Programme are not planned to grow with the expansion of the regional action plans. It is also more likely to ensure genuine commitments to the regional programme if a State can actually see a positive return (or lack of it) for money it has contributed. However, the use of trust funds is not without its problems, especially when work is contracted out to a third party which then becomes dependent on the money being paid and experiences difficulties when delays in payment occur. This is happening in some regions and may make the specialized agencies of the United Nations and other organizations less eager to participate in work supported by such frequently unpredictable financial resources. This, and the relatively large number of meetings required for the co-ordination of regional action plans, pose a serious problem for the effective involvement of the international organizations in the implementation of the action plans.

187. The UNEP Regional Seas Programme is a rational approach to the management of coastal and marine resources and the control of marine pollution at its source. This Programme should be developed further in areas which share enclosed and semi-enclosed waters or coastal waters and common problems, as a basis of management of development and protection of such areas from pollution.

188. As a matter of policy, UNEP has made no attempt to develop regional activities in areas with similar active ongoing programmes, such as those that exist in the North Atlantic or Baltic Sea areas. The experience gained in these programmes is, however, highly relevant to the UNEP Regional Seas Programme. Although some use has already been made of the existing links between these organizations and UNEP, further exchanges of ideas and experience with bodies such as ICES, the Oslo and Paris Commissions and the Helsinki Commission, would be of benefit to the Regional Seas Programme, since the programmes are, in many respects, analogous to the UNEP Regional Seas Programme.

189. There are many reasons for holding meetings, not least the simple gathering together of the people from different countries who will have to work together, and the achievements of the RS/PAC to date is impressive. However, one must question whether all meetings held by all organizations are really necessary or fruitful. If the available funds and staff are to continue to function effectively for all the regions in which UNEP and the other United Nations organizations are concerned, and if the investment of scarce human and financial resources is to produce beneficial returns, it will be necessary for the secretariats of these organizations and the national administrations to exercise firm restraint in the number of meetings called.

190. The first-time attendance, at least for part of the meeting, of representatives from intergovernmental organizations and regulatory commissions that are not part of the United Nations system, which was a feature of the Third Inter-Agency Meeting on Regional Seas (1981), was an important step towards consultations between secretariats involved in the co-ordination of regional programmes. Whilst the presence of representatives of such organizations will not obviate the need for existing associations and co-ordinations to continue, it did provide a useful

mechanism for much broader exchanges of views and experiences than had hitherto been possible. A continuation of such opportunities would serve to strengthen co-operative relationships between organizations responsible for the co-ordination of regional marine programmes and for the regional conventions with those responsible for global marine programmes and conventions.

191. In many regions the level of expertise and facilities available for the actual implementation and conduct of the agreed action plans is limited. In addition to the technical assistance provided through the UNEP-sponsored Regional Seas Programme, several organizations are attempting to improve the situation outside this framework by direct assistance with the establishment or expansion of marine science institutions, by providing equipment and training in various fields related to the assessment of the environmental problem of the region and to the management of the region's resources. The UNESCO Marine Sciences Programme is, for instance, aimed at the establishment of national centres of expertise, a basic essential of any regionally co-ordinated programme. The continuation of such activities is essential if the regional seas action plans are to be fulfilled.

192. A clear deficiency in all regional programmes, even those involving developed countries exclusively, is the scarcity of information available on inputs of pollutants to the oceans from all sources except dumping and operational or accidental discharges of oil from ships, i.e. direct discharges, rivers, the atmosphere and operational and accidental discharges of substances other than oil from ships. Comprehensive analyses of the major environmental problems are still missing in most regions. An improvement in the quality of this type of information is essential if management policies are to be developed and executed in a rational and cost-effective manner. Further support for national, regional and global studies being undertaken or planned by other organizations, e.g., UNESCO/IOC, WMO and IMCO would be useful as a contribution to the Earthwatch programme, adopted by the 1972 Stockholm Conference on the Human Environment.

193. Following the example set by the Helsinki Commission for the Baltic Area and the report prepared by GESAMP on the Health of the Oceans, periodic reports on the state of the marine environment should be prepared at both regional and global levels. One objective of the global reviews should be to ensure that the regional programmes do not become insular and exclusive and that their products remain compatible and make a proper contribution to overall global management strategies and understanding of the marine environment. The preparation of reports covering the Mediterranean and the North and Irish Seas by UNEP and ICES respectively, and that on the Baltic Sea by the Helsinki Commission, is noted as a contribution towards that goal. In conducting overall reviews of trends in the state of marine pollution, the existing mechanisms (e.g. GESAMP, GIPME, SCOR) should be used as far as possible in order to enable the regional seas programme to contribute effectively to the objectives of GEMS.

194. Although enough is now known to permit the statement that problems are only likely to be serious in local coastal regions, apart from the North Sea, North Atlantic, Baltic and to some extent the Mediterranean there are, so far, very few reliable data on marine pollution levels. Equally, the exercise of national control measures and resource management is only now becoming possible in most regions, and it must be recognized that control measures negotiated at international level, with the exception of the IMCO oil pollution prevention conventions, are only slowly becoming effective. There is a clear need to promote both activities in each region and to review the results regularly within each region. Where controls have been applied, e.g. in the Baltic and North Seas, it is apparent that these have had, or are beginning to have, the desired effects.

195. There is a less urgent need to review the problems on a global basis. Where common problems arise in the process of individual regional reviews, they may be resolved by joint discussions or advice prepared through existing channels (e.g. GESAMP). For individual problems, the mechanisms already available for provision of advice and assistance through UNEP and the United Nations specialized agencies or regional organizations, should suffice.

196. It must be recognized that many management issues do not lend themselves to global co-ordination as readily as assessment activities, since they must take into account the social, economic and cultural priorities of the States concerned. However, States and regional groups do stand to benefit from a sharing of information, methodology and experiences, in particular at the present time when resources for research and pilot projects are limited. Frequently, management problems are not shared but are commonly experienced both within a region and between regions. For example, the protection and development of coral reefs is a common problem of many States of the Caribbean Region: it is also a problem being examined in East Africa, the East Asian Seas, the Red Sea and Gulf of Aden, and the South-West Pacific. Many other common problems may be listed, such as contingency planning for co-operation in pollution emergencies, ecology of small islands, endangered habitats and species, environmental impact assessment, energy and tourism. International organizations have an important role to play in informing States of relevant management activities in other regions, in providing a mechanism through which methodology, research, and experiences may be shared, and in identifying gaps in knowledge and research and promoting activities required to fill such gaps.

197. In addition, there are areas in which national and regional activities, which because they are conducted on a large scale and often extend beyond national or regional boundaries, have an impact on the global environment, and as such should be considered within the framework of a global strategy. Examples of such activities are shipping, fisheries, and discharge of certain substances which may have a widespread impact.

Table 1 : Participants in UNEP Regional Seas Programme and related regional conventions

1. MEDITERRANEAN REGION			2. KUWAIT ACTION PLAN REGION			3. CARIBBEAN REGION		
Participants	Regional Convention signed	Regional Convention ratified	Participants	Regional Convention signed	Regional Convention ratified	Participants	Regional Convention signed	Regional Convention ratified
Albania	-	-	Bahrain	yes	yes	Bahamas		
Algeria	yes	yes	Iran	yes	yes	Barbados		
Cyprus	yes	yes	Iraq	yes	yes	Belize		
Egypt	yes	yes	Kuwait	yes	yes	Colombia		
France	yes	yes	Oman	yes	yes	Costa Rica		
Greece	yes	yes	Qatar	yes	yes	Cuba		
Israel	yes	yes	Saudi Arabia	yes	yes	Dominica		
Italy	yes	yes	United Arab Emirates	yes	yes	Dominican Republic		Regional
Lebanon	yes	yes				France		convention
Libyan Arab Jamahiriya	yes	yes				Grenada		
Malta	yes	yes				Guatemala		
Monaco	yes	yes				Guyana		in
Morocco	yes	yes				Haiti		
Spain	yes	yes				Honduras		preparation
Syrian Arab Republic	yes	yes				Jamaica		
Tunisia	yes	yes				Mexico		
Turkey	yes	yes				Netherlands		
Yugoslavia	yes	yes				Netherland Antilles		
EEC	yes	yes				Nicaragua		
						Panama		
						St. Lucia		
						St. Vincent and the Grenadines		
						Suriname		
						Trinidad and Tobago		
						United Kingdom		
						United States of America		
						Venezuela		

4. WEST AND CENTRAL AFRICAN REGION

Participants	Regional Convention signed	Regional Convention ratified	Participants
Angola	-	-	Comoros
Benin	yes	-	Kenya
Cape Verde	-	-	Madagascar
Congo	yes	-	Mauritius
Equatorial Guinea	-	-	Mozambique
Gabon	yes	-	Seychelles
Gambia	yes	-	Somalia
Ghana	yes	-	Tanzania
Guinea	yes	-	
Guinea-Bissau	-	-	6. EAST ASIAN REGION
Ivory Coast	yes	-	Participants
Liberia	yes	-	Indonesia
Mauritania	yes	-	Malaysia
Namibia	-	-	Philippines
Nigeria	yes	-	Singapore
Sao Tome and Principe	-	-	Thailand
Senegal	yes	-	
Sierra Leone	-	-	Indonesia
Togo	yes	-	Malaysia
United Rep. of Cameroon	-	-	Philippines
Zaire	-	-	Singapore

7. RED SEA AND GULF OF ADEN REGION

Participants	Regional Convention signed	Regional Convention ratified
Democratic Yemen	yes	-
Djibouti	-	-
Jordan	yes	-
Palestine (PLO)	yes	-
Saudi Arabia	yes	-
Somalia	yes	-
Sudan	yes	-
Yemen	yes	-

5. EAST AFRICAN REGION

Participants	Action plan
Comoros	Action plan
Kenya	
Madagascar	
Mauritius	preparation
Mozambique	
Seychelles	initiated
Somalia	
Tanzania	

6. EAST ASIAN REGION

Participants	Action plan
Indonesia	No regional convention
Malaysia	included in
Philippines	action plan
Singapore	
Thailand	

8. SOUTH-WEST PACIFIC REGION

Participants	Action plan
American Samoa	
Cook Islands	
Fiji	
French Polynesia	
Guam	
Kiribati	No regional convention
Nauru	
New Caledonia	convention
Niue	
Norfolk Island	included in
Papua New Guinea	
Pitcairn Island	draft action
Solomon Islands	
Tokelau	plan
Tonga	
Trust Territory of the Pacific Islands:	
Northern Marian Islands	
Marshall Islands	
Federated States of Micronesia	
Palau	
Tuvalu	
Vanuatu	
Wallis and Futuna	
Western Samoa	



Table 1 (continued)

9. SOUTH-EAST PACIFIC REGION		10. SOUTH-WEST ATLANTIC REGION	
Participants	Regional Convention adopted	Participants	Action plan preparation initiated
Colombia	yes	Argentina	
Chile	yes	Brazil	
Ecuador	yes	Uruguay	
Panama	yes		
Peru	yes		

Table 2 : Participants in selected regional programmes

HELSINKI COMMISSION

Denmark  
Finland  
German Democratic Republic  
Germany, Federal Republic of  
Poland  
Sweden  
Union of Soviet Socialist Republics

ICES

Belgium  
Canada  
Denmark  
Finland  
France  
German Democratic Republic  
Germany, Federal Republic of  
Greenland  
Iceland  
Ireland  
The Netherlands  
Norway  
Poland  
Portugal  
Spain  
Sweden  
United Kingdom  
United States of America  
Union of Soviet Socialist Republics

IOCARIBE

Belize  
Brazil  
Colombia  
Costa Rica  
Cuba  
Dominican Republic  
France (Guadeloupe, Martinique,  
French Guyana)  
Guatamala  
Guyana  
Haiti  
Jamaica  
The Netherlands (Neth. Antilles)  
Nicaragua  
Panama  
Suriname  
Trinidad and Tobago  
Union of Soviet Socialist Republics  
UK (British Virgin Islands, Cayman  
Islands, Turks and Caicos Islands)  
USA (Puerto Rico, US Virgin Islands)  
Venezuela

OSLO AND PARIS COMMISSIONS

Belgium  
Denmark  
European Economic Community  
France  
Germany, Federal Republic of  
Ireland  
The Netherlands  
Norway  
Portugal  
Sweden.  
United Kingdom

WESTPAC

Australia  
China  
Fiji  
Hong Kong (UK)  
Indonesia  
Japan  
Korea  
Malaysia  
New Caledonia (France)  
New Zealand  
Philippines  
Singapore  
Thailand  
Tonga  
Union of Soviet Socialist Republics  
United States of America  
Vietnam  
Western Samoa

Table 3 : Regional marine pollution monitoring programmes

NORTH SEA - NORTH ATLANTIC (OSLO and PARIS COMMISSIONS and ICES): 1967 - 1971	
NO. OF PARTICIPATING NATIONAL CENTRES	Approximately 40 from 14 States.
POLLUTANTS MONITORED	Petroleum hydrocarbons as total oil and specific compounds; heavy metals (Hg, Cu, Zn, Cd, Pb, Cr, As, Co, Fe), chlorinated hydrocarbons (PCBs, DDT, DDE, DDD, HCH, dieldrin). Some work on PNAHs, phthalates, toxaphene, HCB and HCBd.
MATRICES MONITORED	Mussels and shrimps, various species of fish especially cod, plaice, herring, mackerel, flounder and whiting for all pollutants. Water for metals and petroleum hydrocarbons, sediments for metals and organochlorine residues.
FREQUENCY OF MONITORING	Once a year to once every 3 to 5 years depending on objective. Some water analyses in the context of Paris Commission monitoring are done monthly.
EFFECTS MONITORED	Changes in ecosystems especially benthos. Various other biological effects, e.g. incidence of fish diseases.
REMARKS	The Oslo and Paris Commissions' interest began in 1978 and covers Hg, Cd and PCBs in organisms, water and sediments. Special intercalibration exercise for PCBs in sea-water completed for these bodies. Intercalibration exercises conducted via ICES for metals in sea-water and metals and organochlorines in biota: Exercise on metals in sediments also conducted on behalf of Paris and Oslo Commissions. Monitoring and effects studies largely integrated but are conducted to meet programme needs of ICES, Oslo and Paris Commissions and EEC. For latter organization also limited monitoring of some bathing waters for sewage pollution.

Table 3 (continued)

BALTIC SEA (HELSINKI COMMISSION and ICES): 1968 - 1971

NO. OF PARTICIPATING NATIONAL CENTRES	Approximately 15 from 7 States.
POLLUTANTS MONITORED	Petroleum hydrocarbons as total oil and specific compounds; heavy metals (Hg, Cu, Zn, Cd, Pb, Cr, As, Co, Fe), chlorinated hydrocarbons (PCBs, DDT, DDD, DDE, HCH, dieldrin).
MATRICES MONITORED	Various species of fish and shellfish and some work on marine mammals. Water samples for metals and petroleum hydrocarbons, dissolved oxygen and nutrients.
FREQUENCY OF MONITORING	Monthly to once every 3-5 years depending on pollutant and substrate.
EFFECTS MONITORED	Changes in ecosystems especially benthos. Various other biological effects, e.g. incidence in fish diseases.
REMARKS	Intercalibration exercises have been conducted under the auspices of the Helsinki Commission for both biological and chemical parameters as part of the Baltic Monitoring Programme. Several laboratories from the Baltic Sea States which take part in this programme have also participated in intercalibration exercises for nutrients in sea water and for metals and organochlorine compounds in biota in association with ICES North Atlantic exercises.

MEDITERRANEAN (UNEP): 1975 - 1980 (MEDPOL PHASE I)

NO. OF PARTICIPATING NATIONAL CENTRES	84 from 16 States.
POLLUTANTS MONITORED	Oil and petroleum hydrocarbons (oil slicks, floating tarballs, tar on beaches, dissolved/dispersed hydrocarbons); heavy metals (Hg, Cd, Cu, Pb, Mn, Se, Zn); polychlorinated hydrocarbons (PCB, DDT, DDD, DDE, dieldrin); total coliforms, faecal coliforms and faecal streptococci.
MATRICES MONITORED	Biota (molluscs, crustaceans, benthic fish and large pelagic fish) for heavy metals and polychlorinated hydrocarbons; sea-water for oil and petroleum hydrocarbons and for total coliforms, faecal coliforms and faecal streptococci. In some cases also sediments were monitored.
FREQUENCY OF MONITORING	Variable from twice a month to once per season according to the matrices.
EFFECTS MONITORED	Changes in ecosystems.
REMARKS	FAO, IOC and WHO were involved in the day-to-day co-ordination of the work. All intercalibration exercises on the analytical techniques and a common maintenance service for the instruments distributed to the laboratories through the project were organized by IAEA.

\* \* \* \* \*

Table 3 (continued)

MEDITERRANEAN (UNEP): 1981 onwards (MEDPOL PHASE II)	
NO. OF PARTICIPATING NATIONAL CENTRES	It is expected that, at least, the same institutions which participated in Phase I will be involved and that new ones might complement network.
POLLUTANTS MONITORED	Heavy metals (Hg and Cd), halogenated hydrocarbons, petroleum hydrocarbons (oil slicks, floating tar, tar on beaches, dissolved/dispersed hydrocarbons) and faecal coliforms were retained for the long-term monitoring programme.
MATRICES MONITORED	Sea-water and estuarine water, sediments and sand, beaches and biota (molluscs, crustaceans, demersal fish and migratory fish) will be covered.
FREQUENCY OF MONITORING	Variable depending on the matrix from bi-weekly (for water) to quarterly (for biota and sediments).
EFFECTS MONITORED	Effects will not be monitored but will be the object of research activities.
REMARKS	FAO, UNESCO, IOC, WHO, WMO and IAEA will co-operate in the co-ordination and support of activities (mainly intercalibration of methods and maintenance of instruments).
KUWAIT ACTION PLAN (UNEP): 1982 onwards	
NO. OF PARTICIPATING NATIONAL CENTRES	It is expected that at least one institution from each State in the Region will participate.
POLLUTANTS MONITORED	Oceanographic parameters, oil and petroleum hydrocarbons as well as other pollutants e.g. heavy metals and chlorinated hydrocarbons.
MATRICES MONITORED	Sea-water, sediments and biological tissues. Observation of tar balls on selected beaches as reference points.
FREQUENCY OF MONITORING	Monthly for oceanographic parameters. Quarterly for pollutants.
EFFECTS MONITORED	None.
REMARKS	The programme, which starts in January 1982, will concentrate on strengthening national capabilities and building a regional monitoring network.

Table 3 (continued)

WEST AND CENTRAL AFRICA (UNEP): 1982 onwards

NO. OF PARTICIPATING NATIONAL CENTRES	It is expected that at least one institution from each West and Central African State will participate.
POLLUTANTS MONITORED	Oil and petroleum hydrocarbons as well as other pollutants e.g. heavy metals and chlorinated hydrocarbons. Indicators of sewage pollution such as nutrients, oxygen demand and sewage micro-organisms.
MATRICES MONITORED	Sea-water, sediments and biological tissues. Observation of tar balls on a few beaches selected as reference points.
FREQUENCY OF MONITORING	Not yet fixed.
EFFECTS MONITORED	Effects on human health, commercially significant species, ecosystems.
REMARKS	The programme, which is still being formulated, will concentrate on strengthening national capabilities and building a regional monitoring network.

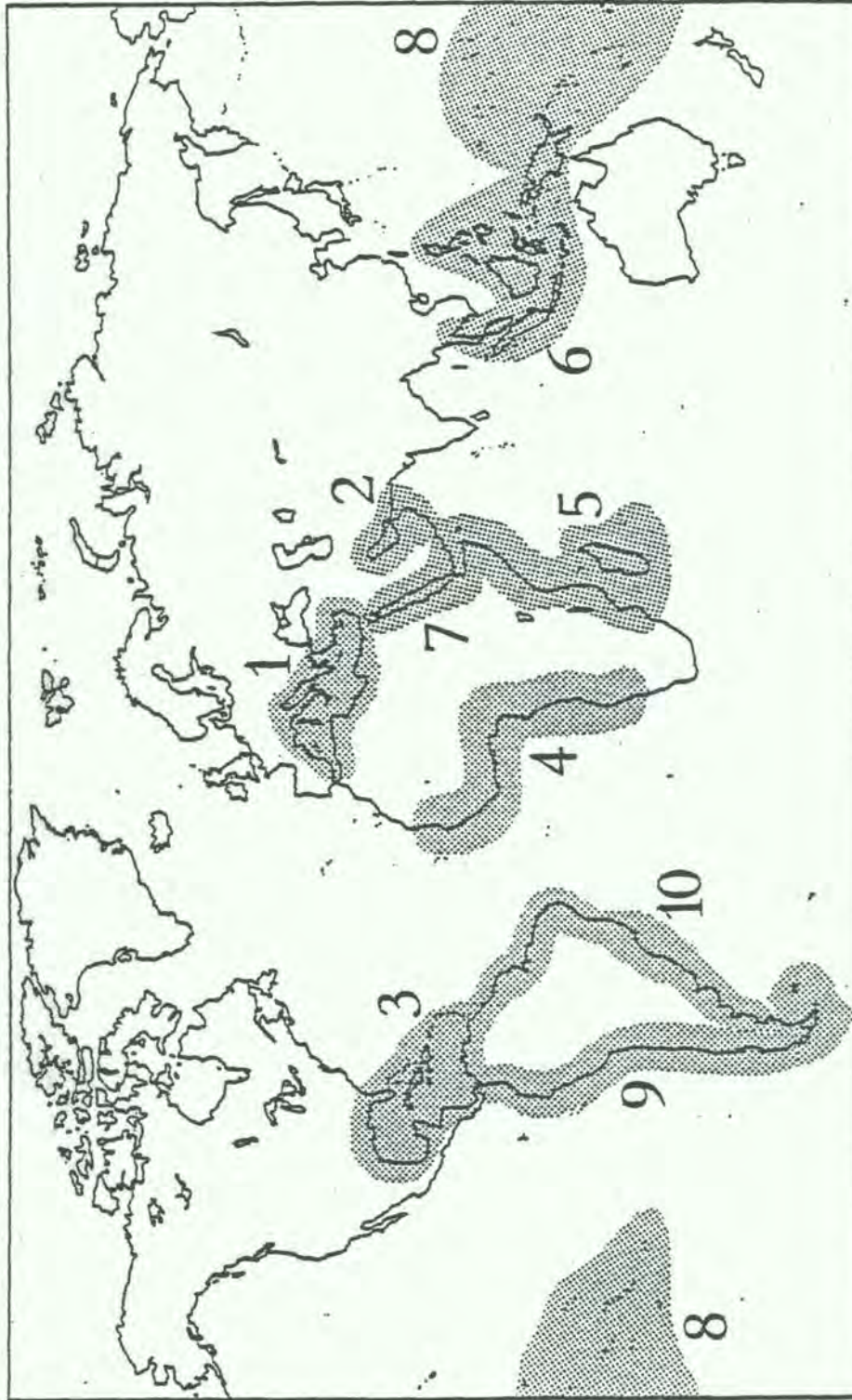
CARIBBEAN (UNEP): 1981 onwards

NO. OF PARTICIPATING NATIONAL CENTRES	One subregional institution.
POLLUTANTS MONITORED	Petroleum hydrocarbons, faecal coliforms, tar on beaches, floating tarballs, polychlorinated hydrocarbons
MATRICES MONITORED	Sea-water (coastal and estuarine water), sediments and sand biota (fish and shellfish).
FREQUENCY OF MONITORING	Variable depending on matrix.
EFFECTS MONITORED	Effects will not be monitored during first stage.
REMARKS	Initially based on the work of the regional Environmental Health Institute in St. Lucia (CARICOM).

Table 3 (continued)

CARIBBEAN (IOCARIBE): 1976 - present	
NO. OF PARTICIPATING NATIONAL CENTRES	Uncertain.
POLLUTANTS MONITORED	Oil and petroleum hydrocarbons as slicks, floating tarballs, tar on beaches and dissolved/dispersed petroleum hydrocarbons.
MATRICES MONITORED	Sea-water, beach areas.
FREQUENCY OF MONITORING	Variable.
EFFECTS MONITORED	Trends in levels.
REMARKS	Follow-up to MAPMOPP Pilot Project as part of MARPOLMON of IOC.
WESTPAC (IOC): 1977 - present	
NO. OF PARTICIPATING NATIONAL CENTRES	Uncertain.
POLLUTANTS MONITORED	Oil and petroleum hydrocarbons as slicks, floating tarballs, tar on beaches and dissolved/dispersed petroleum hydrocarbons. Heavy metals and chlorinated hydrocarbons.
MATRICES MONITORED	Sea-water and beach areas for petroleum hydrocarbons. Commercially exploited shellfish for heavy metals and chlorinated hydrocarbons.
FREQUENCY OF MONITORING	Variable.
EFFECTS MONITORED	Trends in levels.
REMARKS	Petroleum hydrocarbons - a continuation of MAPMOPP as part of MARPOLMON.

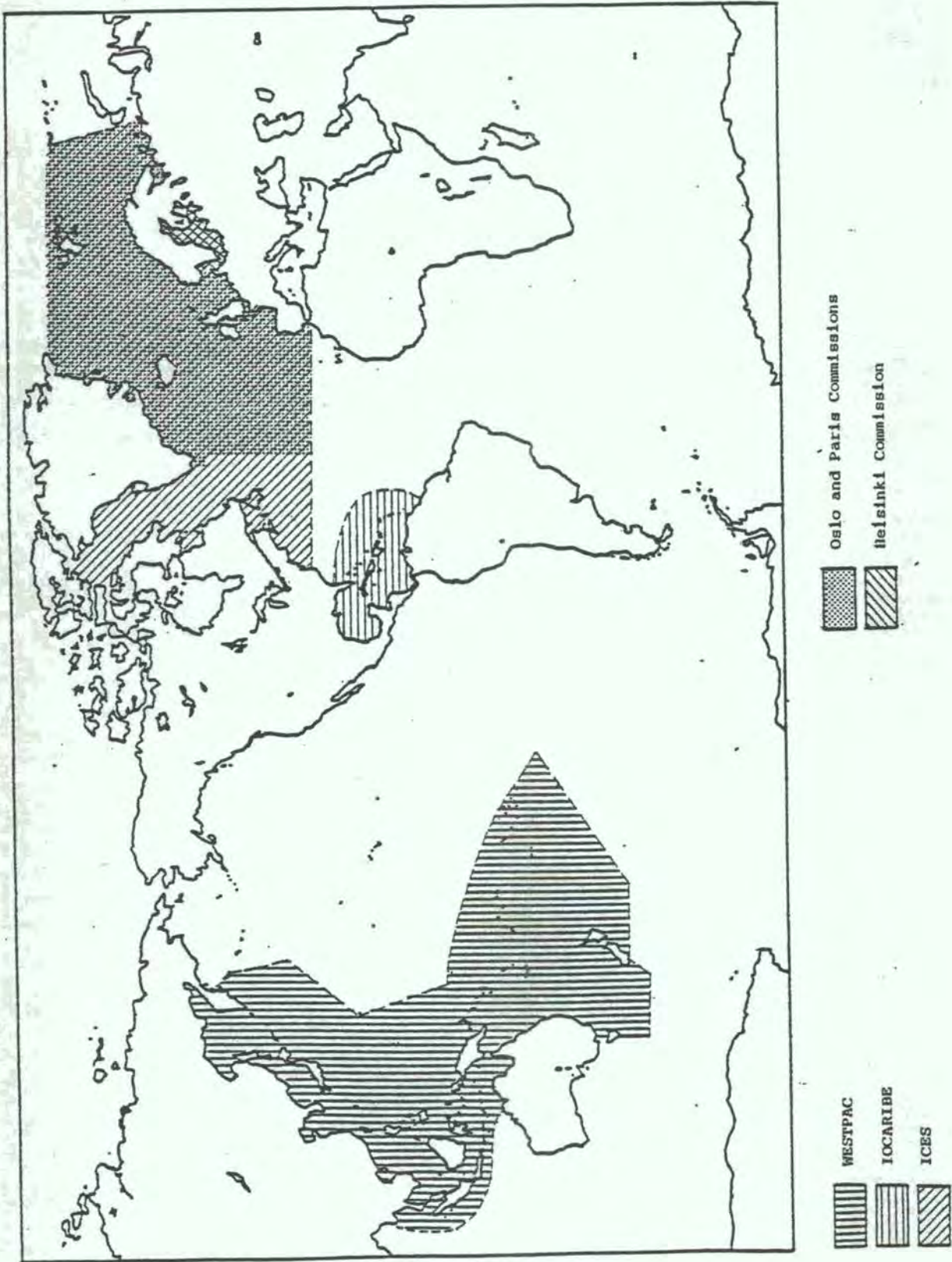
Figure I : Geographic coverage of UNEP Regional Seas Programme



- |                                    |  |
|------------------------------------|--|
| 1. Mediterranean Region            | (Action Plan adopted; 1975; Regional Convention signed; 1976)    |
| 2. Kuwait Action Plan Region       | (Action Plan adopted; 1978; Regional Convention signed; 1978)    |
| 3. Caribbean Region                | (Action Plan adopted; 1981; Regional Convention, in preparation) |
| 4. West and Central African Region | (Action Plan adopted; 1981; Regional Convention signed; 1981)    |
| 5. East African Region             | (Action Plan preparation initiated)                              |
| 6. East Asian Region               | (Action Plan adopted; 1981)                                      |
| 7. Red Sea and Gulf of Aden Region | (Action Plan adopted; 1982; Regional Convention signed; 1982)    |
| 8. South-West Pacific Region       | (Action Plan prepared for adoption in 1982)                      |
| 9. South-East Pacific Region       | (Action Plan adopted; 1981; Regional Convention adopted; 1981)   |
| 10. South-West Atlantic Region     | (Action Plan preparation initiated)                              |



Figure II : Geographic coverage of selected regional programmes





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ACRONYMS AND ABBREVIATIONS

Abidjan Convention	Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (1981)
ALECSO	Arab League Educational, Cultural and Scientific Organization
ASEAN	Association of South-East Asian Nations
ASFIS	Aquatic Sciences and Fisheries Information System (of FAO)
Barcelona Convention	Convention for the Protection of the Mediterranean Sea against Pollution (1976)
Bonn Agreement	Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil (1969)
CARPAS	Regional Fishery Advisory Commission for the Southwest Atlantic (of FAO)
CECAF	Fishery Committee for the Eastern Central Atlantic (of FAO)
CFP	Common Fisheries Policy (of EEC)
CICAR	Co-operative Investigations in the Caribbean and Adjacent Regions (of IOC)
CIM	Co-operative Investigations in the Mediterranean (of IOC, FAO(GFCM) and ICSEM)
CINCWIO	Co-operative Investigation of the Northern and Central Western Indian Ocean (of IOC)
COFI	Committee on Fisheries (of FAO)
CPPS	Permanent Commission for the South Pacific
CSK	Co-operative Study of the Kuroshio and Adjacent Regions (of IOC)
DOEM	Designated Officials for Environmental Matters (of relevant United Nations bodies)
ECA	Economic Commission for Africa (of the United Nations)
ECE	Economic Commission for Europe (of the United Nations)
ECLA	Economic Commission for Latin America (of the United Nations)
ECOSOC	Economic and Social Council (of the United Nations)

ECWA	Economic Commission for Western Asia (of the United Nations)
EEC	European Economic Community
ESCAP	Economic and Social Commission for Asia and the Pacific (of the United Nations)
FAO	Food and Agriculture Organization of the United Nations
GEMS	Global Environment Monitoring System (of UNEP)
GEMSI	Group of Experts on Methods, Standards and Intercalibration (of GIPME)
GESAMP	IMCO/FAO/UNESCO/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Pollution
GFCM	General Fisheries Council for the Mediterranean (of FAO)
GIPME	Global Investigation of Pollution of the Marine Environment (of IOC)
Helsinki Convention	Convention on the Protection of the Marine Environment of the Baltic Sea Area (1974)
IAEA	International Atomic Energy Agency
IBSFC	International Baltic Sea Fisheries Commission
ICES	International Council for the Exploration of the Sea
ICITA	International Co-operative Investigations of the Tropical Atlantic (of IOC)
ICNAF	International Commission for North-West Atlantic Fisheries
ICSEM	International Commission for the Scientific Exploration of the Mediterranean Sea
ICSPRO	Inter-Secretariat Committee on Scientific Programmes Relating to Oceanography (of the United Nations, FAO, UNESCO, WMO and IMCO)
ICSU	International Council of Scientific Unions
IDOE	International Decade of Ocean Exploration
IGOSS	Integrated Global Ocean Services System (of IOC)
IIOE	International Indian Ocean Expedition
ILMR	International Laboratory of Marine Radioactivity (of IAEA)
IMCO	Inter-Governmental Maritime Consultative Organization
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IOCARIBE	IOC Association for the Caribbean and Adjacent Regions



IODE	International Oceanographic Data Exchange (Working Committee of IOC)
IOFC	Indian Ocean Fishery Commission
IPFC	Indo-Pacific Fishery Commission (of FAO)
IUCN	International Union for Conservation of Nature and Natural Resources
Kuwait Convention	Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution (1978)
LEPOR	Long-Term Expanded Programme for Oceanic Exploration and Research (of IOC)
Lima Convention	Convention for the Protection of the Marine Environment and the Coastal Areas of the South-East Pacific (1981)
London Dumping Convention (LDC)	Convention on the Prevention of Marine Pollution by Dumping of Waste and other Matter (1972)
MAB	Man and the Biosphere Programme (of UNESCO)
MAPMOPP	Pilot Project on Marine Pollution (Petroleum) Monitoring (of IGOSS)
MARPOL Convention	International Convention for the Prevention of Pollution from Ships (1973)
MARPOLMON	Marine Pollution Monitoring System (of GIPME)
MEDI	Marine Environmental Data Information (of IOC)
MEDPOL	Co-ordinated Mediterranean Pollution Monitoring and Research Programme (of the Mediterranean Action Plan)
MEMAC	Marine Emergency Mutual Aid Centre (of the Kuwait Action Plan)
NAFO	North-West Atlantic Fisheries Organization
NEAFC	North-East Atlantic Fisheries Commission
Oslo Convention	Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (1972)
PAHO	Pan-American Health Organization (of WHO)
Paris Convention	Convention for the Prevention of Marine Pollution from Land-Based Sources (1974)
PERSGA	Red Sea and Gulf of Aden Environment Programme (of ALECSO)
ROCC	Regional Oil Combating Centre (of the Mediterranean Action Plan)
ROPME	Regional Organization for the Protection of the Marine Environment (in the Kuwait Action Plan Region)

RS/PAC	Regional Seas Programme Activity Centre (of UNEP)
SCAR	Scientific Committee for Antarctic Research
SCOR	Scientific Committee on Oceanic Research (of ICSU)
SIDA	Swedish International Development Authority
SPC	South Pacific Commission
SPEC	South Pacific Bureau for Economic Co-operation
SPREP	South Pacific Regional Environment Programme
SWMTEP	System-Wide Medium-Term Environment Programme (of UNEP)
TAC	Total allowable catch
UNCHS	United Nations Centre for Human Settlements
UNCLOS	United Nations Conference on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UN/DIESA	United Nations Department of International Economic and Social Affairs
UNDP	United Nations Development Programme
UNDRO	Office of the United Nations Disaster Relief Co-ordinator
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
WECAFC	Western Central Atlantic Fishery Commission (of FAO)
WESTPAC	Working Group for the Western Pacific (of IOC)
WHO	World Health Organization
WMO	World Meteorological Organization