



**United Nations  
Environment  
Programme**

**EP**



UNEP(OCA)/MED WG. 75/2  
25 May 1994

Original: ENGLISH

---

---

**MEDITERRANEAN ACTION PLAN**

Meeting of Experts on the preparation  
of MED POL - Phase III

Izmir, 20-23 June 1994

**DRAFT**

**MED POL-Phase III (1996-2005)**

**A PROGRAMME FOR THE ASSESSMENT AND CONTROL OF  
POLLUTION IN THE MEDITERRANEAN REGION**

**PROGRAMME DESCRIPTION**

## Table of Contents

	Pages
<b>1. BACKGROUND</b>	1
<b>2. INTRODUCTION</b>	2
<b>3. GOALS AND PRINCIPLES FOR MED POL - Phase III</b>	6
<b>4. ASSESSMENT OF POLLUTION-RELATED PROBLEMS</b>	8
- Basis for action	8
- Objectives	8
- Activities	10
- Means of implementation	11
<b>5. POLLUTION CONTROL</b>	12
A. <u>Development and implementation of pollution control measures</u>	12
- Basis for action	12
- Objectives	13
- Activities	13
- Means of implementation	13
B. <u>Compliance control</u>	15
- Basis for action	15
- Objectives	16
- Activities	17
- Means of implementation	18
<b>6. SUPPORTING MEASURES</b>	19
A. <u>Assistance (capacity strengthening)</u>	19
- Basis for action	19
- Objectives	19
- Activities	20
- Means of implementation	21
B. <u>Data and information management</u>	21
- Basis for action	21
- Objectives	22
- Activities	22
- Means of implementation	23
C. <u>Coordination and cooperation</u>	23
- Basis for action	23
- Objectives	23
- Activities	23
- Means of implementation	24

## ANNEXES

ANNEX I:	Monitoring of the levels and impacts of pollutants in the context of MED POL-Phase III	25
ANNEX II:	Modalities of cooperation between Contracting Parties and the Secretariat regarding MED POL	29

## APPENDICES

Appendix I:	Acronyms and abbreviations	32
Appendix II:	MED POL-related recommendations adopted by the Eighth Ordinary Meeting of the Contracting Parties to the Convention for the Protection of the Mediterranean Sea against Pollution and its related Protocols (Antalya, 12-15 October 1993). (Extract from UNEP(OCA)/MED IG.3/5, Annex IV)	34
Appendix III:	List of the most important publications and internal documents describing the results and activities of MED POL	39

## 1. BACKGROUND

1.1 The MED POL programme, designed as the environmental assessment component of the Mediterranean Action Plan, has been fully operational since 1975. Its first phase (MED POL-Phase I) was implemented from 1975 until 1980 and it comprehended seven basic baseline studies covering the major marine pollution problems in the Mediterranean. In 1981 the Contracting Parties to the Barcelona Convention approved a new ten-year long-term programme (MED POL-Phase II, 1981-1990) which included two main components, monitoring and research. In 1991 the Contracting Parties decided to extend MED POL-Phase II until 1995 to allow the completion of the programme as well as the formulation of the next phase.

1.2 In fact during the implementation of MED POL-Phase II, the need was felt to bring the MED POL programme closer to the other components of the Mediterranean Action Plan, and in particular to the Protocol for Land-Based Sources of Pollution which entered into force in 1983 and the more recent Coastal Areas Management Programme (CAMP). As a result, preparations were made to re-focus the MED POL Programme and therefore to prepare a new phase of the programme (MED POL-Phase III, 1996-2005). In addition, recent global events such as the Rio de Janeiro Summit and the Agenda 21, i.e. the new trends towards sustainable development, traced the lines for approaching the marine pollution control programmes in a different and more integrated dimension.

1.3 As early as 1989, a meeting of experts took place to evaluate the main pollution data gathered until then through MED POL (UNEP(OCA)/MED WG. 5/3). Four experts prepared specific reports on sources of pollution (UNEP(OCA)/MED WG.5/Inf.3), micro-organisms in coastal areas (UNEP(OCA)/MED WG.5/Inf.4), heavy metals in coastal and reference areas (UNEP(OCA)/MED WG.5/Inf.5) and petroleum and chlorinated hydrocarbons in coastal and reference areas (UNEP(OCA)/MED WG.5/Inf.6) which showed the existing gaps, presented the available data and made suggestions for their improved collection and use.

1.4 In addition, several meetings and consultations took place in and outside the Secretariat with the scientific community and the UN bodies involved in the programme; in particular, large *fora* such as the ICSEM/IOC/UNEP Workshops on pollution of the Mediterranean Sea were utilized to discuss with the scientific community the major achievements and shortcomings of the programme and propose new approaches. Two review papers, "Monitoring Strategies of Marine Pollution" and "Pollution Problems in the Mediterranean and Relevant Research Strategies", were presented and widely discussed during the X ICSEM/IOC/UNEP Workshop held in Perpignan (1990). The papers summarized and critically analyzed the work carried out in the framework of MED POL in the field of monitoring and research and proposed follow-up activities. During the XI ICSEM/IOC/UNEP Workshop on Pollution held in Trieste (1992) another review paper "The Data Quality Assurance Programme of MED POL" presented the new strategy of MED POL as to data quality assurance and the prospectives in the specific field.

1.5 Discussions also on the subject of the new phase of MED POL were held in the course of all Inter-Agency Advisory Committee Meetings of MED POL. Finally, in 1992, the Bureau of the Contracting Parties asked the Secretariat to organize the preparation of an in-depth evaluation of the MED POL Programme by scientists/experts external to the MAP office with a view of using this evaluation in the drafting of the Phase III of MED POL. Five consultants worked during 1993 and an evaluation was prepared and presented to the Eighth Ordinary Meeting of the Contracting Parties in October 1993 (UNEP(OCA)/MED IG. 3/Inf.6). During the latter Meeting the Contracting Parties also formally agreed that a Phase III of MED POL should be prepared covering the period from 1996 to 2005 and, to this effect, they set a number of basic objectives and principles which should be used for its preparation (UNEP(OCA)/MED IG. 3/5, Annex IV).

1.6 The present document is an outline of the programme elements of the MED POL-Phase III. The contents of the programme keep into due account the results and the conclusions of all the Meetings mentioned above as well as the new trends related to marine pollution control developed as a result of the Rio de Janeiro Summit.

## 2. INTRODUCTION

2.1 The organization of a programme for monitoring of the sources, levels and effects of pollutants, as well as the research related to this monitoring, was one of the cornerstones of the Mediterranean Action Plan (MAP)<sup>1</sup> adopted by the governments of the Mediterranean countries in February 1975. With the adoption, in 1976, of the Barcelona Convention by the same governments, and the subsequent adoption of the protocols to this Convention, the objectives and methodologies of the programme were gradually modified in order to respond to the expanding goals set by the governments<sup>2</sup>.

2.2 The declared objectives of the first phase of the programme, MED POL-Phase I (1975-1980)<sup>3</sup>, were:

---

<sup>1</sup> The acronyms and abbreviations used in the present document are listed and explained in Appendix I.

<sup>2</sup> *Mediterranean Action Plan and Convention for the Protection of the Mediterranean Sea against Pollution and its related protocols*. UNEP/UN, 1992.

<sup>3</sup> *Long-term programme for pollution monitoring and research in the Mediterranean (MED POL) - Phase II*. UNEP Regional Seas Reports and Studies No.28. Rev.1. UNEP, 1986.

- *to formulate and carry out a co-ordinated pollution monitoring and research programme taking into account the goals of the Mediterranean Action Plan and the capabilities of the Mediterranean research centres to participate in it<sup>4</sup>:*
- *to assist national research centres in developing their capabilities to participate in the programme;*
- *to analyze the sources, levels, pathways, trends and effects of pollutants relevant to the Mediterranean Sea;*
- *to provide the scientific/technical information needed by the Governments of the Mediterranean States and the EEC for the negotiation and implementation of the Convention and its related protocols; and*
- *to build up consistent time-series of data on the sources, pathways, levels and effects of pollutants in the Mediterranean Sea and thus contribute to the scientific knowledge of the Mediterranean Sea.*

2.3 While the first phase of the programme focused on strengthening the national capabilities in order to enable all countries to participate in the programme, and on the development of methodologies needed to implement it, the next phase of the programme (MED POL-Phase II, 1981-1995) had more general and broader objectives<sup>5</sup> to provide the Parties to the Barcelona Convention with:

- *information required for the implementation of the Convention and the protocols;*
- *indicators and evaluation of the effectiveness of the pollution prevention measures taken under the Convention and the protocols;*
- *scientific information which may lead to eventual revisions and amendments of the relevant provisions of the Convention and the protocols, and for the formulation of additional protocols;*
- *information which could be used in formulating environmentally sound national, bilateral and multilateral management decisions essential for the continuous socio-economic development of the Mediterranean region on sustainable basis; and*

---

<sup>4</sup> All titles of documents and quotes from documents are given in italics. In addition, quotes from recommendations of the Eight Ordinary Meeting of the Contracting Parties (Appendix II to the present document), or references to these recommendations, are identified by relevant paragraph numbers in square brackets.

<sup>5</sup> *Long-term programme for pollution monitoring and research in the Mediterranean (MED POL) - Phase II.* UNEP Regional Seas Reports and Studies No.28. Rev.1. UNEP, 1986.

- *periodic assessment of the state of pollution of the Mediterranean Sea.*

2.4 During the second phase of MED POL:

- the gains of the first phase were consolidated by considerable strengthening of national institutional capabilities through: training; provision of equipment; development of suitable sampling and analytical techniques, quality assurance programmes including intercalibration exercises, equipment maintenance and other forms of assistance;
- the monitoring of the levels and effects of pollutants was intensified, and gradually focused on monitoring related to compliance with the pollution control measures adopted by the Contracting Parties, through agreements with governments involving about 80 national institutions in practically all Mediterranean countries;
- the research programme contributing to the improved understanding of the requirements for pollution control measures was considerably broadened, and implemented through more than 500 research contracts with national institutions in practically all Mediterranean countries;
- a detailed survey (inventory) of pollutants from land-based sources, as defined by the *Protocol for the protection of the Mediterranean Sea against pollution from land-based sources* (LBS protocol) is under way;
- consistent databases resulting from monitoring, research and survey activities, and other sources, were built-up and used in the preparation of studies, analyses and assessments of specific environment pollution problems;
- a regional assessment of the environmental state of the marine and coastal environment was prepared (1989);
- a regional assessment of the possible implications of expected climate changes was prepared (1992), and 11 detailed site-specific studies were carried out on the implications of these changes, with concrete recommendations for the possible mitigation of the negative effects;
- in-depth analyses ("assessment documents") of 13 specific problems related to the control of individual pollutants (or group of pollutants) covered by the LBS protocol were prepared and used as the basis for the formulation of control measures subsequently adopted by the Parties to the Convention;

- significant input was made from all activities listed above into the coastal area management programme (CAMP) carried out in the framework of the Action Plan<sup>6</sup>.

2.5 Taking into account the ongoing refocusing of the MAP on integrated coastal area management, the eighth ordinary meeting of the Contracting Parties to the Barcelona Convention (Antalya, 12-15 October 1993), in reaffirming *the objective of the Mediterranean Action Plan (MAP) since its establishment to act as an instrument of regional cooperation covering the concerns both of the environment and of development*, approved a set of recommendations (UNEP(OCA)/MED IG.3/5, Annex IV) about the general strategy to be followed in MAP, as well as about actions to be taken under specific components of MAP in order to implement this strategy.

2.6 Recognizing that:

- *in line with UNCED and Agenda 21, further emphasis is to be given to those MAP activities contributing to the implementation of the sustainable development concept*, and that
- *MED POL, as the scientific and technical component of MAP, provides the scientific basis for decision making related to marine pollution in the region in the process of achieving sustainable development*;

recommendation 7.2 of the Antalya meeting asked for the development of MED POL-Phase III, and specified the fields in which it should assist the Contracting Parties, with the following overall objectives:

- organization of a Mediterranean coordinated marine pollution monitoring and research programme, concentrating on contaminants and pollutants affecting the quality of the marine and coastal environment, as well as the health of man and of the living resources in the Mediterranean and interpretation/assessment of the results of the programme as part of the scientific basis for decision making in the region [7.2.i];*
- generation of information on the sources, levels, amounts, trends (trend monitoring) and effects of marine pollution, develop capabilities for assessing the present and future state of the marine environment within the Mediterranean region as an additional component of the scientific basis upon which the formulation of proposals for preventive and remedial actions can be based [7.2.ii];*

---

<sup>6</sup> Appendix III contains a selected list of the most important publications and internal documents giving detailed presentation of the results and activities of the first two phases of MED POL.

- (c) *formulation of proposals for technical, administrative and legal programmes and measures for the prevention and/or reduction of pollution [7.2.iii];*
- (d) *strengthening and, when necessary, development of the capabilities of the national institutions, in accordance with the circumstances and the country requesting it, so as to implement monitoring and research of pollution of the marine environment [7.2.iv]; and*
- (e) *assistance, as appropriate, to Contracting Parties for the implementation of the recommendations adopted with view to the assessment of their effectiveness; this assistance will allow the competent authorities to verify the recommendations adopted taking into account data of a satisfactory standard [7.2.v].*

### **3. GOALS AND PRINCIPLES FOR MED POL-Phase III (1996-2005)**

3.1 The main goal of MED POL-Phase III (1996-2005) shall be to serve the Contracting Parties to the Barcelona Convention as their long-term programme for the assessment, prevention, mitigation and control of pollution<sup>7</sup> in the geographic area covered by the Convention and MAP. This goal shall be achieved by:

- (a) assessing the sources of pollution, the load of pollution reaching the Mediterranean Sea, and the magnitude of the problems caused by the impact of pollutants on living and non-living resources, including human health, as well as on amenities and uses of the marine and coastal regions;

---

<sup>7</sup> In the context of this document, "pollution of the marine environment" is interpreted according to the definition adopted in the United Nations Convention on the Law of the Sea as:

*the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities;*

bearing in mind the somewhat more restrictive definition given in the Barcelona Convention:

*introduction by man, directly or indirectly, of substances or energy into the marine environment resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of sea-water and reduction of amenities.*

- (b) formulating measures for prevention and control of pollution, and measures for mitigation of impacts caused by pollution, including measures for the restoration of systems already damaged by pollution;
- (c) monitoring the effectiveness of the implementation of the pollution prevention, mitigation and control measures adopted; and
- (d) assessing the trends in the quality of the marine and coastal environment attributable to pollution, and acting as an early warning system for potential environmental problems caused by pollution.

3.2 In view of the broad cross-sectoral mandate of MED POL with heavy emphasis on pollution control from all sources, in particular from land-based sources, and taking into account that the control of marine pollution is one of the central issues to be resolved in the framework of MAP in order to enable the sustainable development of the Mediterranean region, the new phase of MED POL will require an intensified interaction between MED POL and practically all other components of MAP, and with the coastal area management programme (CAMP) in particular. Therefore, in outlining the possible elements of MED POL's new phase, an attempt is made in the present document to link the specific objectives and activities recommended for MED POL-Phase III by the Antalya meeting with those recommended for the other components of MAP.

3.3 In addition to reflecting the organic links between MED POL-Phase III and the other components of MAP, the document was also prepared with due regard for the concepts and recommendations contained in Agenda 21 as they bear on activities relevant to MED POL, specifically those contained in Chapter 17 of the Agenda 21<sup>8</sup>.

3.4 The stated goals shall be achieved through the implementation of interdependent and organically linked (see Figure 1) activities grouped in 3 basic MED POL programme elements (assessment of pollution related problems; pollution control; and supporting measures), all contributing to the ultimate goal of MED POL and MAP. The rationale of these activities, their specific objectives and means of implementation are described in sections 4-6 of the present document.

3.5 The development of suitable measures for the prevention, mitigation and control of pollution from all sources, and a continuous monitoring of the effectiveness of their implementation, are the central goals of the new phase of MED POL. All other activities are subsidiary to these goals and contribute to their more efficient achievement. By concentrating on these goals, MED POL- Phase III is expected to provide critically

---

<sup>8</sup> Chapter 17 of the Agenda 21, adopted by the United Nations Conference on Environment and Development (Rio de Janeiro, 3-14 June 1992), lists 33 objectives and more than 180 type of activities which are recommended under the heading *Protection of the oceans, all kind of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their resources.*

important inputs into practically all other components of MAP, notably in MAP's coastal area management programmes (CAMPs), and thus make a significant contribution to the development of the Mediterranean region in a sustainable manner.

#### **4. ASSESSMENT OF POLLUTION RELATED PROBLEMS**

##### Basis for action

4.1 A scientifically correct assessment of pollution related problems of the Mediterranean region is one of the basic prerequisites for development of a rational approach towards the sustainable development of the region. Such an assessment, together with information provided through the other components of MAP, is the sound foundation for the decisions and recommendations of the Contracting Parties to the Convention on pollution control measures suitable and applicable in the Mediterranean region<sup>9</sup>.

##### Objectives

4.2 The specific objectives of this programme element shall be:

- (a) to identify the sources, assess the present levels and keep under periodic review the trends in the load of pollutants reaching the Mediterranean Sea from marine and land-based sources including point and non-point sources and airborne pollutants. This will constitute an inventory of sources of pollution required as basic information for the implementation of the LBS and other protocols<sup>10</sup>;
- (b) to assess, in areas under direct influence of pollutants (e.g., coastal waters, estuaries), the levels of pollutants and their potentially harmful effects on marine life, fisheries, and human health<sup>10</sup>;
- (c) to assess, in areas not under direct influence of pollutants from identifiable primary or secondary source of pollution ("reference areas"), parameters which may serve as indicators for the general trend in the environmental quality of larger areas<sup>10</sup>;
- (d) to identify and assess potential short- and long-term threats to the Mediterranean region associated with environmental pollution<sup>11</sup>; and

---

<sup>9</sup> Articles 5, 6, 7 and 8 of the Barcelona Convention.

<sup>10</sup> Paragraphs 3.2 (a), (b) and (c) and 17.13 and 17.35 (a) of Agenda 21.

<sup>11</sup> Paragraphs 17.6 (e) and 17.97 of Agenda 21.

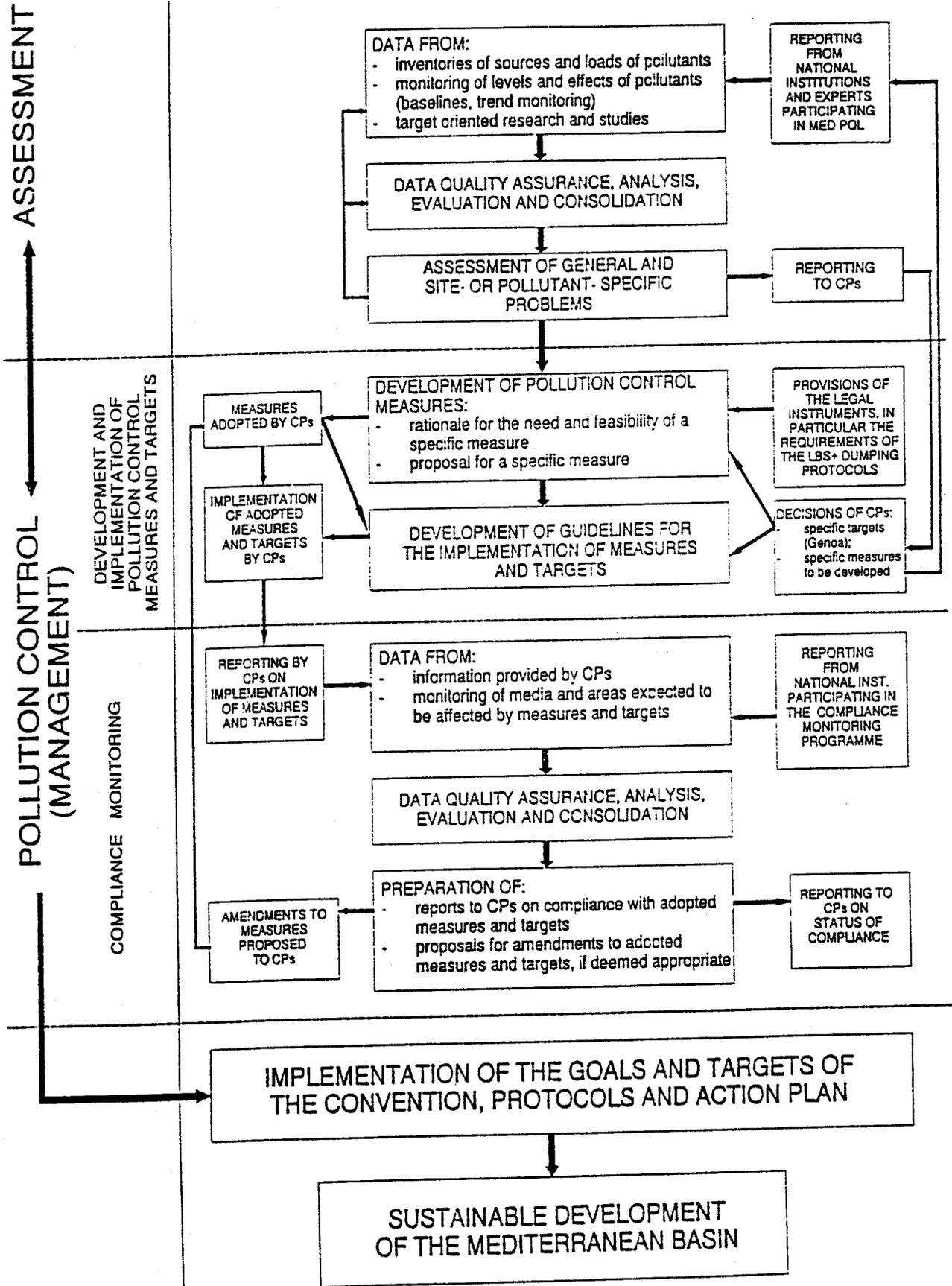


Figure 2: Simplified flow chart showing the more important links between the substantive activities of MED POL-Phase III.

- (e) to provide the Contracting Parties, and other interested groups and individuals, with information about the general and specific pollution related problems of the Mediterranean region<sup>12</sup>.

#### Activities

4.3 The stated objectives shall be achieved through:

- (a) monitoring of trends in the levels and impacts (effects) of pollutants<sup>13</sup>;
- (b) target oriented research in support of monitoring activities<sup>14</sup>;
- (c) collection, analysis and evaluation of pollution related data from surveys, baseline studies and monitoring organized in the framework of MED POL, and from other sources;
- (d) preparation of reports on the assessment of specific pollution related problems of the Mediterranean region (e.g., on possible implications of the expected climate change<sup>15</sup>), including recommendations for action, if deemed appropriate<sup>16</sup>;
- (e) preparation of short and concise reports on the state of pollution of the Mediterranean environment for each meeting of the Contracting Parties, specifically highlighting the changes and trends identified since the submission of the last report<sup>17</sup>; and
- (f) preparation, for the 1997 and 2003 meetings of the Contracting Parties, consolidated reports on the state of the Mediterranean environment<sup>17 18</sup>.

4.4 The monitoring shall concentrate on the assessment of trends in pollution related problems in order to provide a solid basis for the appraisal of the environmental health

---

<sup>12</sup> Paragraph 17.35 (b) of Agenda 21.

<sup>13</sup> Article 10 of the Barcelona Convention.

<sup>14</sup> Article 11(3) of the Barcelona Convention.

<sup>15</sup> Paragraphs 17.98 and 17.101 (a), (b) and (c) of Agenda 21.

<sup>16</sup> The recommendations may lead to the development of proposals for concrete pollution control measures, as described in section 5A of the present document.

<sup>17</sup> Paragraph 17.106 (d) of Agenda 21.

<sup>18</sup> The last report of this nature was prepared in 1989 (MAP Technical Reports Series No.28).

of the Mediterranean as a whole, and to serve as an early warning system for the problems which may be encountered in the future<sup>19</sup>. The preparation of inventories of point- and non-point sources of pollution, particularly the land-based sources, and the monitoring of the pollution loads reaching the Mediterranean from these sources, shall be considered as a high priority task<sup>20</sup>.

4.5 In some instances data from monitoring programmes alone will not be sufficient for the assessment of pollution related problems and their long-term implications. Therefore, in such cases, monitoring data will have to be supplemented by well defined target oriented research.

#### Means of implementation

4.6 The assessment of pollution related problems will require a high degree of coordination and close cooperation between the Secretariat of MAP<sup>21</sup>, the National Coordinators for MED POL, the National MED POL Collaborating Institutions, and the specialized Agencies of the United Nations system supporting or participating in MED POL<sup>22</sup>. The modalities of their cooperation are described in Annex II of the present document.

4.7 Data and information from monitoring of trends in the levels and impacts (effects) of pollutants, including from the inventories of pollution sources and loads (paragraphs 4.3(a) and 4.4), will be generated and provided to the Secretariat by the National MED POL Collaborating Institutions, as described in Annex II. While it is expected that the Institutions from developed countries will provide data and information without cost to the Trust Fund, in case of Institutions from developing countries the costs involved are expected to be shared between the Trust Fund and the relevant Institutions.

4.8 Target oriented research (paragraphs 4.3(b) and 4.5) will be based on research projects selected by the Secretariat in cooperation with the relative UN Specialized Agency participating in the Programme. For such projects, research contracts will be signed by the Secretariat or Agency and the National MED POL Collaborating Institutions, in consultation with the relevant National Coordinators for MED POL.

---

<sup>19</sup> See Annex I about details on monitoring activities.

<sup>20</sup> Presently ongoing activity, using the *Guidelines for monitoring land-based sources of marine pollution* prepared in 1994 in the framework of MED POL Phase II.

<sup>21</sup> In the context of this document, *UNEP's Coordinating Unit for the Mediterranean Action Plan in Athens* is identified as the *Secretariat of MAP*.

<sup>22</sup>- Food and Agriculture Organization of the United Nations (FAO)  
- International Atomic Energy Agency (IAEA)  
- Intergovernmental Oceanographic Commission (IOC)  
- United Nations Educational, Scientific & Cultural Organization (UNESCO)  
- World Health Organization (WHO)  
- World Meteorological Organization (WMO)

Institutions from developing countries will receive financial support from the Trust Fund to cover the partial cost of the research carried out by them.

4.9 Assistance to developing countries will be needed in the form of training of their national experts and technical assistance (equipment, material, data quality assurance, instrument maintenance) to their national institutions, in order to enable their effective participation in the programme element<sup>23</sup>.

## 5. POLLUTION CONTROL

5.1 A scientifically correct assessment of pollution related problems of the Mediterranean region is only the first step towards action to prevent, mitigate and control the pollution and its effect. Therefore, the substantive focus of MED POL-Phase II was gradually shifting from the assessment of the problems related to pollution to the development of proposals for concrete pollution control measures. Taking into account the data and information obtained in the previous phases of MED POL, and relying on a permanent system for keeping the present assessment up to date through activities envisaged in section 4 of the present document, MED POL-Phase III shall further emphasize the development of proposals for pollution control measures, and the control of compliance with the measures adopted by the Contracting Parties, as its central activities.

### A. Development and implementation of pollution control measures<sup>24</sup>

#### Basis for action

5.2 Pollution from land-based sources was recognized in the very early stages of the MAP as the major problem for the Mediterranean region. The adoption of the LBS protocol (1980) and its entering into force (1983) provided the legal basis for the introduction of concrete measures for the control of pollutants from land-based sources and activities listed in the annexes to the protocol.

5.3 Although the control of pollution from land-based sources remains a major objective of MAP, the control of pollutants from other sources and activities is not neglected, as exemplified by the adoption of protocols associated with the Barcelona

---

<sup>23</sup> Article 11(3) of the Barcelona Convention.

<sup>24</sup> In the context of this document, *pollution control measures* are broadly interpreted as a combination of technical (technological), economic (fiscal), legal and administrative policies, measures and practices contributing to the:

- prevention and mitigation of pollutants' impact on human health and on the quality of the marine and coastal environment, including their living and non-living resources, and amenities;
- general decrease of pollution load reaching the Mediterranean Sea; and
- restoration of marine and coastal environment damaged by present impact of pollution.

Convention which deal with pollution from dumping and emergency situations, and by the preparations for the adoption of a protocol on control of pollution from offshore seabed activities<sup>25</sup>.

### Objectives

- 5.4 The specific objectives of this programme element shall be:
- (a) to develop proposals for concrete pollution control measures required by the Barcelona Convention, its protocols<sup>26</sup>, as well as the decisions and recommendations of the Contracting Parties<sup>27</sup>; and
  - (b) to implement pollution control measures adopted by the Contracting Parties<sup>28</sup><sub>29</sub>

### Activities

- 5.5 The stated objectives shall be achieved by:
- (a) formulation of a scientifically sound rationale for pollution control measures, by providing an assessment of the magnitude and intensity of the problem which is to be tackled by the measures ("assessment document");
  - (b) formulation of concrete proposals for pollution control measures, taking into account the best available assessment of the problem to be controlled and the feasibility of the measures' implementation in the context of the Mediterranean region;
  - (c) formal adoption of the proposed measures, or of their amended versions, by the Contracting Parties;

---

<sup>25</sup> *Protocol concerning cooperation in combating pollution of the Mediterranean Sea by oil and other harmful substances* (adopted in 1976, entered into force in 1978); *Protocol for the prevention of pollution of the Mediterranean Sea by dumping from ships and aircraft* (adopted in 1976, entered into force in 1978); *Protocol concerning pollution resulting from exploration and exploitation of the continental shelf, the sea-bed and its subsoils* (adoption expected in October 1994).

<sup>26</sup> Articles 5(2), 6(2) and 7(1) of the LBS protocol.

<sup>27</sup> Paragraphs 17.6 (n), 17.28 (h) and 17.30 (a) of Agenda 21.

<sup>28</sup> Paragraphs 17.6 (n), 17.22 (a), 17.24 and 17.28 (j) of Agenda 21.

<sup>29</sup> Articles 4(1), 5, 6, 7, 8 and 9 of the Barcelona Convention

- (d) development of technical guidelines for the implementation of adopted measures<sup>30</sup>; and
- (e) implementation of the adopted measures by the Contracting Parties<sup>31</sup>.

Means of implementation

5.6 A high degree of cooperation and coordination will be required between the Secretariat, the Contracting Parties, the National Coordinators for MED POL, as well as the relevant Regional Activity Centres of MAP<sup>32</sup> and organizations of the United Nations system, to implement the activities listed above.

5.7 The priorities for the formulation of control measures, as well as the timetable for the development of proposals shall be determined by the Contracting Parties.

5.8 Based on the decisions of the Contracting Parties, the Secretariat will coordinate the preparation of the assessment documents, the formulation of proposals for control measures, and the technical guidelines for the implementation of the adopted measures.

5.9 Consultants and *ad hoc* meetings of experts may be used by the Secretariat for the preparation of the assessment documents, the proposals for control measures, and the guidelines for their implementation.

5.10 The meetings of the Scientific and Technical Committee shall review, and revise as necessary, the drafts of the assessment documents, the proposals for control measures and the guidelines for implementation of the measures, before they are submitted for the consideration of the Contracting Parties.

5.11 The implementation of the adopted measures shall be the responsibility of the individual Contracting Parties.

5.12 Assistance shall be provided through the Secretariat to developing countries requesting training of their national experts, or advise (technical and legal) to their

---

<sup>30</sup> Article 7 of the Barcelona Convention.

<sup>31</sup> Articles 4(1), 5, 6, 7, 8 and 9 of the Barcelona Convention.

<sup>32</sup> The following are the Regional Activity Centres of MAP:

- Regional Activity Centre for Priority Actions Programme (PAP/RAC) in Split;
- Regional Activity Centre for Blue Plan (BP/RAC) in Sophia Antipolis;
- Regional Marine Pollution Emergency Response Centre for the Mediterranean (REMPEC) in Malta;
- Regional Activity Centre for Specially Protected Areas (SPA/RAC) in Tunis;
- Regional Activity Centre for Environment Remote Sensing (ERS/RAC) in Palermo.

national institutions, in order to ensure timely and effective implementation of the adopted pollution control measures<sup>33</sup>.

## B. Compliance control

### Basis for action

5.13 Compliance with the provisions of the Barcelona Convention and its protocols, and specifically with the decisions and recommendations adopted by the meetings of the Parties to the Convention, is the key to a successful environmental protection of the Mediterranean sea. The most relevant decisions and recommendations pertinent to the mitigation, prevention and control of pollution are:

- (a) the targets, adopted by the Contracting Parties in 1985<sup>34</sup>, *to be achieved as a matter of priority during the second decade of the Mediterranean Action Plan*:
- *establishment of reception facilities for dirty ballast waters and other oily residues received from tankers and ships in ports of the Mediterranean;*
  - *establishment as a matter of priority of sewage treatment plants in all cities around the Mediterranean with more than 100,000 inhabitants and appropriate outfalls and/or appropriate treatment plants for all towns with more than 10,000 inhabitants<sup>35</sup>;*
  - *applying environmental impact assessment as an important tool to ensure proper development activities;*
  - *concrete measures to achieve substantial reduction in industrial pollution and disposal of solid waste; and*
  - *substantial reduction in air pollution which adversely affects coastal areas and the marine environment with the potential danger of acid rains<sup>36</sup>;*
- (b) the 13 specific measures adopted by the Contracting Parties in the context of the implementation of the LBS protocol for:

---

<sup>33</sup> Article 11(3) of the Barcelona Convention, and Article 10 of the LBS protocol.

<sup>34</sup> Genoa Declaration. UNEP(OCA)/IG.56/5.

<sup>35</sup> In order to assist the countries, *Guidelines for submarine outfall structures for Mediterranean small and medium-sized coastal communities* were prepared in 1994 in the framework of MED POL-Phase II.

<sup>36</sup> The listed five targets are directly related to the implementation of the provisions contained in the LBS protocol.

- *interim environmental quality criteria for bathing waters (1985);*
- *interim environmental quality criteria for mercury (1985);*
- *measures to prevent mercury pollution (1987);*
- *environmental quality criteria for shellfish waters (1987);*
- *measures for control of pollution by used lubricating oils (1989);*
- *measures for control of pollution by cadmium and cadmium compounds (1989);*
- *measures for control of pollution by organotin compounds (1989);*
- *measures for control of pollution by organohalogen compounds (1989);*
- *measures for control of pollution by organophosphorus compounds (1991);*
- *measures for control of pollution by persistent synthetic materials in the Mediterranean sea (1991);*
- *measures for control of radioactive pollution (1991);*
- *measures for control of pollution by pathogenic micro-organisms (1991); and*
- *control of pollution by carcinogenic, teratogenic and mutagenic substances (1993).*

(c) the relevant recommendations approved in 1993 by the Antalya meeting of the Contracting Parties, specifically those identified in paragraphs 3.4-3.7, 6.1, 6.3, 7.1-7.2 (see Appendix II).

### Objectives

5.14 The specific objectives of this programme element shall be:

- (a) to monitor, on a continuous basis, the implementation and the effectiveness of the implementation of pollution control measures adopted or recommended by the Contracting Parties<sup>37</sup>;

---

<sup>37</sup> Paragraphs 17.25 (b), 17.28 (a) and (c), 17.30 (a) and 17.35 (a) of Agenda 21.

- (b) to identify problems experienced by the Contracting Parties and their institutions in the implementation of the measures, and formulate proposals which may assist in their more effective implementation<sup>38</sup>; and
- (c) to keep the Contracting Parties regularly informed about the status of the implementation of the adopted and recommended measures<sup>39</sup>.

#### Activities

5.15 The stated objectives shall be achieved through:

- (a) collection, analysis and evaluation of data and information received from the Contracting Parties, or on their behalf through the National Coordinators for MED POL, on the status of implementation of the adopted or recommended pollution control measures<sup>40</sup>;
- (b) compliance monitoring programmes<sup>41</sup> carried out by National MED POL Collaborating Institutions (see Annex I and II);
- (c) collection, analysis and evaluation of data and information received through the National Coordinators for MED POL from national compliance monitoring programmes (see Annex II);
- (d) target oriented research in support of national compliance monitoring programmes<sup>42</sup>; and
- (e) preparation of consolidated reports for the Contracting Parties on the status of the implementation of the measures, including recommendations on the ways and means to improve the efficiency of their implementation.

5.16 The type of data and information which will be expected from the Contracting Parties, or on their behalf from the National Coordinators for MED POL, may include, *inter alia*:

---

<sup>38</sup> Paragraph 17.25 (b) of Agenda 21.

<sup>39</sup> Paragraph 17.35 (b) of Agenda 21.

<sup>40</sup> Article 20 of the Barcelona Convention; Articles 4, 5 and 6 of the Dumping protocol; and Article 13 of the LBS protocol.

<sup>41</sup> Article 10 of the Barcelona Convention, and Article 8 of the LBS protocol.

<sup>42</sup> Article 11(2) of the Barcelona Convention, and Article 9 of the LBS protocol.

- (a) the status of the adopted or recommended measures (paragraphs 5.13(a) and (b) in relation to the relevant national legislation and national administrative procedures and practices<sup>43</sup>;
- (b) information on the permits issued for dumping of waste<sup>44</sup>;
- (c) the experience gained with the application of the pollution control measures and dumping permits;
- (d) the results of the time series of measurements and observations<sup>45</sup> about the levels of pollutants, or the status of biological pollution indicators, in media directly affected by the measures (e.g., effluent waters, recipient waters);
- (e) the major marine and land-based sources of marine pollutants on the national territories, including coastal waters under national jurisdictions, and estimates of the amounts of pollutants reaching the marine environment from these sources; and
- (f) information relevant for monitoring the biological development of the Mediterranean environment, and on threats to specially protected areas which may come from sources of pollution outside their control<sup>46</sup>.

#### Means of implementation

5.17 Close co-operation with the Contracting Parties and their institutions designated to participate in the programme element is the basic prerequisite for its successful implementation.

5.18 The Secretariat will centrally coordinate all activities envisaged under the programme element.

5.19 Data and information on the status of the adopted or recommended measures, and on the experience gained with their application (paragraphs 5.16(a),(b) and (c)) will be provided to the Secretariat by the Parties to the Convention, or on their behalf by the designated National Coordinators for MED POL, without cost to the Trust Fund.

5.20 Data and information on the results of the time series of measurements and observations, and on the marine and land-based sources of pollution (paragraphs 5.16(d) and (e)) will be provided to the Secretariat by the Parties to the Convention, through the National Coordinators for MED POL, on the basis of agreements between

---

<sup>43</sup> Article 13 of the LBS protocol.

<sup>44</sup> Article 7 of the Dumping protocol.

<sup>45</sup> See Annex I about the details of "compliance monitoring".

<sup>46</sup> Article 14(1) of the SPA protocol.

the Secretariat and the relevant national institutions (see Annex II). The costs involved are expected to be shared between the Trust Fund and the relevant national institutions.

5.21 Target oriented research (paragraph 5.15(d)) will be based on research projects selected by the Secretariat in cooperation with the relative UN Specialized Agency participating in the Programme. For such projects, research contracts will be signed by the Secretariat or Agency and the National MED POL Collaborating Institutions, in consultation with the relevant National Coordinators for MED POL. Institutions from developing countries will receive financial support from the Trust Fund to cover the partial cost of the research carried out by them.

5.22 Assistance shall be provided through the Secretariat to developing countries<sup>47</sup> requesting training of their national experts, or technical advice or assistance (equipment, material, data quality control, intercalibration) to their national institutions participating in monitoring the effectiveness of the implementation of pollution control measures (paragraph 5.15(b)) and reporting on national compliance with these measures (paragraph 5.15(a)).

## 6. SUPPORTING MEASURES

6.1 References have been made in sections 4 and 5 of the present document to some of the measures supporting the substantive MED POL activities, but in view of their importance for the MAP as a whole, they are described in these sections of the document in a more comprehensive way.

### A. Assistance (capacity strengthening)

#### Basis for action

6.2 MED POL-Phase III can not be implemented in a meaningful way without a strong national institutional basis supported with adequate financial resources, equipment and experts. While the situation in developed countries of the Mediterranean region seems adequate to deal with the implementation of the MED POL programme, the capacity of the developing countries will need further strengthening.

#### Objectives

6.3 The objective of the programme element is:

---

<sup>47</sup> Article 11(3) of the Barcelona Convention, and Article 10 of the LBS protocol.

- to facilitate the full participation of all Contracting Parties in MED POL, including the implementation of the pollution control measures and recommendations adopted by the Contracting Parties<sup>48</sup>.

Activities<sup>49</sup>

6.4 The stated objective shall be achieved by providing countries requesting assistance with:

- (a) technical advice on the most suitable institutional arrangements which may be needed for the implementation of the MED POL programme;
- (b) advice on legal<sup>50</sup>, technical<sup>51</sup> and fiscal<sup>52</sup> policies, strategies, and practices which may contribute to the implementation of the pollution control measures and targets adopted by the Contracting Parties<sup>53</sup>;
- (c) individual and group training (e.g., seminars, workshops) of national experts (administrators, technicians, scientists) in all subjects related to the MED POL programme<sup>54</sup>;
- (d) equipment and material donated to the National MED POL Collaborating Institutions<sup>55</sup>;
- (e) guidelines, manuals, documents and reference publications relevant to the implementation of the MED POL programme;

---

<sup>48</sup> Paragraphs 17.6 (k), 17.9, 17.14, 17.17, 17.23, 17.35 (f), 17.38 (f), 17.40 and 17.104 of Agenda 21.

<sup>49</sup> References to the legislative authority for specific assistance measures are given in the relevant paragraphs of Sections 4 and 5 of the present document.

<sup>50</sup> E.g., review of the adequacy of existing national legislation, proposals for adjustments in national legislation, proposals for new legislation.

<sup>51</sup> E.g., clean production technologies, minimization of waste.

<sup>52</sup> E.g., user fees, charges for violating pollution control measures, pricing policies and practices, fiscal incentives, possible loans and grants from international financial institutions.

<sup>53</sup> Paragraphs 17.6 (m) and 17.22 (a) of Agenda 21.

<sup>54</sup> Paragraph 17.38 (a) of Agenda 21.

<sup>55</sup> Paragraph 17.37 (c) of Agenda 21.

- (f) advice and technical assistance related to data management, including data validation, quality control and reporting; and
- (g) maintenance services for analytical equipment used in national pollution monitoring programmes.

#### Means of implementation

6.5 The provision of the assistance shall be coordinated by the Secretariat, involving as necessary the relevant RACs of MAP and the organizations of the United Nations system (FAO and WHO in particular). The cost of the assistance will be normally at the expense of the Trust Fund, but the Secretariat will also solicit direct bilateral assistance (without cost to the Trust Fund) from countries and financial institutions ready to provide such assistance.

6.6 The common maintenance services for analytical equipment, established during MED POL-Phase I, will continue to be provided through IAEA's Marine Environment Laboratory in Monaco to the National MED POL Collaborating Institutions. The same Laboratory will continue to provide the coordination of activities related to the analytical data quality assurance programme, intercalibration of analytical and sampling methods, and further development of "reference methods" for marine pollution studies used in national pollution monitoring programmes.

6.7 The implementation of MED POL may be eligible for financial support (loans or grants) from the international or regional financial institutions and mechanisms on a regional or country basis. The Secretariat will explore the possibilities for such support, and will assist the interested and potentially eligible countries in formulating project proposals which may be considered for support by the appropriate financial institutions and mechanisms<sup>56</sup>.

### B. Data and information management<sup>57</sup>

#### Basis for action

6.8 The nature and quality of data and information provided through MED POL is of crucial importance for the soundness of the scientific and technical rationale underlying the decisions of the Contracting Parties. Therefore a great emphasis should be placed on appropriate data and information management procedures and techniques.

---

<sup>56</sup> The Global Environment Facility (GEF) and the World Bank's Mediterranean Environment Programme are the two most promising mechanisms which may support MED POL related activities.

<sup>57</sup> Data and information management in the context of this document is understood as involving acquisition, quality control, analysis, evaluation, storage, retrieval and exchange (dissemination) of data and information.

### Objectives

- 6.9 The MED POL data and information management shall have a twofold objective:
- (a) to provide the Contracting Parties, on a continuous basis, with reliable data and information required for the development and effective implementation of pollution control measures<sup>58</sup>;
  - (b) to assist all components of MAP, and the coastal area management programmes (CAMPs) in particular, with data and information on the sources, levels (concentrations), trends and effects of pollutants in the Mediterranean region.

### Activities

6.10 The stated objectives shall be achieved through the following activities<sup>59</sup> of the Secretariat:

- (a) collection of data and information resulting from MED POL activities;
- (b) quality control (validation) of collected data and information;
- (c) storage of validated data and information in appropriate databases maintained by the Secretariat;
- (d) analysis and reduction, if appropriate, of the validated data;
- (e) preparation of synthetic reports (evaluations) on general and specific MED POL related issues; and
- (f) distribution (exchange) of data, information and synthetic reports to the Contracting Parties and their subsidiary bodies (Bureau, Scientific and Technical Committee), RACs, National Coordinators for MED POL, National MED POL Collaborating Institutions, meetings organized in the framework of MAP, and other individuals and organizations, as appropriate.

---

<sup>58</sup> Paragraphs 17.8, 17.35 (d) and (e) and 17.37 (f) of Agenda 21.

<sup>59</sup> References to these activities, and to the means of their implementation, have been made in sections 4 and 5 (paragraphs 4.2(e), 4.3(c)-(f), 4.7, 5.4(a), 5.5(a), 5.8, 5.15(a), 5.15(c), 5.15(e), 5.16, 5.19 and 5.20), Annex I (paragraphs 3, 5 and 10) and Annex II (paragraphs 1.(c) and (d), 2. and 3.(b)-(f)) of the present document.

### Means of implementation

6.11 The Contracting Parties, directly or through the National Coordinators for MED POL and the National MED POL Collaborating Institutions, shall be the primary source of data and information supporting the development and implementation of MED POL.

6.12 The collection, quality control, analysis and evaluation of the data and information will be carried out by the Secretariat (with the help of the relevant organizations of the United Nations system, outside experts, and *ad hoc* meetings of experts, as necessary).

6.13 The Secretariat's databank will be the central repository of all data and information. Access to these data and information, and their exchange with interested parties, will be free, unless they were received by the Secretariat as "privileged information", i.e. with clause restricting their use in a form in which they were received.

6.14 The reports of the Secretariat to the Contracting Parties will be transmitted through the subsidiary bodies of the Contracting Parties.

### C. Coordination and cooperation

#### Basis for action

6.15 MED POL, as one of the central and most complex MAP activity, organically linked with virtually all other MAP activities, requires a well coordinated approach in order to ensure the harmonious cooperation and interaction of, and inputs from, the various actors contributing to its implementation.

#### Objectives

6.16 The objective to be achieved through the coordination of MED POL activities is:

- to ensure the full implementation of Contracting Parties' decisions relevant to MED POL through the highest degree of efficient cooperation between the Secretariat, national structures, international organizations, and individuals participating in the implementation of MED POL<sup>60</sup>.

#### Activities

6.17 The stated objective shall be achieved by:

- guidance provided directly or indirectly by the Secretariat to all organizations, structures and individuals involved in MED POL.

---

<sup>60</sup> Paragraph 17.10 of Agenda 21.

Means of implementation

6.18 The Secretariat shall play a central role in coordinating all MED POL activities, in close cooperation with National Coordinators for MED POL<sup>61</sup> and the specialized organizations of the United Nations system involved in MED POL.

6.19 The Scientific and Technical Committee, as the subsidiary body of the Contracting Parties, will continue to review periodically the progress of MED POL, evaluate its results and advise the Contracting Parties on the strategies to be followed in its implementation.

6.20 The coordination of the inputs from the specialized organizations of the United Nations system into MED POL will continue to be ensured through frequent direct working level contacts with these organizations and periodic Interagency Meetings on MED POL.

6.21 The periodic meetings of the heads of RACs with the Secretariat will continue to be used to ensure: (a) the coordination between complementary activities of MAP implemented by the Secretariat and the respective RACs; and (b) the inputs of MED POL into activities carried out by RACs.

---

<sup>61</sup> The modalities of cooperation are described in Annex II.

## ANNEX I

### MONITORING OF THE LEVELS AND IMPACTS OF POLLUTANTS IN THE CONTEXT OF MED POL-Phase III

1. Depending on the main purpose and objectives of the monitoring<sup>62</sup>, two basic types are distinguished in the context of MED POL-Phase III: compliance and trend monitoring.
2. Depending on the media and indicators included in the monitoring programmes, both basic types of the programmes may be identified as programmes for:
  - monitoring of "hot spots" (e.g., intensively polluted areas, areas which are expected to become heavily polluted);
  - monitoring of loads (e.g., from land-based sources of pollution in general or from identified sources, pollutants transported by atmosphere, pollutants carried by rivers, agroindustrial pollutants of non-point origin);
  - monitoring of biological effects at various organizational levels including molecular, cellular, physiological, behavioral, community and ecosystem levels;
  - monitoring of health-related conditions (e.g., sanitary quality of bathing beaches and waters used for aquaculture, quality of seafood);
  - monitoring of health-related effects (e.g., occurrence of illnesses in bathers exposed to contaminated waters or seafood); etc.

#### Compliance monitoring

3. The *objective of the monitoring* is to collect, over a given time period, data and information on the levels and impacts of pollutants which may serve as indicators of compliance with, and effectiveness of, the relevant provisions of the Barcelona Convention and its protocols, and of the measures and recommendations for the prevention, mitigation or control of pollutants adopted by the Contracting Parties in particular.
4. The *purpose of the monitoring* is to provide an indication of the effectiveness of the adopted and recommended measures, and to serve as a starting point for the initiation of additional activities (e.g., formulation of new measures or revision of existing

---

<sup>62</sup> There are considerable differences in the interpretation of terminology used in monitoring programmes, and one could easily argue that all monitoring is "trend monitoring" and that "compliance monitoring" is simply a "trend monitoring" with specific objectives. Therefore, the terminology used in the present document may not always correspond to that used in programmes outside of MED POL.

ones, preparation of guidelines for the application of the measures or revision of existing ones, technical assistance) if the effectiveness of the measures is deemed inadequate.

#### Trend monitoring

5. The *objective of the monitoring* is to collect, over a given time period, data and information on the levels and impacts of pollutants which may serve as indicators of eventual changes in the monitored system attributable to pollution.

6. The *purpose of the monitoring* is to provide information on the environmental conditions of the monitored areas, and on the rate of changes (if any) in these conditions. The results of the monitoring are intended to be used for the assessment of a particular or a more general problem associated with marine pollution, and thus serve as the basis for development and introduction of pollution control measures, whenever feasible and necessary.

#### Media (matrices) to be monitored

7. The media (one or several) included in monitoring programmes will depend on the objective and purpose of the monitoring. The most common media which could be included in monitoring programmes are:

- (a) waters, sediments and biota (individual specimens or communities) of marine coastal regions and estuaries which are, or are likely to be, under direct impact of identifiable point or non-point source(s) of pollution;
- (b) effluents reaching the marine environment from industrial plants and municipal sewerage systems;
- (c) outputs of air pollutants from installation which may affect the quality of the marine environment; and
- (d) people or other non-aquatic species (e.g., birds) which may be affected by pollutants through direct or indirect exposure to polluted media, or products (e.g., food) derived from such media.

#### Areas to be monitored

8. In case of compliance monitoring, the monitored areas should include the impact zone of pollutant(s) covered by the pollution control measure whose effectiveness is being monitored.

9. In case of trend monitoring programmes, the monitored areas should be selected in such a way that they respond to the objective and purpose of the monitoring in a most economic way but without sacrificing the quality of the results, which may impair their intended use.

### Indicators to be monitored

10. Indicators to be monitored will vary from case to case, i.e. will be site and problem specific. They may include one or several of the following types of physical, chemical or biological parameters, or health-related indicators:

- physical and chemical properties (e.g., redox potential, oxygen saturation) of the monitored abiotic media;
- the concentration of a specific chemical compound or group of compounds in a given matrix<sup>63</sup>;
- indicators of marine ecosystem health on molecular, cellular, individual organism, community and ecosystem levels (e.g., bioassays, biomarkers, histopathology, physiology, population structure)<sup>64</sup>;
- sanitary quality of media used by people (e.g., microbiological quality of bathing waters), or for food production (e.g., quality of waters used for aquaculture);
- ecological effects of coastal aquaculture<sup>65</sup>;
- abundance and distribution of indicator species or communities;
- physiological, teratogenic or genetic changes in biota attributable to their exposure to polluted media; and

---

<sup>63</sup> A good overview of the present experience with monitoring of biological matrices is contained in MAP Technical Reports Series No.77 (1993) on *Designing of Monitoring Programmes and management of Data concerning Chemical Contaminants in Marine Organisms*, and in *Guidelines for Monitoring Chemical Contaminants in the Sea using Marine Organisms* (Reference Methods for Marine Pollution Studies No.6, UNEP, 1993).

<sup>64</sup> Detailed information on biological indicators which may be used in monitoring programmes can be found in:

- MAP Technical Reports Series No.69 containing the *Proceedings of the UNEP/FAO/IOC Workshop on the Biological Effects of Pollutants on Marine Organisms* (Malta, 10-14 September 1991);
- the report of the UNEP/FAO/Council of Europe sponsored meeting of the *Working Group on Biomonitoring in the Mediterranean and the Black Sea*, convened in the framework of MED POL-Phase II (Valletta, 10-11 November 1992); and
- GESAMP's work on the *Indicators of Marine Ecosystem Health* (GESAMP Working Group 33).

<sup>65</sup> GESAMP is currently working on defining the ways and means of *Monitoring the Ecological Effects of Coastal Aquaculture*, including the regulatory aspects of such monitoring (GESAMP Working Group 31).

- health effects on people exposed to contaminated media (e.g., bathers) or products (e.g., contaminated shellfish) derived from such media.

11. In case of compliance monitoring, the selection of the indicator(s) to be monitored is determined by the pollution control measure whose effectiveness is being monitored.

#### Methods of monitoring

12. The methods of monitoring will vary, depending on the magnitude of the problem, its periodicity, nature of pollutants and other factors specific for the monitored source, media and indicators. In general: the monitoring should be systematic, according to an agreed sampling, measurement or observation scheme and time schedule.

13. In case of compliance monitoring, whenever possible the monitoring should start before the introduction of measures (technical, technological, or administrative) for pollution control. Ideally, compliance monitoring should be preceded by a good baseline study, or trend monitoring.

#### Reporting requirements

14. The results obtained by the sampling, measurement and observation must be of adequate quality (accuracy and precision), must be comparable on a Mediterranean-wide basis, and must be reported to the Secretariat according to agreed formats and schedules, in order to satisfy the reporting requirements<sup>66</sup>.

---

<sup>66</sup> The experience with quality assurance programmes, largely based on the practices of MED POL, is described in *Contaminant Monitoring Programmes using Marine Organisms: Quality Assurance and Good Laboratory Practice* (UNEP Regional Seas Reference Methods for Marine Pollution Studies No.57, 1990).

## ANNEX II

**MODALITIES OF COOPERATION BETWEEN THE CONTRACTING PARTIES  
AND THE SECRETARIAT REGARDING MED POL**

In order to ensure the efficient coordination of national efforts related to MED POL, and a streamlined communication channel between the *Secretariat of MAP* and the national structures designated by the Contracting Parties to participate in MED POL, each Contracting Party designates a person or office as the *National Coordinator for MED POL*. Their mutual responsibilities shall be as follows:

**1. Responsibilities of the National Coordinators for MED POL:**

- (a) to ensure the implementation of all activities of the national monitoring programme of MED POL covering national pollution compliance and trend monitoring programme as specified in an agreement signed between the Secretariat and the designated national authorities;
- (b) to select and designate *National MED POL Collaborating Institutions* and coordinate their activities related to the agreed national monitoring programme;
- (c) to serve as the channel of all formal communications between the Secretariat and the National MED POL Collaborating Institutions while for technical matters Institutions will be contacted directly by the Secretariat;
- (d) to collect and evaluate the data and information provided by the National MED POL Collaborating Institutions, and to transmit these data and information to the Secretariat according to agreed formats and schedules, together with his/her evaluation;
- (e) to report to the Secretariat on the progress achieved in the implementation of the agreed national MED POL programme according to agreed formats and schedules;
- (f) to assist in the preparation of reports on dumping activities relevant to the Dumping protocol;
- (g) to prepare national surveys and inventories of point and non-point land-based sources of pollutants relevant to the LBS protocol, including those relevant to airborne pollutants;
- (h) to provide the Secretariat with any national data or information required for the implementation of approved activities;
- (i) to prepare periodic reports of the state of the marine and coastal environment areas under national jurisdiction;

- (j) to participate in the meetings of the Scientific and Technical Committee as a member of the Committee; and
- (k) to review the MED POL-related technical and policy documents and proposals prepared by the Secretariat before their submission to the Contracting Parties, and to advise the Contracting Parties and the Secretariat on the way to handle these documents and proposals.

**2. Responsibilities of the National MED POL Collaborating Institutions:**

As far as the national monitoring programmes are concerned, the individual responsibilities shall be determined by the National Coordinators for MED POL in consultation with the Secretariat, and shall be reflected in the monitoring agreements signed between the Secretariat and the National Coordinators for MED POL. The Institutions shall report according to agreed formats and schedules to the Secretariat through the respective Coordinator, and shall participate in the mandatory data quality assurance programme organized by the Secretariat, whenever such exercises are warranted.

**3. Responsibilities of the Secretariat:**

- (a) to coordinate and harmonize the work carried out in the framework of the agreed national MED POL programmes; this shall be done in close consultation and cooperation with National Coordinators for MED POL, National MED POL Collaborating Institutions, MAP's Regional Activity Centres, and specialized bodies of the United Nations system supporting or participating in the programme;
- (b) to collect, evaluate, analyze and store in the Secretariat's databases the data and information received through the National Coordinators for MED POL;
- (c) to organize data quality assurance programmes which will be done, as appropriate with or through the relative competent UN Specialized Agencies participating in the programme;
- (d) to convene the periodic meetings of the Scientific and Technical Committee, and the *ad hoc* meetings of experts called to:
  - assist in the analysis, evaluation, and integration of data and information made available through the National Coordinators for MED POL or other sources;
  - review and advise on technical and policy documents prepared by the Secretariat and the UN Specialized Agencies;
- (e) to prepare, jointly with or through the relevant competent UN Specialized Agency or Agencies participating in the programme, whenever appropriate, technical and policy documents for the Contracting Parties based on data and information received through the National Coordinators for MAP, through MED POL

Collaborating Institutions, through other research Institutions and open scientific literature. These technical and policy documents include :

- reports on the state and trends in the environmental quality of the marine and coastal areas; and
  - proposals for measures which may prevent or mitigate the environmental degradation of these areas, or contribute to the restoration of the areas affected by degradation; and
- (f) to disseminate the results of MED POL to all interested parties.

## APPENDIX I

### ACRONYMS AND ABBREVIATIONS

*Agenda 21* - Basic document adopted by UNCED

*Barcelona Convention* - Convention for the protection of the Mediterranean sea against pollution (Barcelona, 1976)

*BP/RAC* - Blue Plan Regional Activity Centre in Sophia Antipolis

*CAMP* - Coastal Area Management Programme of MAP

*Contracting Parties* - Parties to the Barcelona Convention

*Dumping protocol* - Protocol for the prevention of pollution of the Mediterranean sea by dumping from ships and aircraft (Barcelona, 1976)

*EIA* - Environmental impact assessment

*Emergency protocol* - Protocol concerning cooperation in combating pollution of the Mediterranean sea by oil and other harmful substances in cases of emergency (Barcelona, 1976)

*ERS/RAC* - Environmental Remote Sensing Regional Activity Centre in Palermo

*FAO* - Food and Agriculture Organization of the United Nations

*GEF* - Global Environment Facility

*IAEA* - International Atomic Energy Agency

*IOC* - Intergovernmental Oceanographic Commission

*LBS protocol* - Protocol for the protection of the Mediterranean sea against pollution from land-based sources (Athens, 1980)

*MAP* - Mediterranean Action Plan

*MED POL* - Long-term programme for the assessment, prevention, mitigation and control of pollution in the geographic area covered by the Barcelona Convention and MAP

*OCA* or *OCA/PAC* - Oceans and Coastal Area Programme Activity Centre of UNEP

*PAP/RAC* - Priority Actions Programme Activity Centre in Split

*Regional Activity Centres* - see BP/RAC, PAP/RAC, REMPEC, SPA/RAC, ERS/RAC

*REMPEC* - Regional Marine Pollution Emergency Response Centre for the Mediterranean in Malta

*Secretariat* - UNEP's Coordinating Unit for the Mediterranean Action Plan in Athens

*SPA protocol* - Protocol concerning Mediterranean specially protected areas (Geneva, 1982)

*SPA/RAC* - Specially Protected Areas Programme Activity Centre in Tunis

*UNCED* - United Nations Conference on Environment and Development (Rio de Janeiro, 3-14 June 1992)

*UNEP* - United Nations Environment Programme

*UNESCO* - United Nations Educational, Scientific & Cultural Organization

*UNDP* - United Nations Development Programme

*WHO* - World Health Organization

*WMO* - World Meteorological Organization

## APPENDIX II

### **MED POL-RELATED RECOMMENDATIONS ADOPTED BY THE EIGHTH ORDINARY MEETING OF THE CONTRACTING PARTIES TO THE CONVENTION FOR THE PROTECTION OF THE MEDITERRANEAN SEA AGAINST POLLUTION AND ITS RELATED PROTOCOLS (Antalya, 12-15 October 1993) (Extract from UNEP(OCA)/MED IG.3/5, Annex IV)**

#### 3. LEGAL COMPONENT

...

4. To actively support the total prohibition of the export and transfer of hazardous wastes to developing Countries.
5. To re-affirm the decision of the Contracting Parties to submit a consolidated annual report every two years on measures adopted to implement the Convention and its related protocols (Article 20 of the Convention).
6. To convene a plenipotentiaries Conference on the offshore protocol in 1994, to be immediately preceded by a short meeting of experts.
7. To convene during 1994 a second meeting of Mediterranean experts on the preparation of a protocol for the prevention of pollution of the Mediterranean Sea by transboundary movements of hazardous wastes and their disposal, with a view of convening a Conference of Plenipotentiaries during 1995 for the adoption of the Protocol.

#### 6. IMPLEMENTATION OF THE LBS PROTOCOL AND DUMPING PROTOCOL

##### 1. Implementation of LBS Protocol

- To request the Secretariat to make every effort to follow up the implementation by the Contracting Parties of pollution control measures adopted, and to report to the next Contracting Parties' meeting on actions taken by individual countries.
- To urge Contracting Parties who have not completed the questionnaires for the survey of land-based sources of pollution to do so as soon as possible.
- To continue to provide assistance to Contracting Parties for the implementation of the control measures adopted, as appropriate.
- To recommend that the Contracting Parties reduce and phase out by the year 2005 inputs to the marine environment of toxic, persistent and

bioaccumulative substances listed in the LBS Protocol, in particular organohalogen compounds having those characteristics. In this framework, high priority is to be given to both diffuse sources and industrial sectors which are sources of organohalogen inputs.

- To report to the Secretariat on all measures taken in accordance with the above decision and to assess implementation progress by the year 2000.

...

### 3. Implementation of the Dumping Protocol

To adopt the following:

- to urge Contracting Parties to make every effort to send on a regular basis annual reports on dumping to the MED Unit;
- to ask the Secretariat to prepare guidelines for dumping of sewage sludge and dredging spoils which would include recommendations on methods for their treatment, the definition of "trace contaminants" and the establishment of maximum volumes to be authorized for dumping in the presence of high concentration of contaminants. The guidelines should be prepared by the Secretariat with the help of experts and should be reviewed by a meeting of an ad hoc group which would also review Annex I, Section B, of the Dumping Protocol. The group, composed of government-designated experts, should meet during 1994. The Secretariat should, in the meantime, collect all the available information from Contracting Parties on the subject of dumping of sewage sludge and dredging spoils and organize an informal consultation meeting at the end of 1993, subject to the availability of funds.

## 7. MONITORING OF MARINE POLLUTION IN THE MEDITERRANEAN

### 1. To approve the following recommendations concerning MED POL-Phase II (1994-1995)

#### a) Monitoring and supporting activities

- The monitoring objectives should be reviewed and modified to allow for improved utilisation of monitoring results in the management and decision-making aspects of the sustainable development process.
- Integrated monitoring and research should include regular preparation of regional environmental assessments.

- The identification of appropriate Mediterranean sub-regions, grouping several countries around a specific marine entity would be conducive to progress.
  - Country profiles on status and trends of the quality of the marine environment should be prepared and updated every two years.
  - The basic importance of monitoring of sources of pollution should be reiterated because of its ability to help in focusing the monitoring activities.
  - Data quality assurance activities, including microbial parameters, must remain a priority task, with the aim of encouraging laboratories to consider it as important as the analysis itself.
  - A biological effects monitoring programme should be prepared and implemented within the framework of MED POL.
  - Training of scientists and technicians from developing countries should continue as one of the main means of achieving the objectives of MED POL.
  - Every effort should be made towards the achievement of complete geographical coverage of the monitoring activities in the Mediterranean through the preparation of national Monitoring Programmes of MED POL and the provision of relevant pollution data.
  - The monitoring of airborne pollution should be included whenever possible in the MED POL national monitoring programmes, the data from all countries carrying out that monitoring should be submitted to the MED Unit, and the collection of emission inventory data, especially for heavy metals, should be initiated.
  - The contribution to MAP of the World Bank in the field of MED POL data quality assurance, which will enable the Secretariat to expand the activities limited by the MAP budget, should be welcomed and encouraged.
  - The World Bank should be urged through the Secretariat to continue in the future to support the MED POL activities for the overall benefit of the Barcelona Convention and the Mediterranean Action Plan.
- b) Research
- Up to fifty per cent of the budget earmarked for the research should be used for eutrophication and plankton blooms in the 1994-1995 biennium.

- All national and international research efforts leading to an improvement of the general knowledge of the marine environment must be strongly encouraged to allow optimisation of monitoring programme.

c) Climatic changes

- The study of implications of climatic changes on coastal areas should continue in order to assess the environmental problems associated with the potential impact of expected climatic changes on marine environment and on adjacent coastal areas and assist governments in the identification and implementation of suitable policy options and response measures which may mitigate the negative consequences of the expected impacts.

2. Development of MED POL-Phase III (1996-2005)

- Keeping in mind that, in line with UNCED and Agenda 21, further emphasis is to be given to those MAP activities contributing to the implementation of the sustainable development concept, and
- taking into account that MED POL as the scientific and technical component of MAP, provides the scientific basis for decision making related to marine pollution in the region in the process of achieving sustainable development,

the Meeting approves the development of MED POL-Phase III Programme (1996-2005) with the following overall objectives:

- i) organization of a Mediterranean coordinated marine pollution monitoring and research programme, concentrating on contaminants and pollutants affecting the quality of the marine and coastal environment, as well as the health of man and of the living resources in the Mediterranean and interpretation/assessment of the results of the programme as part of the scientific basis for decision making in the region;
- ii) generation of information on the sources, levels, amounts, trends (trend monitoring) and effects of marine pollution, develop capabilities for assessing the present and future state of the marine environment within the Mediterranean region as an additional component of the scientific basis upon which the formulation of proposals for preventive and remedial actions can be based;
- iii) formulation of proposals for technical, administrative and legal programmes and measures for the prevention and/or reduction of pollution;

- iv) strengthening and, when necessary, development of the capabilities of the national institutions, in accordance with the circumstances and the country requesting it, so as to implement monitoring and research on pollution of the marine environment;
- v) assistance, as appropriate, to Contracting Parties for the implementation of the recommendations adopted with a view to the assessment of their effectiveness; this assistance will allow the competent authorities to verify the recommendations adopted taking into account data of a satisfactory standard.

In particular, the full implementation of the MED POL Programme will, inter alia, assist the Governments to:

- a) further reduce the pollution load reaching the marine environment from land-based sources;
- b) safeguard public health by surveillance of the sanitary quality of bathing and shellfish-growing waters and by development of measures which will ensure maintenance of adequate sanitary quality of these waters;
- c) assess the damage of pollution on marine and coastal ecosystems with a view to their rehabilitation;
- d) assess the effectiveness of measures taken to reduce pollution;
- e) establish a set of scientifically-based environmental quality criteria for the coastal environment of the Mediterranean region;
- f) assess the present levels, trends and effects of eutrophication and plankton blooms and formulate proposals for prediction and reduction of such phenomena in the Mediterranean region;
- g) assess airborne pollution levels and to develop predictive models which can provide basis for remedial actions;
- h) enhance the understanding of processes influencing the distribution and dispersion of pollution, and the biogeochemical cycles of specific pollutants;
- i) prepare periodically an assessment of the state of pollution of the Mediterranean Sea and assist Contracting Parties to prepare such assessments on a national level;
- j) develop and implement national monitoring programmes.

## APPENDIX III

**LIST OF THE MOST IMPORTANT PUBLICATIONS AND INTERNAL DOCUMENTS DESCRIBING THE RESULTS AND ACTIVITIES OF MED POL**

- UNEP, 1977: Report of the Mid-term Review Meeting on the Progress of the Co-ordinated Mediterranean Pollution Monitoring and Research Programme (MED POL) and related projects of the Mediterranean Action Plan (Monaco, 18-22 July 1977). (UNEP/WG.11/5). (24 pages) (English and French). UNEP, Athens
- UNEP, 1981: Report of the Meeting of Experts to evaluate the pilot phase of MED POL and to develop a long-term monitoring and research programme for the Mediterranean Action Plan (Geneva, 12-16 January 1981). (UNEP/WG.46/9). (46 pages) (English and French). UNEP, Athens
- UNEP/WHO, 1982: Report on a joint Meeting on Methods for monitoring selected pollutants in sewage effluents and coastal recreational waters (Rome, 24-26 November 1982). (ICP/RCE 211(2)). (109 pages) (English and French). UNEP, Athens
- UNEP, 1985: Final Report of the Consultation on Data Processing Requirements for MAP (Athens, 14-15 March 1985). (UNEP/WG.133/2). (8 pages) (English only). UNEP, Athens
- UNEP/WHO, 1985: Report on a joint Meeting on Correlation between coastal water quality and health effects (Follonica, 21-25 October 1985). (ICP/CEH 001/m06). (44 pages) (English and French). UNEP, Athens
- UNEP, 1985: Report of the Meeting of Experts of the Technical implementation of the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources (Athens, 9-13 December 1985). (UNEP/WG.125/10). (46 pages) (English and French). UNEP, Athens
- UNEP, 1986: Report of the Review Meeting on the MED POL jellyfish programme (Trieste, 27-29 January 1986). (UNEP/WG.145/3). (37 pages) (English and French). UNEP, Athens
- UNEP/IOC/WMO, 1986: Baseline studies and monitoring of oil and petroleum hydrocarbons in marine waters (MED POL I). MAP Technical Reports Series No.1. (96 pages) (parts in English, French or Spanish only). UNEP, Athens
- UNEP/FAO, 1986: Baseline studies and monitoring of metals, particularly mercury and cadmium, in marine organisms (MED POL II). MAP Technical Reports Series No. 2. (220 pages) (parts in English, French or Spanish only). UNEP, Athens

- UNEP/FAO, 1986: Baseline studies and monitoring of DDT, PCBs and other chlorinated hydrocarbons in marine organisms (MED POL III). MAP Technical Reports Series No. 3. (128 pages) (parts in English, French or Spanish only). UNEP, Athens
- UNEP/FAO, 1986: Research on the effects of pollutants on marine organisms and their populations (MED POL IV). MAP Technical Reports Series No. 4. (118 pages) (parts in English, French or Spanish only). UNEP, Athens
- UNEP/FAO, 1986: Research on the effects of pollutants on marine communities and ecosystems (MED POL V). MAP Technical Reports Series No. 5. (146 pages) (parts in English or French only). UNEP, Athens
- UNEP/IOC, 1986: Problems of coastal transport of pollutants (MED POL VI). MAP Technical Reports Series No. 6. (100 pages) (English only). UNEP, Athens
- UNEP/WHO, 1986: Coastal water quality control (MED POL VII). MAP Technical Reports Series No. 7. (426 pages) (parts in English or French only). UNEP, Athens
- UNEP/IAEA/IOC, 1986: Biogeochemical studies of selected pollutants in the open waters of the Mediterranean (MED POL VIII). MAP Technical Reports Series No. 8. (42 pages) (parts in English or French only). UNEP, Athens
- UNEP, 1986: Biogeochemical studies of selected pollutants in the open waters of the Mediterranean (MED POL VIII). Addendum, Greek Oceanographic Cruise 1980. MAP Technical Reports Series No. 8, Addendum. (66 pages) (English only). UNEP, Athens
- UNEP, 1986: Co-ordinated Mediterranean pollution monitoring and research programme (MED POL - Phase I). Final report, 1975-1980. MAP Technical Reports Series No. 9. (276 pages) (English only). UNEP, Athens
- UNEP, 1986: Long-term programme for pollution monitoring and research in the Mediterranean (MED POL)-Phase II. UNEP Regional Seas Reports and Studies No. 28. Rev.1. (26 pages) (English only). UNEP, Athens
- UNEP, 1987: Research on the toxicity, persistence, bioaccumulation, carcinogenicity and mutagenicity of selected substances (Activity G). Final reports on projects dealing with toxicity (1983-85). MAP Technical Reports Series No. 10. (118 pages) (English only). UNEP, Athens
- UNEP/FAO/WHO, 1987: Assessment of the state of pollution of the Mediterranean Sea by mercury and mercury compounds. MAP Technical Reports Series No. 18. (354 pages) (English and French). UNEP, Athens

- UNEP, 1987: An Assessment of organosilicons as marine pollutants, with particular reference to their status in the Medierranean dumping and land-based sources protocols. (UNEP/WG.160/12). (23 pages) (English and French). UNEP, Athens
- UNEP/IOC, 1988: Assessment of the state of pollution of the Mediterranean Sea by petroleum hydrocarbons. MAP Technical Reports Series No. 19. (130 pages) (English and French). UNEP, Athens
- UNEP/WHO, 1988: Epidemiological studies related to environmental quality criteria for bathing waters, shellfish-growing waters and edible marine organisms (Activity D). Final report on project on relationship between microbial quality of coastal seawater and health effects (1983-86). MAP Technical Reports Series No. 20. (156 pages) (English only). UNEP, Athens
- UNEP/UNESCO/FAO, 1988: Eutrophication in the Mediterranean Sea: Receiving capacity and monitoring of long-term effects. MAP Technical Reports Series No. 21. (200 pages) (parts in English or French only). UNEP, Athens
- UNEP/FAO, 1988: Study of ecosystem modifications in areas influenced by pollutants (Activity I). MAP Technical Reports Series No. 22. (146 pages) (parts in English or French only). UNEP, Athens
- UNEP, 1988: National monitoring programme of Yugoslavia, Report for 1983-1986. MAP Technical Reports Series No. 23. (223 pages) (English only). UNEP, Athens
- UNEP/FAO, 1988: Toxicity, persistence and bioaccumulation of selected substances to marine organisms (Activity G). MAP Technical Reports Series No. 24. (122 pages) (parts in English or French only). UNEP, Athens
- UNEP/FAO/WHO, 1988: Report on a Joint WHO/FAO/UNEP Meeting on Mediterranean health-related environmental quality criteria (Bled, 12-16 September 1988). (EUR/ICP/CEH 059). (37 pages) (English and French). UNEP, Athens
- UNEP, 1988: Report of the Joint Meeting of the Task Team on Implications of climatic changes in the Mediterranean and the Coordinators of Task Teams for the Caribbean, South-East Pacific, South Pacific, East Asian Seas and South Asian Seas Regions (Split, 3-8 October 1988). (UNEP(OCA)/WG.2/25). (46 pages) (English only). UNEP, Athens
- UNEP/FAO/IAEA/WHO, 1988: Report of the Review meeting on the organotin pilot survey (Erdemli, Turkey, 7-9 November 1988). (FIR/MEDPOL/OT/5). (62 pages) (English and French). UNEP, Athens
- UNEP, 1989: Implications of expected climate changes in the Mediterranean Region: An overview. MAP Technical Reports Series No. 27. (52 pages) (English only). UNEP, Athens

UNEP, 1989: State of the Mediterranean marine environment. MAP Technical Reports Series No. 28. (225 pages) (English only). UNEP, Athens

UNEP, 1989: Bibliography on effects of climatic change and related topics. MAP Technical Reports Series No. 29. (143 pages) (English only). UNEP, Athens

UNEP/WMO, 1989: Airborne pollution of the Mediterranean Sea. Report and proceedings of a WMO/UNEP Workshop. MAP Technical Reports Series No. 31. (247 pages) (parts in English or French only). UNEP, Athens

UNEP/FAO, 1989: Biogeochemical cycles of specific pollutants (Activity K). MAP Technical Reports Series No. 32. (139 pages) (parts in English or French only). UNEP, Athens

UNEP/FAO/WHO/IAEA, 1989: Assessment of organotin compounds as marine pollutants in the Mediterranean. MAP Technical Reports Series No. 33. (185 pages) (English and French). UNEP, Athens

UNEP/FAO/WHO, 1989: Assessment of the state of pollution of the Mediterranean Sea by cadmium and cadmium compounds. MAP Technical Reports Series No. 34. (175 pages) (English and French). UNEP, Athens

UNEP, 1989: Bibliography on marine pollution by organotin compounds. MAP Technical Reports Series No. 35. (92 pages) (English only). UNEP, Athens

UNEP/FAO/IAEA/WHO, 1989: Report of the Review meeting on the organophosphorus pilot survey (Barcelona, 24-26 January 1989). (FIR/MEDPOL/OP/5). (29 pages) (English only). UNEP, Athens

UNEP, 1989: Report of the meeting of responsible investigators of monitoring programmes (Athens, 20-23 March 1989). (UNEP(OCA)/MED WG.5/3). (22 pages) (English and French). UNEP, Athens

UNEP, 1989: Evaluation of MED POL-Phase II Monitoring Data Part I - Sources of Pollution. Meeting of responsible investigators of monitoring programmes (Athens, 20-23 March 1989). (UNEP(OCA)/MED WG.5/Inf.3). (10 pages) (English and French). UNEP, Athens

UNEP, 1989: Evaluation of MED POL-Phase II Monitoring Data Part II - Micro-organisms in coastal areas. Meeting of responsible investigators of monitoring programmes (Athens, 20-23 March 1989). (UNEP(OCA)/MED WG.5/Inf.4). (16 pages) (English and French). UNEP, Athens

UNEP, 1989: Evaluation of MED POL-Phase II Monitoring Data Part III - Heavy metals in coastal and reference areas. Meeting of responsible investigators of monitoring programmes (Athens, 20-23 March 1989). (UNEP(OCA)/MED/ WG.5/Inf.5). (22 pages) (English and French). UNEP, Athens

- UNEP, 1989: Evaluation of MED POL-Phase II Monitoring Data Part IV - Petroleum and chlorinated hydrocarbons in coastal and reference areas. Meeting of responsible investigators of monitoring programmes (Athens, 20-23 March 1989). (UNEP(OCA)/MED WG.5/Inf.6). (54 pages) (English and French). UNEP, Athens
- UNEP, 1989: Report of the Meeting on the implications and control of undesirable plankton blooms (Athens, 4-6 April 1989). (UNEP(OCA)/MED/WG.4/2). (68 pages) (English and French). UNEP, Athens
- UNEP/IOC/FAO, 1989: Report of the Review meeting on persistent synthetic materials (Haifa, Israel, 12-14 June 1989). (46 pages) (English only). UNEP, Athens
- UNEP/UNIDO/WHO, 1989: Assessment of the situation regarding used lubricating oils in the Mediterranean basin and suggested progressive measures for their elimination as marine pollutants. (UNEP(OCA)/MED/WG.3/Inf.4). (40 pages) (English and French). UNEP, Athens
- UNEP/WHO, 1989: Report on a Joint WHO/UNEP Meeting on Programmes and measures for the protection of the Mediterranean Sea against pollution from land-based sources (Alexandria, 5-9 November 1989). (EUR/ICP/CEH 082). (11 pages) (English and French). UNEP, Athens
- UNEP, 1990: A programme of support for regional and global marine pollution assessments (Reference Methods and Materials). (18 pages) (English only). UNEP, Athens
- UNEP, 1990: Report of a Consultation Meeting on the evaluation of MED POL-Phase II Monitoring Data (Athens, 12-13 January 1990). (UNEP(OCA)/MED/WG.14/1). (37 pages) (English only). UNEP, Athens
- UNEP/FAO, 1990: Report of the *Ad-hoc* meeting on the review of the assessment document and proposed measures concerning organophosphorus compounds (Athens, Greece 7-8 March 1990). (FIR/MEDPOL/ROP/1). (48 pages) (English only). (UNEP, Athens
- UNEP/FAO, 1990: Final reports on research projects dealing with eutrophication and plankton blooms (Activity H). MAP Technical Reports Series No. 37. (74 pages) (parts in English or French only). UNEP, Athens
- UNEP, 1990: Common measures adopted by the Contracting Parties to the Convention for the Protection of the Mediterranean Sea against pollution. MAP Technical Reports Series No. 38. (100 pages) (English, French, Spanish and Arabic). UNEP, Athens
- UNEP/FAO/WHO/IAEA, 1990: Assessment of the state of pollution of the Mediterranean Sea by organohalogen compounds. MAP Technical Reports Series No. 39. (224 pages) (English and French). UNEP, Athens

UNEP/FAO, 1990: Final reports on research projects (Activities H,I and J). MAP Technical Reports Series No. 40. (125 pages) (English and French). UNEP, Athens

UNEP, 1990: Bibliography on aquatic pollution by organophosphorus compounds. MAP Technical Reports Series No. 44. (98 pages) (English only). UNEP, Athens

UNEP/IAEA, 1990: Transport of pollutants by sedimentation: Collected papers from the first Mediterranean Workshop (Villefranche-sur-Mer, France, 10-12 December 1987). MAP Technical Reports Series No. 45. (302 pages) (English only). UNEP, Athens

Halim, Y., 1990: Pollution problems in the Mediterranean Sea and relevant research priorities, Xth ICSEM/UNEP Workshop on Marine Pollution in the Mediterranean, ICSEM, Perpignan, 18-19 October 1990. (18 pages) (English only)

Joanny, M., 1990: Monitoring Strategies of Marine Pollution, Xth Workshop on Marine Pollution in the Mediterranean, ICSEM, Perpignan, 18-19 October 1990. (23 pages) (French and English)

UNEP/WHO, 1991: Epidemiological studies related to environmental quality criteria for bathing waters, shellfish-growing waters and edible marine organisms (Activity D). Final report on project on relationship between microbial quality of coastal seawater and rotavirus-induced gastroenteritis among bathers (1986-88). MAP Technical Reports Series No.46. (64 pages) (English only). UNEP, Athens

UNEP, 1991: Jellyfish blooms in the Mediterranean. Proceedings of the II workshop on jellyfish in the Mediterranean Sea. MAP Technical Reports Series No.47. (320 pages) (parts in English or French only). UNEP, Athens

UNEP/FAO, 1991: Final reports on research projects (Activity G). MAP Technical Reports Series No. 48. (126 pages) (parts in English or French only). UNEP, Athens

UNEP/WHO, 1991: Biogeochemical cycles of specific pollutants. Survival of pathogens. Final reports on research projects (Activity K). MAP Technical Reports Series No. 49. (71 pages) (parts in English or French only). UNEP, Athens

UNEP, 1991: Bibliography on marine litter. MAP Technical Reports Series No. 50. (62 pages) (English only). UNEP, Athens

UNEP/FAO, 1991: Final reports on research projects dealing with mercury, toxicity and analytical techniques. MAP Technical Reports Series No. 51. (166 pages) (parts in English or French only). UNEP, Athens

UNEP/FAO, 1991: Final reports on research projects dealing with bioaccumulation and toxicity of chemical pollutants. MAP Technical Reports Series No. 52. (86 pages) (parts in English or French only). UNEP, Athens

- UNEP/WHO, 1991: Epidemiological studies related to environmental quality criteria for bathing waters, shellfish-growing waters and edible marine organisms (Activity D). Final report on epidemiological study on bathers from selected beaches in Malaga, Spain (1988-1989). MAP Technical Reports Series No. 53. (127 pages) (English only). UNEP, Athens
- UNEP/WHO, 1991: Development and testing of sampling and analytical techniques for monitoring of marine pollutants (Activity A): Final reports on selected microbiological projects. MAP Technical Reports Series No. 54. (83 pages) (English only). UNEP, Athens
- UNEP/WHO, 1991: Biogeochemical cycles of specific pollutants (Activity K): Final report on project on survival of pathogenic organisms in seawater. MAP Technical Reports Series No. 55. (95 pages) (English only). UNEP, Athens
- UNEP/IOC/FAO, 1991: Assessment of the state of pollution of the Mediterranean Sea by persistent synthetic materials which may float, sink or remain in suspension. MAP Technical Reports Series No. 56. (113 pages) (English and French). UNEP, Athens
- UNEP/WHO, 1991: Research on the toxicity, persistence, bioaccumulation, carcinogenicity and mutagenicity of selected substances (Activity G): Final reports on projects dealing with carcinogenicity and mutagenicity. MAP Technical Reports Series No. 57. (59 pages) (English only). UNEP, Athens
- UNEP/FAO/WHO/IAEA, 1991: Assessment of the state of pollution of the Mediterranean Sea by organophosphorus compounds. MAP Technical Reports Series No. 58. (122 pages) (English and French). UNEP, Athens
- UNEP/FAO/IAEA, 1991: Proceedings of the FAO/UNEP/IAEA Consultation Meeting on the Accumulation and Transformation of Chemical contaminants by Biotic and Abiotic Processes in the Marine Environment (La Spezia, Italy, 24-28 September 1990), edited by G.P. Gabrielides. MAP Technical Reports Series No. 59. (392 pages) (English only). UNEP, Athens
- UNEP/WHO, 1991: Development and testing of sampling and analytical techniques for monitoring of marine pollutants (Activity A): Final reports on selected microbiological projects (1987-1990). MAP Technical Reports Series No. 60. (76 pages) (parts in English or French only). UNEP, Athens
- UNEP/WHO, 1991: Report on a joint Meeting on health risks from bathing in marine waters (Athens, 15-18 May 1991). (EUR/ICP/CEH 103). (91 pages) (English and French). UNEP, Athens
- UNEP, 1991: Report of the *Ad hoc* Consultation on Land-based Sources of Pollution (Athens, 5-6 November 1991). (UNEP(OCA)/MED WG. 32/2). (13 pages) (English only). UNEP, Athens

UNEP/IAEA, 1992: Assessment of the State of Pollution of the Mediterranean Sea by Radioactive Substances. MAP Technical Reports Series No. 62, (133 pages) (English and French). UNEP, Athens

UNEP/WHO, 1992: Biogeochemical cycles of specific pollutants (Activity K) - Survival of Pathogens - Final reports on Research Projects (1989-1991). MAP Technical Reports Series No. 63, (86 pages) (French only). UNEP, Athens

UNEP/WMO, 1992: Airborne Pollution of the Mediterranean Sea. Report and Proceedings of the Second WMO/UNEP Workshop. MAP Technical Reports Series No. 64, (246 pages) (English only). UNEP, Athens

UNEP, 1992: Directory of Mediterranean Marine Environmental Centres. MAP Technical Reports Series No. 65, (351 pages) (English and French). UNEP, Athens

UNEP/CRU, 1992: Regional Changes in Climate in the Mediterranean Basin Due to Global Greenhouse Gas Warming. MAP Technical Reports Series No. 66, (172 pages) (English only). UNEP, Athens

UNEP/FAO/IOC, 1992: Evaluation of the Training Workshops on the Statistical Treatment and Interpretation of Marine Community Data. MAP Technical Reports Series No. 68. (221 pages) (English only). UNEP, Athens

UNEP, 1992: Report of the Consultation Meeting on the Preparation of a Research Programme on Eutrophication and Plankton Blooms (Athens, 19-20 March 1992). (UNEP(OCA)/MED WG. 44/1). (12 pages) (English only). UNEP, Athens

UNEP/FAO/IAEA, 1992: Report of the Review meeting on the herbicides pilot survey (Athens, Greece, 7-9 April 1992). (FIR/MEDPOL/HERB/2). (40 pages) (English only) UNEP, Athens

UNEP, 1992: Report of the Meeting of the MED POL National Co-ordinators (Athens, 6-9 May 1992). (UNEP(OCA)/MED WG. 35/4). (28 pages) (English and French). UNEP, Athens

UNEP/FAO/IOC, 1992: Proceedings of the FAO/UNEP/IOC Workshop on the Biological Effects of Pollutants on Marine Organisms (Malta, 10-14 September 1991), edited by G.P. Gabrielides. MAP Technical Reports Series No. 69. (287 pages) (English only). UNEP, Athens

UNEP, 1992: Report of the meeting on implications of expected climatic changes on Mediterranean coastal areas (island of Rhodes, Kastela Bay, Syrian, Malta and Cres/Losinj islands) (Valletta, 15-19 September 1992). (UNEP(OCA)/MED/WG.55/7). (40 pages) (English only). UNEP, Athens

UNEP/IAEA/IOC/FAO, 1992: Organohalogen Compounds in the Marine Environment: A Review. MAP Technical Reports Series No. 70. (49 pages) (English only). UNEP, Athens

- UNEP, 1992: Report of the Consultation meeting on the evaluation of the Israeli Monitoring Programme (Haifa, 21-22 December 1992). (UNEP(OCA)/MED WG.59/2). (18 pages) (English only). UNEP, Athens
- L. Jeftic, J.D. Milliman and G. Sestini (Eds.), 1992: Climatic Change and the Mediterranean, Environmental and Societal Impacts of Climatic Change and sea-level Rise in the Mediterranean Region. (673 pages) (parts in English or French only). Edward Arnold, London
- UNEP/FAO/IOC, 1993: Selected techniques for monitoring biological effects of pollutants in marine organisms. MAP Technical Reports Series No. 71. (189 pages) (English only). UNEP, Athens
- UNEP, 1993: Costs and Benefits of Measures for the Reduction of Degradation of the Environment from Land-based Sources of Pollution in Coastal Areas. A - Case Study of the Bay of Izmir. B - Case Study of the Island of Rhodes. MAP Technical Reports Series No. 72. (64 pages) (English only). UNEP, Athens
- UNEP/FAO, 1993: Final Reports on Research Projects Dealing with the Effects of Pollutants on Marine Communities and Organisms. MAP Technical Reports Series No. 73. (186 pages) (English and French). UNEP, Athens
- UNEP/WHO, 1993: Development and Testing of Sampling and Analytical Techniques for Monitoring of Marine Pollutants (Activity A). MAP Technical Reports Series No. 75. (90 pages) (English only). UNEP, Athens
- UNEP/WHO, 1993: Biogeochemical Cycles of Specific Pollutants (Activity K): Survival of Pathogens. MAP Technical Reports Series No. 76. (68 pages) (English and French). UNEP, Athens
- UNEP/FAO/IAEA, 1993: Designing of monitoring programmes and management of data concerning chemical contaminants in marine organisms. MAP Technical Reports Series No. 77. (236 pages) (English only). UNEP, Athens
- UNEP, 1993: Report of the Joint Meeting of the Scientific and Technical Committee and the Socio-Economic Committee (Athens, 3-7 May 1993). (UNEP(OCA)/MED/WG.66/8. (102 pages) (English and French). UNEP, Athens
- UNEP/FAO/WHO, 1993: Preliminary assessment of the state of pollution of the Mediterranean Sea by zinc, copper and their compounds and proposed measures. (UNEP(OCA)/MED/WG.66/Inf.3). (121 pages) (English and French). UNEP, Athens
- UNEP/WHO, 1993: Report on a joint WHO/UNEP Meeting on Microbiological quality of coastal recreational waters (Athens, 9-12 June 1993). (EUR/ICP/CEH 039(1)). (108 pages) (English and French). UNEP, Athens

UNEP, 1993: Evaluation Report of the MED POL Programme. (UNEP(OCA)/MED/IG.3/Inf.6). (62 pages) (English and French). UNEP, Athens

UNEP/FAO, 1994: Final reports on research projects dealing with eutrophication problems. MAP Technical Reports Series No. 78. (139 pages) (English only). UNEP, Athens

UNEP/FAO, 1994: Final reports on research projects dealing with toxicity of pollutants on marine organisms. MAP Technical Reports Series No. 79. (135 pages) (parts in English or French only). UNEP, Athens

UNEP/FAO, 1994: Final reports on research projects dealing with the effects of pollutants on marine organisms and communities. MAP Technical Reports Series No. 80. (123 pages) (English only). UNEP, Athens

UNEP/IAEA, 1994: Data quality review for MED POL: Nineteen years of progress. MAP Technical Reports Series No. 81. (79 pages) (English only). UNEP, Athens

UNEP, 1994: Implications of expected climatic changes on the island of Rhodes (Valletta, 15-19 September 1992). (UNEP(OCA)/MED WG.55/2 (Revised)). (105 pages) (English only). UNEP, Athens

UNEP, 1994: Implications of expected climatic changes on Malta (Valletta, 15-19 September 1992). (UNEP(OCA)/MED WG.55/3 (Revised)). (165 pages) (English only). UNEP, Athens

UNEP, 1994: Implications of expected climatic changes on Kastela Bay (Valletta, 15-19 September 1992). (UNEP(OCA)/MED WG.55/4 (Revised)). (134 pages) (English only). UNEP, Athens

UNEP, 1994: Implications of expected climatic changes on Cres/Losinj islands (Valletta, 15-19 September 1992). (UNEP(OCA)/MED WG.55/5 (Revised)). (267 pages) (English only). UNEP, Athens

UNEP, 1994: Implications of expected climatic changes on the Syrian coast (Valletta, 15-19 September 1992). (UNEP(OCA)/MED WG.55/6 (Revised)). (112 pages) (English only). UNEP, Athens

UNEP, 1994: Report of the Consultation meeting on the evaluation of the Croatian Monitoring Programme (Zagreb, 15-17 February 1994) (UNEP(OCA)/MED/WG.80/2). (114 pages) (English only). UNEP, Athens

UNEP/WHO, 1994: Document on Guidelines for submarine outfall structures for Mediterranean small and medium-sized coastal communities (issued April 1994) (EUR/ICP/CEH 047). (35 pages) (English and French). UNEP, Athens

UNEP/WHO, 1994: Document on Guidelines for treatment of effluents prior to discharge into the Mediterranean Sea (issued May 1994). (EUR/ICP/CEH 047). (212 pages) (English and French). UNEP, Athens

UNEP/WHO, 1994: Document (in V Parts) on Guidelines for health-related monitoring of coastal recreational and shellfish areas (issued May 1994). (EUR/ICP/CEH 041(2-6)). (382 pages) (English and French). UNEP, Athens