

ANNEX IV
RECOMMENDATIONS AND PROGRAMME BUDGET
AS APPROVED BY THE CONTRACTING PARTIES
FOR THE 2000-2001 BIENNIUM

1. RECOMMENDATIONS APPROVED BY THE CONTRACTING PARTIES:**I. COORDINATION****A. LEGAL AND INSTITUTIONAL FRAMEWORK****A.1 Legal framework****(a) Recommendations addressed to the Contracting Parties**

1. To give high priority to the implementation of the MAP legal instruments.
2. To notify to the Depositary, in writing, and as soon as possible, their acceptance of the amendments to the Convention for the Protection of the Mediterranean Sea against Pollution, the Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft (Dumping Protocol), and the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources (LBS Protocol).
3. If they have not already done so, to ratify, accept or approve, or accede to the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean and its three Annexes (SPA and Biodiversity Protocol), the Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil (Offshore Protocol), and the Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movement of Hazardous Wastes and their Disposal (Hazardous Wastes Protocol).
4. To review their countries' position with respect to other pertinent international conventions, protocols and agreements and to ensure the early signature and/or ratification of those instruments which may have a positive influence on the Mediterranean Basin.
5. To convene, as appropriate and subject to the availability of external funding, a meeting of plenipotentiaries for the adoption of amendments to the Emergency Protocol.

(b) Recommendations addressed to the Secretariat

1. To request the Secretariat (MEDU) to assist the Contracting Parties in their efforts to adhere to the MAP legal instruments.
2. To invite the Secretariat (MEDU) to assist the Contracting Parties to incorporate MAP legal instruments in their national legislation.
3. To invite the Secretariat (MEDU & RACs) to take the necessary action to make MAP and its legal instruments better known in the Mediterranean region, as well as outside the region.
4. To request the Secretariat (MEDU & RACs) to assist the Contracting Parties in their efforts to report regularly to the Secretariat on the measures undertaken to implement the Convention and its Protocols, as well as decisions of the Meetings of the Contracting Parties.

5. To request the Secretariat (MEDU) to continue and finalize its work on the MAP Reporting System, including MCSD concerns, with the assistance of a group of experts composed of the members of the Bureau, and submit the final report to the Bureau of the Contracting Parties for its consideration and approval.
6. To invite the Secretariat (MEDU & RACs) to organize a training programme on Mediterranean environmental law for government-nominated legal and technical personnel at the national level involved in the implementation of the Barcelona Convention system and in the handling of other relevant issues concerning legal and institutional protection of the Mediterranean marine and coastal environment.
7. To request the Secretariat (MEDU) to follow further developments at the international level and, to convene, when appropriate in the year 2001, a second meeting of legal and technical experts on liability and compensation.
8. To organize training courses on the MAP programme every year for national officials at MEDU.

A.2 Institutional framework

Recommendations addressed to the Secretariat

1. To abolish the practice of the examination of BP and PAP activities at the beginning of the regular meetings of MAP National Focal Points and request the Secretariat to organize a joint meeting for BP/RAC, PAP/RAC and ERS/RAC National Focal Points.
2. To assess the relevance of the 100 historic sites programme and its role in the context of MAP Phase II objectives, taking also into account the work programme of the MCSD, as well as the work being carried out by other organizations, and to present all the options and recommendations to the next Meeting of the Contracting Parties.
3. To continue the process of programme assessment and financial evaluation of MAP and RACs by finalizing the one of PAP/RAC and undertaking the evaluation of at least two other RACs (including BP/RAC during the biennium) as well as the overall MAP structure (Appendix I on "Recommendations on MED Unit, MED POL and RACs Structure" as adopted by the Contracting Parties in Tunis UNEP(OCA)/MED IG.11/10), and to that end to hold an expert meeting to develop a methodology for cost-benefit assessment to be applied to all MAP structures and activities, including statements of accounts.

B. MEDITERRANEAN COMMISSION ON SUSTAINABLE DEVELOPMENT (MCSD)

Recommendations addressed to the Contracting Parties

The following MCSD recommendations and proposals for action were approved:

- Information, public awareness, environmental education and participation (Annex IV, Appendix I of this report);

- Indicators for sustainable development in the Mediterranean (Annex IV, Appendix II of this report);
- Tourism and sustainable development (Annex IV, Appendix III of this report).

C. INFORMATION AND PARTICIPATION

(a) Recommendations addressed to the Contracting Parties

- a. To approve the recommendations as proposed in the MAP Information Strategy (Annex IV, Appendix IV to this report).
- b. To invite the Contracting Parties to implement the MCSD recommendations on "Information, Awareness, Environmental Education and Public Participation".

(b) Recommendations addressed to the Secretariat

- a. To invite the Secretariat (MEDU and RACs) to implement the MAP Information Strategy.
- b. To invite the Secretariat (MEDU and RACs) together with NGOs and other actors to assist the countries in implementing the MCSD recommendations on "Information, Awareness, Environment Education and Public Participation".

D. Cooperation and coordination with United Nations Agencies, Convention Secretariats, IGOs and other institutions

Recommendations addressed to the Secretariat

1. To invite the Secretariat (MEDU and RACs) to further strengthen its cooperation with relevant United Nations Agencies, Environmental Convention Secretariats and other intergovernmental organizations:
 - with WHO, IAEA, WMO, IOC/UNESCO, FAO/GFCM and IMO, as well as other related United Nations agencies, in the implementation of programmes for the prevention of marine pollution and the protection of marine resources;
 - with GEF, METAP, the European Environment Agency and the European Commission in the context of the Euro-Mediterranean Partnership, including the exchange of information and experience;
 - with the UN/Commission on Sustainable Development, UN/ECE and other UN Agencies in the implementation of MCSD programme;
 - with the Arab League Council of Arab Ministers in charge of the environment in the fields of water resources management, industrial pollution, education and public awareness, training, coastal management

and the various themes of the MCSD;

- with CEDARE and the "European Sustainable cities campaign" on sustainable development, coastal management, information and public awareness;
 - with the Black Sea Secretariat concerning marine pollution;
 - with CBD, CCD and FCCC, the Ramsar Convention and other multi-lateral environmental agreements, in the establishment of operational linkage.
2. To invite the Secretariat (MEDU and RACs) to prepare projects to be financed by MEDA/SMAP.

E. COOPERATION AND COORDINATION WITH NON-GOVERNMENTAL ORGANIZATIONS (NGOS)

(a) Recommendations addressed to the Contracting Parties

1. To adopt the recommendations suggested by the MAP/NGO Working Group and reviewed by the Bureau of the Contracting Parties as presented in Annex IV, Appendix V to this report.
2. To invite the Contracting Parties to implement the various recommendations relevant to cooperation with NGOs, as presented in Annex IV, Appendix V to this report.
3. To include the following Non-Governmental Organizations in the NGO/MAP list of Partners, subject to verification by the Bureau when the application does not meet all the selection criteria:

Academia Mediterranea Halicarnassensis (Turkey)
 AMWAJ of the Environment (Lebanon)
 Arab NGO Network for Environment and Development (RAED) (Egypt)
 Centre Méditerranéen de l'environnement (CME), France
 Clean up Greece (Greece)
 Cyprus Conservation Foundation (Cyprus)
 Environnement et Développement au Maghreb (ENDA) (Morocco)
 European Environmental Policy and Law Institute (EEPALI) (Greece)
 Lebanese Environment Forum (LEF) (Lebanon)
 Legambiente (Italy)
 Sea Turtle Protection Society of Greece (STPS) (Greece)
 Underwater Research Society/Mediterranean Seal Research Group (SAD/AFAD) (Turkey)

4. To authorize the Bureau to review the existing list of partners to verify that they meet the new selection criteria and to report back to the Contracting Parties;

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (MEDU & RACs) to implement the various recommendations concerning MAP/NGOs cooperation presented in Annex IV,

Appendix V to this report.

2. To invite the Secretariat (MEDU & RAC's) to further strengthen their cooperation and assistance to Mediterranean NGOs incorporated in the NGO/MAP list of Partners, giving qualified environmental priorities to those active in the East and South Mediterranean.
3. To reflect further on the need to add additional criteria for the selection of and cooperation with MAP/NGO partners.

F. MEETINGS AND CONFERENCES ORGANIZED WITHIN THE MAP FRAMEWORK (MEDU & RACS)

Recommendations addressed to the Secretariat:

1. To invite the Secretariat to convene the proposed meetings as reflected in the Budgetary Component Section;
2. To invite the Secretariat (MEDU & RACs) to strictly observe the relevant rules concerning dispatching invitations and documents for the various MAP meetings;
3. To invite the Secretariat (MEDU & RACs) to improve and upgrade the form of presentation of MAP documents, reports and information material;

II. COMPONENTS

A. POLLUTION PREVENTION AND CONTROL

(a) Recommendations addressed to the Contracting Parties

(a) Land-based pollution assessment and control activities

1. To give emphasis to the implementation of action-oriented pollution control activities and, to this end, to give priority to the implementation of the activities of the SAP and especially to those included in the GEF Mediterranean Project; in particular, activities related to pollution hot spots where the full cooperation and contribution of the countries are indispensable for their success.
2. To formulate and implement monitoring programmes, including trend monitoring, biological effects monitoring and biological monitoring, where feasible, as well as compliance monitoring related to the control and enforcement of national and regional legislation.
3. To continue and strengthen cooperation with the competent UN Cooperating Agencies, Regional Activity Centres, intergovernmental and international organizations, sub-regional agreements and programmes and, as appropriate, non-governmental organizations for the implementation of the SAP and other MED POL-related activities approved by the Contracting Parties. In particular, to welcome the continued cooperation with WHO in relation to pollution control activities, the very positive cooperation established with GEF, FFEM, METAP and the other supporting organizations for the implementation of the Mediterranean GEF Project and the important contribution from RAMOGE for the

implementation of activities related to biological effects monitoring.

4. To establish Inter-ministerial National Committees for full coordination of the activities related to the implementation of the Mediterranean GEF Project.
5. To adopt the Guidelines for the Management of Dredged Material which were prepared by the Secretariat in close cooperation with government-designated experts as part of the implementation of the Dumping Protocol (Annex IV, Appendix VI to this report).

(b) Sea-based pollution prevention and control activities

1. To continue to support REMPEC in the revision process of the Emergency Protocol in order to ensure its modernization and bring it into line with the recently revised Barcelona Convention and its other related Protocols.
2. To agree to the resolution approved by the Meeting of REMPEC Focal Points held in Malta 25 - 28 November 1998, aimed at creating a new post of administrator, as provided for in the budget for the next biennium.
3. To support REMPEC in its endeavours when implementing the programme of activities under the E.C. MEDA project on port reception facilities.
4. To utilize and adhere to the POLREP system for the exchange of information when accidental pollution of the sea has occurred or when a threat of such pollution is present.
5. To promote, either individually or through bilateral or multilateral co-operation, aerial surveillance as a means of monitoring violations of existing regulations for the prevention of pollution from ships.
6. To support the establishment of a Mediterranean Technical Working Group, co-ordinated by REMPEC, which will work, as a minimum, by correspondence and whose function will be to facilitate the exchange of technical data and other scientific and technological information aimed at assessing the nature, exposure and risks from accidental marine pollution and promoting remedies for such pollution in the Mediterranean Sea area
7. To provide the necessary support to enable the Secretariat to start the process of considering the issue of the prevention of pollution from non-commercial pleasure-craft activities.
8. To give high priority to finding a solution to the problem of providing REMPEC with the necessary personnel so that it can carry out its new responsibilities in the field of the prevention of pollution from ships. A practical solution, at no cost to the MTF, may be found through the mechanism of seconding a professional officer from a country to the Centre on a temporary basis or under a rotation system.

(c) Cleaner production and sustainable development

1. To invite the Contracting Parties to promote and stimulate the introduction of Best Available Techniques (BATs) and Best Environmental Practices (BEPs) within Mediterranean companies.

(b) Recommendations addressed to the Secretariat:

(a) Land-based pollution assessment and control activities

1. To request the Secretariat (MED POL) to continue to assist countries in the preparation, finalization and implementation of their National Monitoring Programmes which should include monitoring of trends, biological effects monitoring and compliance monitoring.
2. To request the Secretariat (MED POL) to work on the processing and analysis of the data resulting from trend monitoring and to give priority to the implementation of data quality assurance programmes.
3. To request the Secretariat (MED POL) to give special emphasis to the organization of activities related to compliance with, and enforcement of, regional and national legislation related to land-based pollution and, accordingly, to establish, organize and coordinate the work of an Informal Network on Compliance and Enforcement.
4. To request the Secretariat (MED POL) to reorganize the research component of MED POL Phase III by identifying and following up on a regular basis emerging pollution issues in cooperation with National Coordinators, Mediterranean scientists and the competent UN Cooperating Agencies in order to formulate relevant studies, assessments and research projects to be carried out by Mediterranean national institutions.
5. To request the Secretariat (MED POL) to cooperate fully with the GEF Secretariat for the coordination of the Mediterranean GEF Project and, accordingly, to give priority during the biennium to the MED POL activities related to pollution control included in the GEF Project and in the SAP.
6. To request the Secretariat (MEDU and MED POL) to finalize the role and involvement of Implementing and Cooperating Agencies for the Mediterranean GEF project, notably with regard to METAP.
7. To request the Secretariat (MED POL) to start the process of updating the SAP by taking into account developments in the scientific, technical, economic, environmental and legal fields in order to ensure effective implementation of the SAP.
8. To request the Secretariat (MED POL) to continue the work related to the preparation of the necessary Guidelines as requested by articles 4 and 6 of the 1995 Dumping Protocol, with a view to their adoption by the Contracting Parties.
9. To invite the Secretariat (PAP/RAC) to implement the "Economic Instruments" activity of the GEF-funded SAP MED project, and to use the findings of this project in preparing bankable projects to follow PAP/RAC activities and MAP CAMP programmes, once they are completed.

(b) Sea-based pollution prevention and control activities

1. To request the Secretariat (REMPEC), in co-ordination with UNEP/MAP, to continue and finalize the work for the revision of the Emergency Protocol.

2. To instruct the Secretariat (REMPEC) that, as regards the provision concerning the prevention of pollution of ships, no activity should be initiated other than the programme on port reception facilities for which financing is presently being considered by the E.U. within the framework of the MEDA programme until such times that the necessary personnel are made available.
 3. To request the Secretariat (REMPEC and MEDU) to endeavour to obtain the necessary external funds to start the process of considering the issue of the prevention of pollution from non-commercial pleasure-craft activities.
- (c) Cleaner Production and Sustainable Development*
1. To invite the Secretariat (CP/RAC) to implement all the activities as approved by the Spanish Government and the Contracting Parties
 2. To participate and actively cooperate with the Industry and Sustainable Development Group and with the "Tourism and Environment Group" within the MCSD.
 3. To invite the Secretariat (CP/RAC) to organise the Third CP/RAC NFP meeting by 2001, and four training workshops, two about general methodology and another two about textile and agroindustry sectors during the biennium 2000-2001. The conclusions of these workshops will be published in a manual or guide.
 4. To request the Secretariat (CP/RAC) to continue publishing and disseminating the MedClean case studies and the CPNews bulletin, as well as to launch an annual technical publication about waste minimisation experiences and studies.
 5. To invite the Secretariat (CP/RAC) to compile a database of free voluntary experts interested in collaborating and providing technical support to cleaner production initiatives.
 6. To invite the Secretariat (CP/RAC) to help Mediterranean companies to prioritise demonstration projects and to promote bilateral projects of co-operation.
 7. To invite the Secretariat (CP/RAC) to launch a Cleaner Production Congress within 2 or 3 years to share experiences and present initiatives taken by Mediterranean countries regarding pollution prevention and waste minimisation, and notably in the olive branch.
 8. To invite the Secretariat (CP/RAC) to create a Mediterranean Cleaner Production award to honour those pollution prevention initiatives carried out by Mediterranean companies or individuals.
 9. To invite the Secretariat (CP/RAC) to improve and develop a CP/RAC NFP network through the Web.

* All CP/RAC activities are subjected to the approval of concrete actions by the Spanish Government.

B. CONSERVATION OF BIOLOGICAL DIVERSITY

B.1 Collection of data and periodic assessment of the situation

4. Recommendations

(a) Recommendations addressed to the Contracting Parties

1. To adopt the reference classification of benthic marine habitat types for the Mediterranean region (Annex IV, Appendix VII of this report).
2. To adopt the general framework of the Draft Standard Data-Entry Form for National Inventories of Natural Sites of Conservation Interest and, as an exceptional case, to mandate to the Bureau to adopt the final version of the Form by the first half of the year 2000 on the basis of the results of a meeting of experts to be convened as soon as possible.
3. To invite the Secretariat (SPA/RAC) to convene a meeting of experts for the further elaboration of the draft Form.
4. To evaluate and, where necessary, improve the information on the status and trends of marine habitats mentioned at the reference list of habitats for the selection of sites to be included in the National Inventories of Natural Sites of Conservation Interest in the areas under their sovereignty and jurisdiction.

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (RAC/SPA) to assist the Mediterranean countries in applying the adopted criteria for the preparation of national inventories of natural sites of conservation interest, focussing for the biennium 2000-2001 on marine sites to be identified by the presence of priority habitats, in particular meadows and biogenic constructions (*Lithophyllum* rim and coralligenous)
2. To request the Secretariat (RAC/SPA) to convene in the year 2001, a meeting of experts on coastal (terrestrial and wetland) habitat types in the Mediterranean region.

B.2 Planning and management

(i) Implementation of the Action Plan for the Conservation of Mediterranean Marine Turtles

(a) Recommendations addressed to the Contracting Parties

1. To adopt the Action Plan for the Conservation of Mediterranean Marine Turtles, including the List of Priority Actions for further implementation of the Action Plan (Annex IV, Appendix VIII of this report).
2. To invite the Contracting Parties to foster the involvement of the fishing sector in the conservation of marine turtles in the Mediterranean.

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (RAC/SPA) to convene the first Mediterranean Conference on marine turtles, to be jointly organized with the Secretariats of the Convention on Migratory Species of Wild Animals and of the Convention on the Conservation of European Wildlife and Natural Habitats, and in collaboration with other concerned Organizations.
2. To invite the Secretariat (RAC/SPA) to work on the preparation of:
 - an inventory of marine turtle nesting, mating, feeding and wintering areas and migration routes all around the Mediterranean, compiling and synthesising the information in an Atlas;
 - a directory of marine turtle specialists in the Mediterranean;
 - training and information/awareness modules and tools addressed to fishermen, aimed at reducing the mortality of marine turtles incidentally caught in fishing gear.

(ii) Implementation of the Action Plan for the Management of the Mediterranean Monk Seal**(a) Recommendations addressed to the Contracting Parties**

1. To adopt the recommendations of the Meeting of experts on the implementation of the action plans for marine mammals (monk seal and cetaceans) adopted within MAP (Arta, 29-31 October 1998) on topics to be addressed as a matter of priority in the further implementation of the Action Plan for the management of the Mediterranean monk seal (see Annex IV, Appendix IX of this report). To invite the Contracting Parties to implement those recommendations pertaining to their responsibility.

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (RAC/SPA) to assist the Contracting Parties in improving their knowledge of monk seal population size and parameters, habitat use and movement.

(iii) Implementation of the Action Plan for the Conservation of Cetaceans in the Mediterranean Sea**(a) Recommendations addressed to the Contracting Parties**

1. To ratify, if they have not done so, the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean and the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area.
2. To grant a legal protection status if they have not done so, to the cetacean species appearing in the Annex II to the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean.
3. To promote the establishment of national networks for the monitoring of cetacean strandings.

- 4 To adopt the recommendations proposed by the Meeting of Experts on the implementation of the Action Plans for marine mammals (monk seal and cetaceans) adopted within MAP (Arta, 29-31 October 1998), on topics to be addressed as a matter of priority in the further implementation of the action plan for the management of the Mediterranean Cetaceans (see Annex IV, Appendix X of this report) and to implement those recommendations pertaining to their responsibility.

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (RAC/SPA) to assist the Contracting Parties in the establishment of national networks for the monitoring of cetaceans, and to ensure to the extent possible the co-ordination at Mediterranean level among the national networks.
2. To invite the Secretariat (SPA/RAC) to organise a coordination/training workshop to prepare concerted monitoring methods to be proposed for use by the Mediterranean teams.

(iv) Implementation of the Action Plan for the Conservation of Marine Vegetation in the Mediterranean Sea

(a) Recommendations addressed to the Contracting Parties

1. To adopt the Action Plan for the conservation of marine vegetation in the Mediterranean Sea, as contained in Annex IV, Appendix XI of this report, and to see that the measures it provides for are implemented according to the timetable annexed to the Action Plan.
2. To adopt and implement the recommendations of the Workshop on Invasive *Caulerpa* species in the Mediterranean (Heraklion, 19-20 March 1998).

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (SPA/RAC), acting as the coordination structure for the Action Plan for the conservation of marine vegetation in the Mediterranean Sea, to contribute to the implementation of the Action Plan according to the timetable annexed to it.
2. To entrust the Secretariat (SPA/RAC) with the task of coordinating the collection and dissemination of information validated by each Party on invasive *caulerpa* species and the follow-up to the recommendations of the Heraklion Workshop (18-20 March 1998).

(v) Development of Specially Protected Areas

(a) Recommendations addressed to the Contracting Parties

1. To give high priority during the biennium 2000-2001, to the identification of marine sites possessing sensitive, threatened or rare habitats with a view to establishing marine protected areas; and to give every support to the improvement of the management of marine protected areas.

2. To support the formulation and implementation of a regional project for the protection of sites and elements of Mediterranean marine and coastal biodiversity, to be developed in the framework of the MEDA/SMAP programme.

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (SPA/RAC) to assist the Mediterranean countries in establishing new SPAs to protect sensitive, threatened or rare marine habitats and to improve the management of marine sites already protected in that area.

(vi) Conservation of Biological Diversity

(a) Recommendations addressed to the Contracting Parties

1. To improve knowledge of marine biodiversity in areas under their sovereignty and jurisdiction, and to take marine biodiversity duly into account in the elaboration of their plans and strategies.

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (RAC/SPA) to continue to assist the Contracting Parties in improving knowledge of their biodiversity, and notably the marine component, and to develop strategies and plans for its conservation and management.

B.3 Public information

(a) Recommendations addressed to the Contracting Parties:

1. To use, where appropriate, the documents published by RAC/SPA on the design and implementation of information and awareness campaigns addressed to those who are concerned with the sustainable management and protection of biodiversity at the national and local levels.
2. To inform SPA of achievements at the national and local levels in the fields of implementation of Action Plans for the conservation of endangered species and the development of specially protected areas.

(b) Recommendations addressed to the secretariat:

1. To invite the Secretariat (RAC/SPA) to summarize available scientific data in technical publications, including those of RAC/SPA, so as to present them in a more readily comprehensible form for less specialized readers.
2. To invite the Secretariat (RAC/SPA) to summarize successful projects in various countries of the region, with a view to presenting them in more readily comprehensible forms to national institutions of the region, thus making them better known and facilitating the exchange of experience.
3. To invite the Secretariat (RAC/SPA) to publish a liaison/information bulletin (BIO-MED) aimed at disseminating summaries that are being prepared and national experience to all countries of the region (specialized institutions, natural resources managers, NGOs, etc.)

4. To invite the Secretariat (RAC/SPA) to develop its website and use it to disseminate the summaries that are being prepared.

B.4 Exchange of experience and strengthening of national capabilities

Recommendations addressed to the Secretariat

To invite the Secretariat (RAC/SPA) to continue to assist the Mediterranean countries in improving their national capabilities in the field of the conservation and management of the natural heritage, and to seek additional funding from external sources.

C. SUSTAINABLE MANAGEMENT OF COASTAL ZONES

(a) Recommendations addressed to the Contracting Parties:

General

1. To support the drawing up and concerted implementation of a regional programme for the sustainable management of coastal areas, pooling the means available from MEDA/SMAP, MAP, and the Countries.
2. To strengthen the institutional mechanisms which contribute towards better land planning, particularly laws on the protection of the coasts, and planning and protection agencies.
3. To invite concerned authorities and relevant partners to give due consideration to MCSD recommendations on the sustainable management of coastal regions.

ICAM

4. To review the countries' position with respect to incorporating ICAM in their respective national legislation, with special emphasis on legal enforcement and implementation of ICAM policies.
5. To support and assist the national and local institutions in using methodologies, tools and techniques for the implementation of ICAM, developed by MAP, notably in regard to coastal industries.

MAP/CAMPs

6. To invite the authorities of Algeria, Lebanon, Malta, Morocco and Slovenia to support the preparation and implementation of CAMPs in their countries. The objectives of these CAMPs should be clearly stated in MAP CAMP agreements. Furthermore, CAMPs should be focussed on fewer fully implementable activities, with a strong sectorial integration approach. National teams for the implementation of CAMPs should consist of highly qualified experts with experience in integrated coastal area management.
7. To invite authorities in countries where MAP CAMPs are completed, to prepare and implement a follow-up programme in cooperation with MAP.

Remote sensing

8. To widen the use of remote sensing-derived information and its integration in information from other sources, in planning and decision-making processes for the sustainable management of coastal zones.

(b) Recommendations addressed to the Secretariat:

Euro-Mediterranean Partnership

1. To invite the Secretariat (MEDU with concerned RACs, such as PAP, BP, ERS) to draw up and implement a regional MEDA/SMAP programme on the sustainable management of coastal areas, including consolidation of the necessary knowledge (assessment of changes in land use, institutional analyses..), the networking of pilot operations in the regions, and the consolidation of national and local level activities.

ICAM

2. To invite the Secretariat (PAP/RAC) to continue to support the Contracting Parties in implementing ICAM plans and programmes and to provide technical assistance for ICAM when specifically required by Contracting Parties.
3. To invite the Secretariat (PAP/RAC) to continue institutional strengthening and capacity building of Contracting Parties' national and local institutions regarding ICAM preparation and implementation, by means of regional and national training courses, and to enlarge the information component by increased publishing and dissemination (including electronic means) of methodological documents, programme results and other achievements.
4. To invite the Secretariat (PAP/RAC) to continue development of ICAM tools and techniques, specifically SEA, EIA, CCA for tourism, coastal information systems, economic instruments, and land and sea use planning systems.
5. To invite the Secretariat (PAP/RAC) to test guidelines for integrated coastal area and river basin management.

MAP CAMPs

6. To invite the Secretariat (BP/RAC) to assist national and local authorities in better anticipating developments by consolidating prospective approaches and related information systems, particularly within the framework of the CAMPs.
7. To invite the Secretariat (PAP/RAC) to co-ordinate the various MAP activities in relation to CAMPs, within the overall coordination responsibility of the Coordinating Unit
8. To invite the Secretariat (PAP/RAC) to prepare CAMP feasibility studies, CAMP programmes and agreements, and to implement the on-going MAP CAMPs and those which it has already been decided to implement, in cooperation with all relevant partners.
9. To invite the Secretariat (PAP/RAC) to suggest countries where MAP CAMPs are completed the introduction of new or the adaptation of existing economic

instruments which would enable the follow-up of CAMPs, and to assist those countries in preparing bankable projects which will represent the continuation of MAP CAMPs.

10. To invite the Secretariat (ERS/RAC) to contribute, in the framework of a close cooperation among the MAP components, to the implementation of ongoing and future CAMPs, including capacity building activities in cooperation with all relevant partners.

MCSD

11. To invite the Secretariat (PAP/RAC) to support the follow up of MCSD recommendations on ICAM and stimulate the introduction of national legislation for ICAM.
12. To invite the Secretariat (PAP/RAC) to support the MCSD Working group on urban management and to help formulate recommendations for sustainable growth of Mediterranean cities.
13. To invite the Secretariat (PAP/RAC) to provide support to the MCSD working groups on other activities of MCSD which are relevant to PAP/RAC.

Remote sensing

14. To invite the Secretariat (ERS/RAC) to assist Mediterranean countries in the field of monitoring of environmental issues through remote-sensing techniques, and to support activities of other MAP components with remotely sensed information and data, and their integration with ones from other sources.
15. To invite the Secretariat (ERS/RAC) to continue strengthening its central role for exchange with Mediterranean countries of information on remote sensing applications, through meetings, direct contacts, inventories, as well as through the further development of its web site on the Internet.
16. To invite the Secretariat (ERS/RAC) to endeavour to extend to a Mediterranean dimension the results achieved through its projects, in order to help improving environmental knowledge and understanding in support to the decision-making processes.
17. To invite the Secretariat (ERS/RAC) to assist Mediterranean countries in setting-up activities for monitoring state and changes of priority environmental issues (i.e. desertification, coastal changes, urban expansion), seeking also external sources for funding.
18. To invite the Secretariat (ERS/RAC) to convene meetings of the National Focal Points on a regular basis, jointly with the focal point meetings for PAP/RAC and Blue Plan, while soliciting external funds for this purpose.

D. INTEGRATING ENVIRONMENT AND DEVELOPMENT**D.1. Observation and prospective study of the environment and development
Assessment of progress towards sustainable development in the Mediterranean****(a) Recommendations addressed to the Contracting Parties**

1. To invite the Contracting Parties to implement the MCSD recommendations on indicators for sustainable development, as adopted in section I.B of this report.
2. To invite the Contracting Parties to give priority to actions devoted to acquiring a sound knowledge on environmental indicators at national level, with a view to extending such knowledge at the regional level, also making integrated use of remote sensing and other advanced techniques.
3. To invite the Contracting Parties to include in their legislation new economic instruments, or to adapt existing economic instruments, in order to make feasible follow-up of MAP related activities.
4. To invite the Contracting Parties to consolidate the policy assessment work which they are at present carrying out, and to promote the structural reforms and institutional tools which could assist in ensuring more effective action towards sustainable development.

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (BP/RAC) to assist the Contracting Parties in their efforts to implement the MCSD recommendations as regards sustainable development indicators.
2. To invite the Secretariat (BP/RAC) to draw up an assessment comparing the actual situation in the year 2000 in the field of environment and development, with the 1985 Blue Plan scenario for the same year. A macro-economic assessment making it possible to update scenarios for 2025 will also be carried out to complement the retrospective and prospective demographic analysis carried out in 1999.
3. To invite the Secretariat (BP/RAC) to encourage and assist the countries in setting up and/or consolidating the functions of an Observatory for environment/development changes through the provision of methodological and technical support, cooperation and exchange of experience, with the aim of promoting a Mediterranean network;
4. To invite the Secretariat (BP/RAC) to assist countries in their assessment work: calculating the Indicators of Sustainable Development selected by the MCSD, mobilizing experts, and providing assistance to national observatories, organizing regional workshops, drawing up country profiles, and preparing a regional report on environment and development;
5. To invite the Secretariat (BP/RAC) to continue the analysis work on free trade and environment in the framework of the MCSD;

6. To invite the Secretariat (BP/RAC), in collaboration with WHO, to begin the assessment of some social and economic aspects of sustainable development (poverty, health) in relation to the environment;
7. To invite the Secretariat (BP/RAC) to take stock of exercises for assessing the costs incurred as a result of inadequate account being taken of the environment and the economic instruments which could be of use to the environment, and setting the ball rolling on this question at regional level;
8. To invite the Secretariat (BP/RAC) to consolidate communication and training activity in order to strengthen action and reflection towards sustainable development in the Mediterranean;
9. To invite the Secretariat (BP/RAC) to assist in the consolidation of environmental statistics in the countries, through notably the implementation of the MEDSTAT - Environment programme;
10. To invite the Secretariat (ERS/RAC) to check the present availability of information on indicators that can be monitored by remote sensing, and to cooperate with Mediterranean Countries, also providing them with scientific and technical assistance, in the monitoring of indicators through remote sensing.
11. To invite the Secretariat (ERS/RAC), in cooperation with other MAP Components, to support the MCSD in the preparation of programmes to be implemented in the framework of the MAP.
12. To invite the Secretariat (MEDU) to coordinate the preparation of a "Strategic Review for the year 2000" as requested by the MCSD terms of reference, and to see the necessary funds.

D.2 Tourism and Sustainable Development

(a) Recommendations addressed to the Contracting Parties:

1. To invite the Contracting Parties to implement the MCSD recommendations on tourism and Sustainable Development as adopted in section I.B of this report.
2. To invite the Contracting Parties to encourage their national and local authorities, and profit and non-profit organisations to apply, where appropriate, carrying capacity assessment for tourism activities as a common tool for sustainable development of tourism.

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (BP/RAC) to assist the Contracting Parties in their efforts to implement the recommendations addressed to them.
2. To invite the Secretariat (BP/RAC) to prepare the "White Paper" on tourism and sustainable development in the Mediterranean in conjunction with countries and concerned partner experts.
3. To invite the Secretariat (PAP/RAC) to promote the use of carrying capacity assessment as a tool for the sustainable development of tourism, through the

enhancement of the capacity Mediterranean national and local institutions in specific touristic areas, and to continue offering technical assistance.

D.3. Urban Development and sustainable town management

(a) Recommendations addressed to the Contracting Parties:

1. To invite the Contracting Parties to contribute to the steps being taken within the MCSD framework to achieve relevant and worthwhile analysis and to carry out the proposed work programme.

(b) Recommendations addressed to the Secretariat:

1. To invite the Secretariat (PAP/RAC, BP/RAC and ERS/RAC) to continue and consolidate work begun on analyzing the problems related to urbanization and the sustainable management of Mediterranean cities, particularly within the MCSD framework.
2. To invite the Secretariat (BP/RAC) to carry out a retrospective analysis of developments and encourage the prospective approach through appropriate training and communication activities, and pilot operations.
3. To invite the Secretariat (BP/RAC) to further study the question of waste management in conjunction with the Mediterranean partners (States, towns, CEDARE, METAP, NGOs...), and to identify what strategies and actions should be encouraged in this field.

D.4 Rural development, natural areas and resources

(a) Recommendations addressed to the Contracting Parties.

1. To invite the Contracting Parties to give effective follow-up to the recommendations on water demand management. To this end, to develop a regional programme in line with the SMAP/Euro-Mediterranean Partnership, as well as national programmes in accordance with these recommendations.
2. To invite the Contracting Parties to integrate their national and local decision making system regarding use of coastal water resources.
3. To invite the Contracting Parties to continue and intensify activities related to erosion/desertification control management as an essential element of sustainable development in the region.
4. To invite the Contracting Parties to support the hitherto successful co-operation between FAO, PAP/RAC and BP/RAC in the field.

(b) Recommendations addressed to the Secretariat

1. To invite the Secretariat (BP/RAC) to assist the Contracting Parties in implementing the recommendations which they have adopted regarding water demand management.

2. To invite the Secretariat (BP/RAC) to develop training and communication activities aimed at circulating more widely the results of MCSD work on water at the level of the Mediterranean basin.
3. To invite the Secretariat (PAP/RAC) to implement the activity “Decision Support System for Coastal Water Resources Management” which will enable transfer of knowledge in use of modern and efficient tools and techniques in coastal water resources management, and to secure that decision-making be concentrated at the appropriate level.
4. To invite the Secretariat (PAP/RAC) to continue the activity related to erosion/desertification control and implementation of prevention and management techniques.

2. PROGRAMME BUDGET APPROVED BY THE CONTRACTING PARTIES FOR THE 2000-2001 BIENNIUM:

SUMMARY OF BUDGETARY ALLOCATIONS

	Proposed Budget (in US \$)	
	2000	2001
I. ADMINISTRATIVE AND OPERATING COSTS		
1. COORDINATING UNIT, Athens, Greece		
- Secretariat's Personnel and Operating Costs	905,500	921,000
- MEDPOL Personnel	428,000	435,000
- Operating Costs covered by the Greek Counterpart Contribution	400,000	400,000
2. MEDPOL COOPERATING AGENCIES	269,500	273,600
3. REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE MEDITERRANEAN (REMPEC)	573,000	585,000
4. BLUE PLAN REGIONAL ACTIVITY CENTRE (BP/RAC)	480,000	490,500
5. PRIORITY ACTIONS PROGRAMME REGIONAL ACTIVITY CENTRE (PAP/RAC)	364,000	375,000
6. SPECIALLY PROTECTED AREAS REGIONAL ACTIVITY CENTRE (SPA/RAC)	291,000	295,500
7. ENVIRONMENT REMOTE SENSING REGIONAL ACTIVITY CENTRE (ERS/RAC)	-	-
8. CLEANER PRODUCTION REGIONAL ACTIVITY CENTRE (CP/RAC)	-	-
SUB-TOTAL	3,711,000	3,775,600
PROGRAMME SUPPORT COSTS*	430,430	438,828
TOTAL ADMINISTRATIVE AND OPERATING COSTS	4,141,430	4,214,428

* The Programme Support Costs of 13% is not charged to the Greek Counterpart Contribution.

	Proposed Budget (in US \$)	
	2000	2001
II. ACTIVITIES		
A. ACTIVITIES TO BE FUNDED THROUGH THE MTF (excluding the EU voluntary contribution)		
1. PROGRAMME COORDINATION	385,000	360,000
2. POLLUTION PREVENTION AND CONTROL	847,000	730,000
3. PROTECTION OF BIOLOGICAL DIVERSITY	123,000	143,000
4. SUSTAINABLE MANAGEMENT OF COASTAL ZONES	104,000	90,000
5. INTEGRATING ENVIRONMENT AND DEVELOPMENT	220,000	185,000
	SUB-TOTAL	1,679,000
PROGRAMME SUPPORT COSTS	218,270	196,040
TOTAL ACTIVITIES FUNDED THROUGH THE MTF	1,897,270	1,704,040

	Proposed Budget (in US \$)	
	2000	2001
B. ACTIVITIES TO BE FUNDED THROUGH THE EU VOLUNTARY CONTRIBUTION		
1. PROGRAMME COORDINATION	83,000	54,000
2. POLLUTION PREVENTION AND CONTROL	86,000	46,000
3. PROTECTION OF BIOLOGICAL DIVERSITY	150,000	110,000
4. SUSTAINABLE MANAGEMENT OF COASTAL ZONES	140,000	217,000
5. INTEGRATING ENVIRONMENT AND DEVELOPMENT	90,000	120,000
	SUB-TOTAL	549,000
TOTAL ACTIVITIES TO BE FUNDED THROUGH THE EU VOLUNTARY CONTRIBUTION	549,000	547,000

**AGGREGATE BUDGET COVERING ACTIVITIES , ADMINISTRATIVE AND OPERATING COSTS
FOR THE COORDINATING UNIT AND THE CENTRES:**

	Proposed Budget (in US \$)	
	2000	2001
COORDINATING UNIT, Athens, Greece		
TOTAL ACTIVITIES	468,000	414,000
TOTAL ADMINISTRATIVE COSTS	1,305,500	1,321,000
TOTAL	1,773,500	1,735,000
MEDPOL		
TOTAL ACTIVITIES	699,000	630,000
TOTAL ADMINISTRATIVE COSTS	697,500	708,600
TOTAL	1,396,500	1,338,600
REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE MEDITERRANEAN (REMPEC)		
TOTAL ACTIVITIES	189,000	141,000
TOTAL ADMINISTRATIVE COSTS	573,000	585,000
TOTAL	762,000	726,000
BLUE PLAN REGIONAL ACTIVITY CENTRE (BP/RAC)		
TOTAL ACTIVITIES	225,000	230,000
TOTAL ADMINISTRATIVE COSTS	480,000	490,500
TOTAL	705,000	720,500
PRIORITY ACTIONS PROGRAMME REGIONAL ACTIVITY CENTRE (PAP/RAC)		
TOTAL ACTIVITIES	324,000	340,000
TOTAL ADMINISTRATIVE COSTS	364,000	375,000
TOTAL	688,000	715,000
SPECIALLY PROTECTED AREAS REGIONAL ACTIVITY CENTRE (SPA/RAC)		
TOTAL ACTIVITIES	273,000	253,000
TOTAL ADMINISTRATIVE COSTS	291,000	295,500
TOTAL	564,000	548,500
ENVIRONMENT REMOTE SENSING REGIONAL ACTIVITY CENTRE (ERS/RAC)		
TOTAL ACTIVITIES	50,000	47,000
TOTAL ADMINISTRATIVE COSTS	0	0
TOTAL	50,000	47,000
CLEANER PRODUCTION REGIONAL ACTIVITY CENTRE (CP/RAC)		
TOTAL ACTIVITIES	0	0
TOTAL ADMINISTRATIVE COSTS	0	0
TOTAL	0	0
PROGRAMME SUPPORT COSTS	648,700	634,868
GRAND TOTAL	6,587,700	6,465,468

SOURCES OF FINANCING

	2000	2001
A. Income		
MTF Contributions	4,839,689	4,936,483
Greek Counterpart Contribution	400,000	400,000
UNEP Counterpart Contribution	50,000	50,000
Total Contributions	5,289,689	5,386,483
Unpaid Pledges for 1998/99 and prior years	1,280,996	
Total expected income	11,957,167	
B. Commitments		
Commitments	5,390,000	5,283,600
Programme Support Costs	648,700	634,868
Total commitments	11,957,168	

	2000	2001
A. Income		
Voluntary Contribution of EU	549,054	546,634
B. Commitments		
Activities funded through the EU Voluntary Contribution	549,000	547,000
Total commitments	549,000	547,000

CONTRIBUTIONS FOR 2000-2001 (IN US DOLLARS):

Contracting Parties	%	Ordinary Contributions to MTF for 1999 (in US \$)	Ordinary Contributions to MTF for 2000* (in US \$)	Ordinary Contributions to MTF for 2001** (in US \$)
Albania	0.07	3,321	3,387	3,455
Algeria	1.05	49,821	50,817	51,834
Bosnia and Herzegovina	0.3	14,235	14,520	14,810
Croatia	0.97	46,024	46,944	47,883
Cyprus	0.14	6,643	6,776	6,911
EU	2.5	118,621	120,993	123,413
Egypt	0.49	23,250	23,715	24,189
France	37.97	1,801,597	1,837,629	1,874,382
Greece	2.81	133,328	135,995	138,714
Israel	1.47	69,748	71,143	72,566
Italy	31.37	1,488,441	1,518,210	1,548,574
Lebanon	0.07	3,321	3,387	3,455
Libya	1.97	93,473	95,342	97,249
Malta	0.07	3,321	3,387	3,455
Monaco	0.07	3,321	3,387	3,455
Morocco	0.28	13,286	13,552	13,823
Slovenia	0.67	31,790	32,426	33,074
Spain	14.99	711,244	725,469	739,978
Syria	0.28	13,286	13,552	13,823
Tunisia	0.21	9,964	10,163	10,367
Turkey	2.25	106,758	108,893	111,071
Sub-total	100	4,744,793	4,839,689	4,936,483
Host Country(Greece)		400,000	400,000	400,000
UNEP Environment Fund		50,000	50,000	50,000
TOTAL		5,194,793	5,289,689	5,386,483

* The 2000 Contributions represent a 2% increase over the 1999 Ordinary Contributions to the MTF.

** The 2001 Contributions represent a 2% increase over the 2000 Ordinary Contributions to the MTF.

Estimated Counterpart Contributions in Cash/Kind of Contracting Parties hosting Regional Activity Centres and of the U.N. Agencies participating in the MEDPOL Programme. The amounts have been provided to UNEP by the respective Centres and Agencies.

Countries		2000 (,000 US\$)	2001 (,000 US \$)
Croatia	PAP/RAC	150	150
France	BP/RAC	440	440
Italy	ERS/RAC	300	300
Malta	REMPEC	80	80
Spain	CP/RAC	625	625
Tunisia	SPA/RAC	90	90
U.N. Agencies			
WHO	MED POL	100	100
WMO	MED POL	50	50
IAEA	MED POL	300	300
UNESCO/IOC	MED POL	80	80

All figures except those from Malta and Spain are same as for previous biennium.

I. COORDINATION**I.A LEGAL COMPONENT**

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
Legal assistance to the Secretariat	MEDU	15,000			15,000		
Assistance to countries to develop their national legislation and national enforcement of control mechanisms in line with the implementation of the Convention and its Protocols and the adopted protection measures	MEDU	5,000	10,000		5,000	10,000	
Training Programme for national officials on environment and institutional issues, including environmental law	MEDU	15,000	10,000	20,000	15,000	10,000	20,000
SUB-TOTAL ACTIVITIES		35,000	20,000	20,000	35,000	20,000	20,000

I.B MEDITERRANEAN COMMISSION ON SUSTAINABLE DEVELOPMENT (MCSD)

Related activities are budgeted under the following sections: I.C, I.E, II.C and II.D.

I.C INFORMATION AND PARTICIPATION

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
Publication and dissemination of MAP Technical Reports	MEDU	15,000			10,000		
Library services (environmental awareness and educational assistance)	MEDU	5,000					
Preparation, translation, Printing and dissemination of MAP Newsletter MEDWAVES (Arabic, English and French)	MEDU	40,000			40,000		
Support to public awareness campaigns at the national level	MEDU	20,000		20,000	20,000		20,000
Preparation, editing, translation, printing and dissemination of brochures and reports, including the use of the Internet	MEDU	50,000		20,000	30,000		20,000
Preparation of an information kit for the public and for the press	MEDU	20,000		10,000	10,000		10,000
Training on Information Strategy, tools, networking	MEDU	20,000		20,000*			20,000
Support to follow-up of MCSD on information and participation	MEDU		10,000	10,000		10,000	10,000
SUB-TOTAL ACTIVITIES		170,000	10,000	80,000	110,000	10,000	80,000

* Turkey has expressed its intention to provide requested additional support.

I.D COORDINATION AND COOPERATION WITH NON-GOVERNMENTAL ORGANISATIONS

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
Support to non-governmental organisations and other major actors	MEDU	30,000	9,000	50,000	25,000	9,000	50,000
SUB-TOTAL ACTIVITIES		30,000	9,000	50,000	25,000	9,000	50,000

I.E MAJOR MEETINGS ORGANIZED WITHIN THE MAP FRAMEWORK AND RELATED ACTIVITIES

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
12th Ordinary Meeting of the Contracting Parties to review and approve the 2002-3 programme budget	MEDU						200,000 a
Meeting of the MAP National Focal Points to consider the progress of the Action Plan and prepare the 2002-3 programme budget	MEDU				70,000		
Sixth Meeting of the Mediterranean Commission on Sustainable Development (MCSD)	MEDU	30,000		50,000 b			
Seventh Meeting of the Mediterranean Commission on Sustainable Development (MCSD)	MEDU				20,000		60,000 c
Meetings of the Steering Committee on the Mediterranean Commission on Sustainable Development (one per year)	MEDU	20,000			10,000		10,000
Meetings of the Bureau (two per year) to review the progress of the Action Plan, advise the Secretariat on matters arisen since the meeting of Contracting Parties, and decide on programme/ budget adjustments	MEDU	35,000			35,000		
Meeting of the Regional Activity Centres' Directors and the Coordinating Unit for programming and coordination of MAP activities (one per year)	MEDU	5,000			5,000		
Second Meeting of Mediterranean Government designated experts on Liability and Compensation	MEDU				20,000		60,000
Presentation Conferences for CAMP projects (participation of RACs)	MEDU	30,000			20,000		
Follow-up of the recommendations of the MCSD (reporting, feasibility studies and assistance)	MEDU	20,000	9,000	30,000	10,000	15,000	30,000
Support for the preparation of the "Strategic Review of the Year 2000" (participation of RACs)	MEDU		20,000	50,000			

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
Joint workshop with UNCSD on National Sustainable Development Strategies	MEDU	10,000	15,000	50,000 d			
Evaluation of the MAP structure	MEDU			60,000			
Evaluation of the Historic Sites Centre	MEDU			8,000			
Conference of Plenipotentiaries to adopt the amendments to the Emergency Protocol	MEDU			e			
SUB-TOTAL ACTIVITIES		150,000	44,000	248,000	190,000	15,000	360,000

- a: The Principality of Monaco has expressed its intention to host this Meeting and cover all expenses.
b: Tunisia has expressed its intention to host this Meeting and partially cover the expenses.
c: Turkey has expressed its intention to host this Meeting and partially cover the expenses.
d: Funds secured from UN-CSD and Turkey.
e: Malta has expressed its intention to host this Meeting and to cover the expenses jointly with other partners.

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
TOTAL ACTIVITIES UNDER COORDINATION		385,000	83,000	398,000	360,000	54,000	510,000

II. **COMPONENTS**II.A **POLLUTION PREVENTION AND CONTROL** (to cover MEDPOL, REMPEC, CP/RAC and PAP/RAC)

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
Assistance from REMPEC or through REMPEC's consultants to States in developing their capacities in the fields of preparedness for and response to accidental marine pollution	REMPEC	10,000			8,000		
Assistance as above to States in developing port emergency response system	REMPEC	7,000			9,000		
Assistance as above to States in preparing and developing bilateral and multilateral agreements	REMPEC	4,000			5,000		
Development of the regional information system (RIS), library, website and information dissemination	REMPEC	8,000			9,000		
Development of TROCS and of the Mediterranean Information Decision Support Integrated System	REMPEC		11,000			11,000	
Assistance to countries in case of emergency (Mediterranean Assistance Unit)	REMPEC	4,000			4,000		
Assistance to countries in the Organisation of National Training Courses	REMPEC	10,000			10,000		
Regional specialised training course (25 participants) 3 per biennium	REMPEC	64,000		20,000	70,000		50,000
Meeting of REMPEC's Focal Points	REMPEC	66,000					
Two years project on port reception facilities for collecting ship generated garbage, bilge waters and oily waters	REMPEC			400,000 a			240,000 a
Three years project "Risk Assessment of the ports of Marsin and Iskandarun, Turkey" with associated capacity building for the State for preparedness and response to marine pollution	REMPEC			206,000 b			206,000 b
Three years project to develop the natural system for preparedness for and response to accidental pollution in the Syrian Arab Republic	REMPEC			146,000 c			151,000 c
Support to sub-regional agreement between Cyprus, Egypt and Israel	REMPEC	5,000			15,000		
Inventory and analysis of experienced remote sensing monitoring activities to support the LBS Protocol, the MED POL Programme and sea pollution assessment and setting-up of operational plans	ERS/RAC	5,000			5,000		
Assessment of Pollution: Assistance to countries for the formulation and implementation of trend monitoring programmes	MEDPOL	90,000			80,000		
Assistance to countries for the formulation and implementation of biological effects monitoring	MEDPOL	25,000	20,000		20,000	20,000	
Technical Review Meeting on the progress of implementation of the trend and biological effects monitoring	MEDPOL				30,000		20,000

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
Training and Fellowships	MEDPOL	20,000			15,000		
Data Quality Assurance Programmes	MEDPOL	60,000			55,000		
Identification of, and research on, pollution emerging issues	MEDPOL	40,000			40,000		
Review of data and information on pollution Hot Spots and Sensitive Areas (WHO)	MEDPOL			59,000 d			
Consultation Meeting to identify prioritization criteria for pollution Hot Spots and Sensitive Areas (WHO)	MEDPOL	30,000		60,000 d			
Consultation with countries for pre-investment studies	MEDPOL				10,000		50,000 d
Pre-investment studies for pollution abatement in selected hot spots	MEDPOL						2,000,000 e
Consultation Meeting to select pollution Hot Spots for pre-investment studies	MEDPOL	10,000		50,000 d	10,000		
Assessment of health related aspects of the pollution of the Mediterranean Sea (WHO)	MEDPOL			15,000 f			15,000 f
Assessment of pollution by marine and coastal litter (IOC)	MEDPOL	4,000			5,000		
Enforcement and Control: Assistance to countries for the formulation and implementation of compliance monitoring programmes	MEDPOL	30,000	15,000		15,000	15,000	
Assistance to countries for compliance and enforcement of legislation and systems of inspections (WHO)	MEDPOL				40,000		
Consultation Meeting of the informal Network on compliance and enforcement	MEDPOL	20,000	20,000	20,000			
Training courses related to systems of inspection (WHO)	MEDPOL	20,000	20,000	90,000 g			30,000 g
Consultation Meeting on criteria and standards for health-related monitoring of coastal recreational and shellfish waters (WHO)	MEDPOL				30,000		30,000 f
Intercalibration exercise on determination of microbiological pollution (WHO)	MEDPOL				40,000		10,000 f
LBS Protocol/Strategic Action Programme (SAP)/GEF Project: Finalization of Transboundary Diagnostic Analysis (TDA) and revision of SAP	MEDPOL			106,000 d			
Preparation of Regional Guidelines for pollution abatement as part of GEF Project	MEDPOL	50,000		104,000 d			36,000 d
Preparation of Regional Plans for pollution abatement as part of the GEF Project	MEDPOL	100,000		105,000 d			
Preparation of National Action Plans to address pollution from land-based activities	MEDPOL	10,000			10,000		480,000 d
Assistance to countries for the preparation of National Action Plans	MEDPOL				40,000		75,000 d
Expert assistance to the inter-ministerial national committees	MEDPOL			180,000 d			
Meetings at national level for the preparation and presentation of National Action Plans	MEDPOL				20,000		80,000 d
Consultation Meeting on reporting methodology for LBS Protocol	MEDPOL				50,000		

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
Regional and National Training Courses as part of the GEF Project related to river pollution monitoring	MEDPOL	30,000		60,000 g			60,000 g
Regional and National Training Courses as part of the GEF Project related to waste water treatment plant operation and management (WHO)	MEDPOL	30,000		60,000 g			60,000 g
Regional and National Training Courses as part of the GEF Project related to cleaner production techniques	MEDPOL	25,000		140,000 d	5,000		10,000 g
Assistance to countries for the preparation of PRTRs	MEDPOL	10,000			10,000		
Economic Instruments: Implementation of the SAP MED project (support to the national authorities in the implementation of economic instruments in ICAM and mitigation of pollution from land-based activities)	PAP/RAC	40,000		140,000			100,000
Dumping Protocol: Preparation of regional Guidelines according to Art. 4 and 6 of the Protocol	MEDPOL	20,000					
Meeting of Government Experts to approve Guidelines	MEDPOL						70,000 h
Hazardous Wastes Protocol: Assistance for the implementation of the Protocol	MEDPOL				5,000		
Coordination: Meeting of MED POL National Coordinators	MEDPOL				20,000		50,000 h
GEF Project Coordination Meetings	MEDPOL				45,000		139,000 d
CP/RAC Activities	CP/RAC			143,750 i			
- Meetings (including the Meeting of National Focal Points)	CP/RAC						
- Publications	CP/RAC			106,250 i			
- Projects and assistance to countries	CP/RAC			187,500 i			
TOTAL ACTIVITIES		847,000	86,000	2,398,500	730,000	46,000	3,962,000

- a: Funds secured through the EU/DGVII-1/EuroMediterranean Partnership (MEDA)
- b: Money allocated to Turkey within the framework of the three years LIFE project, of which REMPEC is technical manager.
- c: Funds secured through the EU/DGXI/LIFE Programme.
- d: Fund secured from GEF
- e: \$ 1,000,000 from GEF and \$1,000,000 from FFEM.
- f: Funds partly secured through WHO
- g: Funds secured through FFEM.
- h: Funds expected from host countries
- i: Tentative figures subjected to the approval of the concrete activities by the Spanish Government that support directly CP/RAC activities. 2001 activities are subjected to the budget allocated by the Spanish Government to the CP/RAC activities.

II.B PROTECTION OF BIOLOGICAL DIVERSITY (to cover SPA/RAC)

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
<u>Data Collection and Periodic Assessment of the Situation</u> Collection of data and assistance to countries for the preparation of inventories of species and sites	SPA/RAC		50,000	50,000		25,000	35,000
Expert meeting on coastal (terrestrial and wetland) habitats	SPA/RAC				30,000		20,000
<u>Legal measures</u> Assistance to countries in the setting up and enforcement of their national legislation in the field of sites and species conservation	SPA/RAC	10,000			10,000		
<u>Planning and Management</u> Implementation of the Action Plan for threatened species (monk seal, marine turtles, cetaceans and marine vegetation) adopted within MAP	SPA/RAC		50,000			50,000	
Mediterranean Symposium on marine vegetation	SPA/RAC	20,000					
Assistance for the implementation of CAMPs	SPA/RAC	25,000		25,000	25,000		25,000
Assistance to countries for the establishment and management of SPAs	SPA/RAC		25,000	25,000		20,000	30,000
Setting up of strategies and plans in the field of biodiversity conservation	SPA/RAC	10,000	25,000			5,000	
<u>Public information</u> Elaboration and diffusion of data and information relevant to biodiversity conservation and sustainable use	SPA/RAC	18,000			18,000		
<u>Exchange of experience and strengthening of national capabilities</u> Training sessions on the scientific and technical aspects of the conservation of the natural common heritage	SPA/RAC	40,000		10,000	20,000	10,000	20,000
SPA National Focal Points Meeting	SPA/RAC				40,000		
TOTAL ACTIVITIES		123,000	150,000	110,000	143,000	110,000	130,000

II.C SUSTAINABLE MANAGEMENT OF COASTAL ZONES (to cover PAP, ERS and BP RACs)

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
MAP CAMPS Co-ordinating role; implementation of ICAM activities, natural resources, capacity building, preparation of programmes and plans; integration of results and activities; and preparation of bankable projects as a follow-up of CAMP programmes	PAP/RAC	45,000	85,000			130,000	
MCSD Support to follow-up MCSD recommendations on ICAM (implementation of ICAM instruments, tools and techniques)	PAP/RAC	9,000			15,000		
ICAM 'Development of ICAM methodology; development and elaboration of tools & techniques for SEA, CCA for tourism, coastal information systems, land and sea use planning systems; and capacity building and institutional strengthening (national and regional workshops and training courses)	PAP/RAC	20,000	20,000		20,000	50,000	
National Focal Points Meeting of PAP/RAC	PAP/RAC				20,000 a		
Evaluation of PAP/RAC Centre	PAP/RAC				10,000		
Contribution to on-going and planned CAMPS as to remote sensing applications (preliminary studies, capacity building, assistance).	ERS/RAC	5,000	5,000		3,000	7,000	
Meetings and workshops to introduce, to national planners and decision-makers from Mediterranean Countries, remote-sensing-based activities and their support to the sustainable development process.	ERS/RAC	5,000	10,000			10,000	20,000
Improvement and maintenance of the STEPINMED database in the Internet.	ERS/RAC	5,000			5,000		
Assistance to Mediterranean Countries for the setting-up of proposals to be submitted for outside funds.	ERS/RAC	5,000			7,000		
National Focal Points Meeting of ERS/RAC	ERS/RAC						30,000 b
Consolidation of prospective approaches and related information systems	BP/RAC	10,000	20,000	10,000	10,000	20,000	10,000
Preparation for and implementation of MEDA Programme (participation of most RACs)	MEDU						
TOTAL ACTIVITIES		104,000	140,000	10,000	90,000	217,000	60,000

a. Jointly with BP/RAC and ERS/RAC.

b. Jointly with BP/RAC and PAP/RAC. External funds to be provided by the Sicilian local administration.

II.D INTEGRATING ENVIRONMENT AND DEVELOPMENT (to cover BP, PAP and ERS/RACs)

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
<u>Observation and prospective study of the environment and development:</u> Regional level assessment of progress on sustainable development in the Mediterranean	BP/RAC	20,000			20,000	20,000	
<u>Assistance to countries in assessing progress towards sustainable development and support to follow-up on MCSD recommendations on indicators:</u> - calculating indicators; - assistance to national observatories (or equivalent agencies); - national analyses	BP/RAC		45,000	45,000		45,000	45,000
<u>Analysis of the free trade-environment relationship (organisation of a workshop)</u>	BP/RAC	20,000		20,000			
<u>Assessment of the social costs (in terms of poverty and health) incurred by the degradation of the environment and of economic tools used for measuring this phenomenon</u>	BP/RAC	10,000			10,000		
<u>Communication and training activities</u>	BP/RAC			50,000			50,000
<u>MEDSTAT Environment Programme</u>	BP/RAC			400,000 a			400,000
<u>Tourism and Sustainable Development/MCSD:</u> - Assisting in implementing the action plan and drafting the White Paper	BP/RAC	20,000		20,000	15,000		20,000
- Support to follow up of the MCSD recommendations on tourism in the field of environmental assessment for tourism planning and coastal areas and for carrying capacity for tourism techniques and for the preparation of the best practice guide	PAP/RAC	25,000			20,000		10,000
<u>Urban management and sustainable development/MCSD:</u> - Support to the working group: - Urban management tools	PAP/RAC	25,000			20,000		10,000
- Sustainable management of towns	BP/RAC	10,000			10,000		
<u>Control of urbanisation and sustainable town management</u> Retrospective and prospective study of the problems of urbanisation in the Mediterranean and prevention of natural risks	BP/RAC		20,000	20,000	10,000		
<u>Workshop on urban waste management to prepare for feasibility and work programme for MCSD group on "consumption patterns and urban waste management"</u>	BP/RAC	20,000		20,000			
<u>Soil Erosion</u> Erosion and desertification control activities (assistance to countries in preparing plans for coastal areas, training and capacity building for national institutions)	PAP/RAC		25,000	30,000		25,000	30,000

ACTIVITY	OFFICE	Proposed Budget (in US \$)					
		2000			2001		
		MTF	EU	EXT	MTF	EU	EXT
Water Resources Regional workshop to assess the situation in the Decision Support System for Coastal Water Resources Management in the region; Preparation of guidelines for application of the Decision Support System for Coastal Water Resources Management; and Training course on application of the Decision Support System for Coastal Water Resources Management	PAP/RAC	30,000			30,000		
Rural development, natural areas and resources: - Communication and training activity for water demand	BP/RAC	10,000		20,000			
- Gathering information and analysing the land question with country experts	BP/RAC	10,000			10,000		
- Gathering information, analysis and proposal in the field of rural and agriculture development/natural environments and resources	BP/RAC	10,000		10,000		30,000	
Meeting of Blue Plan Focal Points	BP/RAC				20,000 b		
Evaluation of the BP/RAC Centre	BP/RAC				10,000		
Analysis of available information, structures and expertise at National level to support the monitoring of indicators relying on remote sensing techniques.	ERS/RAC	10,000					
Technical assistance to Mediterranean Countries to monitor indicators relying on remote-sensing techniques.	ERS/RAC				10,000		30,000
Implementation of a database on existing data and information relevant to the selected indicators and their availability at national and regional level.	ERS/RAC			25,000			25,000
TOTAL ACTIVITIES		220,000	90,000	660,000	185,000	120,000	620,000

- a. Funds are secured through the EU/DGI/MEDA Programme.
b. Jointly with PAP/RAC and ERS/RAC.

III. ADMINISTRATIVE AND OPERATING COSTS**1. COORDINATING UNIT, Athens, Greece**

	Approved Budget			Proposed Budget			
	1999			2000		2001	
		MTF	GREEK CP	MTF	GREEK CP	MTF	GREEK CP
Professional Staff	m/m						
Coordinator - D.2	12	128,000		131,000		133,000	
Deputy Coordinator - D.1	12	122,000		124,500		127,000	
Senior Programme Officer/ Economist - P.4	12	121,000		118,500		121,000	
Fund Management/Admin. Officer - P.4	12	*		*		*	
MEDPOL Coordinator - P.5	12	116,000		123,500		126,000	
MEDPOL Programme Officer - P.4	12	121,000		118,500		121,000	
MEDPOL Programme Officer - P.3	12	94,000		96,000		98,000	
Computer Operations Officer - P.4	12	92,000		-		-	
Information Officer - P.3 (a)	12	-		96,000		98,000	
Total Professional Staff		794,000		808,000	0	824,000	0
Administrative Support (b)							
Information Assistant - G.6/G.7	12	36,000		37,500		37,500	
Administrative Assistant - G.6/G.7	12	*		*		*	
Senior Secretary - G.5	12	30,000		31,500		31,500	
Administrative Clerk - G.5	12	*		*		*	
Computer Info./System Assistant - G.5/G.6	12	*		*		*	
Budget Assistant - G.5 (c)	12	30,000		*		*	
Administrative Assistant - G.5	12	*		*		*	
Library Assistant - G.5/G.6 (d)	12	-		31,500		31,500	
Secretary - G.4	12	29,000		30,000		30,000	
Secretary - G.4	12	29,000		30,000		30,000	
Secretary (MEDPOL) - G.4	12	29,000		30,000		30,000	
Secretary (MEDPOL) - G.4	12	29,000		30,000		30,000	
Secretary (MEDPOL) - G.4	12	29,000		30,000		30,000	
Telecommunication Clerk - G.4 (c)	12	27,000		*		*	
Administrative Clerk - G.4 (c)	12	26,000		*		*	
Office Clerk/Typist - G.3	12	25,000		26,000		26,000	
Clerk/Messenger - G.2 (c)	12	20,000		*		*	
Temporary Assistance		10,000		5,000		5,000	
Training of MEDU Staff		-		10,000		10,000	
Overtime		15,000		15,000		15,000	
Hospitality		12,000		10,000		12,000	
Total Administrative support		376,000		316,500	0	318,500	0
Travel on Official Business		111,000		120,000		122,500	
Office Costs							
Rental**			137,000		139,000		141,000
Other Office costs (including sundry)		80,900	263,000	89,000	261,000	91,000	259,000
Total Office costs		80,900	400,000	89,000	400,000	91,000	400,000
TOTAL ADMIN. COSTS		1,361,900	400,000	1,333,500	400,000	1,356,000	400,000

* Paid under Programme Support Costs.

** In the case of a change in the location of premises, the adjustment of the budget, due to the change of the cost, to be Proposed by the Bureau.

- (a) In conformity with MAP Information Strategy, and as agreed by the Contracting Parties, the post of "Computer Operations Officer" will be converted into an "Information Officer" corresponding more to the actual needs of MEDU/MAP. Computer issues would be handled by a G. Staff (post already exists) with local technical support as necessary.
- (b) Increase based on the estimated result of the salary survey for 1999.
- (c) Positions previously paid by the MTF to be covered by Programme Support Costs.
- (d) Regularization.

2. MED POL COOPERATING AGENCIES

		Approved Budget (in US\$)	Proposed Budget (in US\$)	
		1999	2000	2001
		MTF	MTF	MTF
Professional Staff				
WHO Programme Officer/Senior Scientist, MAP Coordinating Unit (Athens) P.5	m/m 12	115,000	118,000	120,000
IAEA DQA Consultant (Monaco)	4		20,000	20,000
Total Professional Staff		115,000	138,000	140,000
Administrative Support				
WHO Secretary MAP Coordinating Unit (Athens) G.5	12	30,000	30,500	31,500
IAEA Laboratory Assistant MEL (Monaco) G.6	12	58,000	55,000	56,100
WMO Temporary Assistance - WMO/HQ (Geneva)		14,000	5,000	5,000
IOC Temporary Assistance - IOC/HQ (Paris)		14,000	5,000	5,000
Total Administrative Support		116,000	95,500	97,600
Travel on Official Business				
WHO (Athens)		15,000	15,000	15,000
WMO (Geneva)		5,000	3,000	3,000
IAEA (Monaco)		15,000	15,000 *	15,000 *
IOC of UNESCO (Paris)		5,000	3,000	3,000
Total Travel		40,000	36,000	36,000
Office costs		**	**	**
TOTAL PERSONNEL AND OPERATING COSTS		271,000	269,500	273,600

* Includes field missions for the Data Quality Assurance Programme

** Office costs incurred by WHO staff stationed in the Coordinating Unit in Athens are covered by MED Unit office costs. Office costs incurred by all Agencies at their own Headquarters or Regional Offices are covered by the respective agencies as part of their counterpart contributions.

3. **REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE MEDITERRANEAN (REMPEC) Valletta, Malta**
Cooperating Agency IMO

		Approved Budget (in US\$)	Proposed Budget (in US\$)	
		1999	2000	2001
		MTF	MTF	MTF
Professional Staff	m/m			
Director - D.1	12	134,000	128,000	131,500
Technical Expert - P.4	12	115,000	118,000	120,500
Chemist - P.4	12	105,000	108,000	110,000
Junior Professional (CSN) - P.2	12	-	-	-
Total Professional Staff		354,000	354,000	362,000
Administrative Support				
Information Assistant - G.6	12	21,000	22,000	22,500
Administrative Assistant - G.6/G.7*	12	-	12,000	12,500
Senior Secretary/Admin. Assistant G.6	12	21,000	21,000	21,500
Clerk Secretary - G.4	12	17,000	18,000	18,500
Clerk/Secretary - G.4	12	17,000	18,000	18,500
Caretaker/Docs Reproducer - G.3	12	16,000	17,000	17,500
Total Administrative Support		92,000	108,000	111,000
Travel on Official Business		35,000	37,000	38,000
Office costs		76,500	74,000	74,000
TOTAL PERSONNEL AND OPERATING COSTS		557,500	573,000	585,000

* New position to be financed equally by IMO and MAP.

4. **BLUE PLAN REGIONAL ACTIVITY CENTRE (BP/RAC)**
Sophia Antipolis, France

		Approved Budget (in US\$)	Proposed Budget (in US\$)	
		1999	2000	2001
		MTF	MTF	MTF
Professional Staff	m/m			
Chairman	12			
Director	12	*	*	*
Environmental Economist	12	108,000	95,000	100,000
Scientific Director	12	*	*	*
Systemic and Prospective Officer	12	77,000	82,000	83,500
Computer and Data Base Officer	12	46,000 **	54,000 **	55,000 **
Environment Officer	12	***	***	***
Institutional Studies Officer	12	***	***	***
GIS Officer	12	***	***	***
Environment Officer	12	*	*	*
Administrative and Financial Officer	12	52,000 **	56,000 **	57,000 **
Total Professional Staff		283,000	287,000	295,500
Administrative Support				
Data Collection Assistant/Senior Secretary	12	47,000	50,000	51,000
Bilingual Secretary	12	47,000	50,000	51,000
Secretary	12	****	****	****
Documentation Assistant	12	****	****	****
Temporary Assistance		20,000	15,000	15,000
Total Administrative Support		114,000	115,000	117,000
Travel on Official Business		30,000	33,000	33,000
Office and Operating costs		45,000	45,000	45,000
TOTAL PERSONNEL AND OPERATING COSTS		472,000	480,000	490,500

- * Seconded by the French Government
 ** Supplemented by the French Government and other projects.
 *** Covered by other projects for 2000 and 2001.
 **** Covered by the operating budget derived from external projects.

5. **PRIORITY ACTIONS PROGRAMME REGIONAL ACTIVITY CENTRE (PAP/RAC)**
Split, Croatia

		Approved Budget (in US\$)	Proposed Budget (in US\$)	
		1999	2000	2001
		MTF	MTF	MTF
Professional Staff	m/m			
Director	12	47,000	49,000	51,000
Deputy Director	12	35,000	36,000	38,000
Total Professional Staff		82,000	85,000	89,000
Administrative Support				
Senior Assistant to Projects/Translator	12	25,000	26,000	27,000
Assistant to Projects/Translator	12	24,000	25,000	26,000
Assistant to Projects/Translator	12	24,000	25,000	26,000
Assistant to Projects/Translator	12	24,000	25,000	26,000
Administrative Assistant	12	24,000	25,000	26,000
Financial Assistant	12	24,000	25,000	26,000
Temporary Assistance		14,000	14,000	14,000
Total Administrative Support		159,000	165,000	171,000
Travel on Official Business		30,000	31,000	31,000
Office costs		81,000	83,000	84,000
TOTAL PERSONNEL AND OPERATING COSTS		352,000	364,000	375,000

6. SPECIALLY PROTECTED AREAS REGIONAL ACTIVITY CENTRE (SPA/RAC)
Tunis, Tunisia

		Approved Budget (in US\$)	Proposed Budget (in US\$)	
		1999	2000	2001
		MTF	MTF	MTF
Professional Staff	m/m			
Director	12	33,000 *	33,750 *	34,500 *
Expert	12	16,500 *	17,000 *	17,500 *
Expert	12	62,500	63,750	65,000
Data Researcher	12	44,000	45,000	46,000
Total Professional Staff		156,000	159,500	163,000
Administrative Support				
Administrative Assistant	12	14,000	14,250	14,500
Bilingual Secretary	12	12,000	12,250	12,500
Bilingual Secretary	12	*	12,250	12,500
Driver	12	6,500	6,750	7,000
Finance Officer	12	**	2,000 *	2,000 *
Cleaner	12	**	**	**
Caretaker	12	**	**	**
Temporary Assistance		9,500	5,000	5,000
Total Administrative Support		42,000	52,500	53,500
Travel on Official Business		25,000	25,000	25,000
Office costs		54,000	54,000	54,000
TOTAL PERSONNEL AND OPERATING COSTS		277,000	291,000	295,500

* Represents funds allocated to supplement the salary paid by the Host Country.

** Paid by the Host Country.

7. ENVIRONMENT REMOTE SENSING REGIONAL ACTIVITY CENTRE (ERS/RAC)
Palermo, Italy

	Proposed Budget (in US\$)	
	2000	2001
TOTAL PERSONNEL AND OPERATING COSTS	*	*

* Personnel/Administrative and Operating Costs are fully covered by the Host Country.

8. CLEANER PRODUCTION REGIONAL ACTIVITY CENTRE (CP/RAC)
Barcelona, Spain

	Proposed Budget (in US\$)	
	2000	2001
TOTAL PERSONNEL AND OPERATING COSTS	*	*

* Personnel/Administrative and Operating Costs are fully covered by the Government of Spain.

Appendix I

Mediterranean Commission on Sustainable Development

**Recommendations and Proposals for action on the theme of:
INFORMATION, PUBLIC AWARENESS, ENVIRONMENTAL EDUCATION AND
PARTICIPATION
as adopted by the Contracting Parties (Malta, 27-30 October 1999)**

(a) Framework conditions

The strengthening of the role of civil society requires the urgent and systematic review, amendment and revision of national and local legal and institutional frameworks in most of the Mediterranean countries.

The members concerned took note of the principles of the Aarhus Convention(1998);

Regional and local authorities, NGOs and other civil society organizations must be encouraged and supported. "Dialogue fora" should be promoted and participatory schemes with active involvement of NGOs should be introduced and/or enhanced. Such schemes may include the participation of NGOs in EIA procedures and in specific projects such as biotopes management, training, monitoring, etc. as well as in sustainability plans through Local Agendas 21 and similar initiatives. Funding provision for such activities should be included in the budget.

Public Awareness, information, participation and mobilization for the environment and sustainability, need to start at an early stage. Therefore relevant issues should be introduced in the curricula of schools and adequate time provision should be made; educators should be trained appropriately; suitable pedagogical material should be produced and disseminated; the media and the Internet could be used by establishing sites on education for the environment and sustainability, with links to other sites.

(b) Specific actions proposed:

A number of the specific actions recommended by the Thematic Group are closely linked with the planned MAP information and communication policy and the MAP Secretariat should, therefore, be encouraged to utilize the input of the Thematic Group, as appropriate.

Information:

1. A reliable cost assessment of the needed additional capital investment for infrastructure as well as for running costs etc. for the achievement of comparable, reliable information throughout the Mediterranean.
2. A 2-year state-of-the-art exhibition, held in each Mediterranean country in the national language, which will remain in the country. The information will be provided for the most part by UNEP/MAP and EEA and will focus on the state of the Mediterranean environment as well as the means and mechanisms that are either in place or are needed for its improvement and for the promotion of a truly sustainable development.

Part of each exhibition will be dedicated to the respective country in which it is taking place. The exhibitions will be handled by partnership between Governments and NGOs.

Awareness:

3. Organization of a systematic opinion poll and statistically sound assessment of the awareness views, perceptions behaviour and aspirations of the Mediterranean public in the areas of environment and sustainable development, in a mode compatible with the one employed by “Eurobarometer” for Europe.
4. Invitation to the Contracting Parties to develop and implement national strategies and action plans for awareness, as integral components of their national sustainability plans, in collaboration with NGOs, in order to enhance the efficiency and credibility of the information provided. The Secretariat, eventually with the input of the Thematic Group, may provide an “Information and Awareness Strategy Framework” as a support for the work of the Contracting Parties.

Education:

5. Strengthening of the Mediterranean network of environmental educators and relevant Mediterranean networks on education for environment and sustainability.
6. Assessment of the resources needed for the training of 50 per cent of Mediterranean educators of primary schools in the most productive alternative schemes and 30 per cent of those of secondary schools by the year 2004.
7. Encouragement for the establishment of a Mediterranean register with Internet links on teaching materials, particularly audiovisual.

Participation:

8. Invitation to the Contracting Parties to identify at least one pilot participatory and mobilization project per country with the active involvement of the public. These projects at national or local level will be studied, monitored and documented in order to be publicized as possible examples of good practice. Invitation also to States to collaborate with local authorities.
9. Publication and translation of a series of manuals in various Mediterranean languages on the following issues:
 - (a). participation practices and techniques
 - (b). consensus-building methodologies
 - (c). already existing “success stories” in the area of public participation and mobilization.

Appendix II

Mediterranean Commission on Sustainable Development

Recommendations and Proposals for action on the theme of: INDICATORS FOR SUSTAINABLE DEVELOPMENT IN THE MEDITERRANEAN as adopted by the Contracting Parties (Malta, 27-30 October 1999)

The Contracting Parties to the Barcelona Convention, with the support of actors from civil society, are invited to set up on a voluntary basis a Mediterranean system of indicators for sustainable development for use by:

Mediterranean riparian States;
Actors in multilateral co-operation in the region ;
Actors from civil society (local authorities, companies, associations, ...).

1. **Adoption of a common set of indicators:** A first set of 130 basic indicators (of which 55 are more easy to calculate in view of the relevance and availability of data for an adequate number of countries) was selected by the Contracting Parties. Each country would compile them, where possible and on a voluntary basis, for the purposes of work at the Mediterranean level. This list may be changed in accordance with tests carried out in the countries, and in accordance with guidance and requirements expressed by the Mediterranean Commission on Sustainable Development.
2. **Complementary indicators:** The indicators selected in the common core set cannot alone make up an adequate framework for an in-depth examination of various subjects and for work on sustainable development policies on special fields or territories. MAP, the States and local authorities will endeavour to propose, test and record complementary pressure, state and response indicators.
3. **Harmonization and dissemination of indicators to facilitate work at the national level:** MAP will create a "glossary" which sets out definitions and the methods for drawing up indicators. MAP will also keep an up-to-date dossier illustrating all selected indicators, including a table of trends by country and at regional level from 1960 onwards with graphical illustrations, in addition to comments on difficulties in collection and possible interpretations. MAP will disseminate this work on the Internet.
4. **Mediterranean report:** The Contracting Parties are invited to contribute effectively to the production and publication by MAP of a report on sustainable development in the Mediterranean. The first report shall be drawn up in the year 2002.
This report will be based in particular on indicators for sustainable development.

It will show the unity and diversity of situations in the region, current efforts towards sustainable development, difficulties encountered, good practices, etc.
It will be submitted by the MAP to the Contracting Parties and the MCSD.

5. **National reports:** States are invited to supply MAP with the national reports prepared for the United Nations Commission for Sustainable Development, and to facilitate comparative studies on Mediterranean issues undertaken by Blue Plan (series of Mediterranean Country Profiles).
These national summaries will indicate result-based goals in the medium and long term, which are clearly stated and adopted by States, as well as examples of good practice.

6. **Capacity Building:** The Contracting Parties are invited: to mobilize national statistical institutions and instruct environment and development observatories, or equivalent agencies, to monitor and enhance indicators at the national level; and to develop them into preferential links at the Mediterranean level.

They are invited to develop appropriate programmes, possibly with regional financial support, to build their capacities:

- to promote the use of indicators for sustainable development;
- to harmonize environmental and socio-economic statistics; and
- to ensure coordination with all the institutions concerned

7. **Follow up:** MAP will follow up this work through the activities centres. It will supplement the work with new activities to examine specific themes in greater depth in collaboration with other competent national and international organizations. The MCSD will follow the work and, where necessary, will call on the task managers, who may propose the holding of the appropriate meetings.

Appendix III

Mediterranean Commission on Sustainable Development Recommendations and Proposals for action on the theme of: TOURISM AND SUSTAINABLE DEVELOPMENT as adopted by the Contracting Parties (Malta, 27-30 October 1999)

A major political question-mark for the Mediterranean

As the world's primary tourist destination with over 150 million international and domestic visitors a year, the coastal regions of the Mediterranean will continue to record considerable tourist development over the coming decades (with possibly as much as double the number of tourists by 2025).

As a vector of deep-running changes more often than not irreversible, much more than other activities, tourism begs the general question of societies' ability to control development, provide long-term protection for their environment and promote balanced national planning. The Mediterranean experience indeed shows that controlling tourist development is especially hard in a very attractive region with considerable geographic constraints. It also shows a wide variety of situations with 3 general kinds of areas:

- already "mature" destinations that can report on their positive and/or negative experiences,
- more recent destinations in full growth that must endeavour not to repeat the problems encountered elsewhere,
- coastal or inland areas with real developmental possibilities but which are at present little or not developed and that might even invent new forms of development.

Tourism in the Mediterranean region is therefore of capital importance in its present and future impact on societies, economies and the region's environment. Its ways of developing must absolutely evolve to better take environmental, social and economic aspects into consideration.

Mobilisation on a Mediterranean and world-wide scale

A question-mark at the heart of sustainable development, tourism has recently given rise to numerous initiatives and conferences on both the Mediterranean and world-wide levels, in particular:

- The Lanzarote International Conference on Sustainable Tourism (1995), the United Nations Conference for Sustainable Development in small island developing states (Barbados, 1995), the Lanzarote Conference on Sustainable Tourism in the Islands (October, 1998) and the recent debates in the context of the United Nations' 7th commission on Sustainable Development
 - The Conferences in Hyères les Palmiers (and the Euro-Mediterranean declaration on tourism, 1993), Casablanca (and the charter of Mediterranean Tourism, September, 1995), Calvia (and the Calvia Statement, April, 1997) and the work by MAP on tourism (work by the BP/RAC and the PAP/RAC and the section on tourism on the Med Agenda 21 – Tunis, 1995).
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- Initiatives by Mediterranean NGOs, especially the International Congress on "Sustainable Tourism in the Mediterranean: Participation by Civil Society" (Sant-Felice de Guixols, October, 1998).

The MCSD's Contribution

The MCSD wished to contribute to this necessary thought-process with the goal of developing overview and real proposals for the contracting parties to the Barcelona Convention.

The work carried out, highlighted by the Antalya workshop in Turkey (17 to 19 September, 1998), endeavoured to mobilise the main players involved (states and international organisations, tourist professionals and experts, NGOs, local authorities...), to focus on the question of the relationship between tourism, the environment and sustainable development in the region and to gather a certain number of local case studies (23 case studies were documented by the countries).

Work by the MCSD brought to light three main proposal lines (controlling impact on the environment, promoting tourism in better harmony with sustainable development and developing Mediterranean co-operation) and a proposal for an action plan.

1. Controlling tourism's territorial and environmental impact

Although tourism depends on quality environment and landscape, it is all too often a factor in their deterioration, especially on coasts. Thus the quality of the Mediterranean coasts—one of the Mediterranean's most precious assets—must absolutely be better preserved in the tourist destination areas. To this end the following guidelines have been proposed:

1.1. Anticipate and reduce the negative impact of developments, urbanisation and tourist infrastructures on coastlines

The handsomest locations on the Mediterranean coastline are the prime sites desired by domestic and international tourism. Uncontrolled development of infrastructures and tourist-related urbanisation (especially yacht harbours, tourist accommodation and second homes) can lead to irreversible deterioration of ecosystems (sand dunes, wetlands and so forth) and coastal landscapes. These sometimes very rapid developments are hard to control especially because of the many players involved, the lack of shared common vision and the non-enforcement, even the non-existence, of development regulations.

This is how many mature destination areas have seen their environment damaged, which in some cases has led to serious economic and/or environmental crises.

What is at stake for the Mediterranean is to rehabilitate the damaged mature tourist destinations as far as possible and, above all, avoid such degradation in the areas now undergoing growth or not yet developed.

Recommendations:

The Mediterranean states and local authorities are urged to:

- ⇒ *acquire the instruments needed to evaluate the environmental impact of tourist programmes and large-scale projects,*
- ⇒ *carry out evaluations of destination sites' carrying capacity and taking steps necessary for ensuring that the offer be limited to the carrying capacities thus defined,*
- ⇒ *strengthen or establish legislative tools, regulations and property management leading to controlling tourist urbanisation and protecting the most precious natural sites. Among other things this means:*
 - providing coastal zones subjected to strong tourist developmental pressure with plans for development and land management that take environmental questions into account,
 - avoiding generalised urbanisation too close to coasts and the building of roads parallel and close to coastlines that promote this kind of urbanisation and generate traffic that alters the quality of the destination areas,
 - identifying the most remarkable coastal sites (such as wetlands, sand dunes, and so forth) and implementing measures that ensure their protection, e.g. creating natural reserves or land agencies for procurement wherever possible.
- ⇒ *implement programmes enabling the rehabilitation of mature destination areas favouring the environment,*
- ⇒ *implement mechanisms enabling (whenever possible) a financial contribution from the tourist sector for protecting and managing natural and cultural sites.*

1.2. Reducing consumption of natural resources and the pollution caused by tourist accommodation and activities

Tourism causes heavy consumption of natural resources (especially water, soil and energy) and produces a lot of waste. This consumption and waste production come on top of those generated by the resident population. These effects are all the more considerable for the fact that tourism in the Mediterranean is concentrated mostly over a short period (July and August), which leads to inordinately large amount of amenities and an increase in the problems of water management in the most critical period.

The tourist sector can and must play an innovative role in these environmental questions. Some professionals have, moreover, already implemented environmental charters in facilities and destination areas.

Recommendations:

Mediterranean states and local authorities are urged to:

- ⇒ *ensure good environmental management of tourist facilities and destination sites;*
- ⇒ *encourage quality environmental procedures (certification, charters and so forth) with possible regional financial support,*
- ⇒ *develop all means that may lead to spreading the tourist season over the entire year*
- ⇒ *promote the tourist sector:*
 - to fight against waste and pollution in the water areas (reduced consumption, purification and recycling), energy waste (energy savings and use of renewable energy, especially solar energy) and waste (minimisation, selective collection, recycling and so forth),
 - to promote clean and innovative technology in this sense,
 - to promote and implement the certification process (EMAS, ISO 14000, etc.) of facilities and destination areas and develop voluntary tools such as environmental charters.

1.3. Controlling the development of tourist leisure activities affecting the marine and coastal environment

The generalised use of beaches and the development of boating and new leisure activities (jet skis) and underwater tourism can seriously affect the environment, especially certain protected species (cetaceans, turtles among others).

Recommendations:

Mediterranean states and local authorities, in concert with the professional players involved, are urged to take the necessary steps so that:

- ⇒ *pleasure boats do not discharge their waste water at anchor or, even less, in ports,*
- ⇒ *yacht harbours be furnished with the necessary facilities for taking solid and liquid waste,*
- ⇒ *new leisure forms likely to affect the environment, especially protected species, only be authorised once their impact has been assessed and are shown to conform to the tourist strategies of the areas concerned,*
- ⇒ *access and use of beaches by the public as well as their use by professionals be regulated, if need be, and managed in accordance with environmental factors.*

2. Promoting tourism as a factor in sustainable social, cultural and economic development

Suitably guided and controlled, tourism can become a powerful vector of sustainable development for many Mediterranean regions benefiting both local

populations, tourists, environmental protection and the highlighting of natural and cultural heritage.

2.1. Developing national and local strategies aimed at better reconciling tourism, the environment and sustainable development

Aware of the need to better integrate tourism and the environment, many Mediterranean states and local authorities have already implemented negotiation procedures between services and the pertinent players which have resulted in conventions, agreements and protocols and in defining strategies and programmes. These steps remain too limited, however, and are in general insufficiently operational.

Recommendations:

The Mediterranean states and local authorities are urged to:

- ⇒ *develop and strengthen the in-depth confrontational/negotiation methods between authorities dealing with tourism, the environment and regional development and the pertinent players to define strategies that enable:*
 - the setting of mid-term result goals,
 - better defining and sharing out the roles of the various partners,
 - implementing adapted action tools,
- ⇒ *develop these strategies especially by depending on the observation of tourist impact (on the economy, society, the environment and cultural heritage), the producing of prospective exercises for the mid- and long-term and the selection of pertinent indicators*
- ⇒ *endeavour on a scale with tourist destinations to mobilise local populations, NGOs and the pertinent professionals and implement local Agenda 21s.*

2.2. Promote the diversification of tourism and balanced regional development.

What is required is promoting more compatible forms of tourism with the stakes of sustainable regional planning and development.

Recommendations:

The Mediterranean states and local authorities must endeavour to:

- ⇒ *promote the development of cultural, ecological and rural tourism compatible with the environment. Highlighting archaeological, historical, architectural, landscape and natural heritage can be a strong contributor and should be developed.*
 - ⇒ *look into the complementarity and synergy with other economic sectors, especially agriculture, fishing and craftsmanship,*
-

- ⇒ *develop the synergies between coastal tourism and inland tourism,*
- ⇒ *implement specific-action programmes adapted to the sustainable development of particularly fragile areas on the ecological and human levels, especially islands, hinterland and wetlands,*
- ⇒ *develop appropriate tools for these objectives, as, for example, biosphere reserves and natural parks and processes of the local Agenda 21 sort, by giving them sufficient financial means and technical assistance.*

3. Develop Mediterranean Co-operation

Following the example of other fields of common interest and other regions of the world, the Mediterranean would benefit from building strong regional co-operation in the tourist field. Stakes are crucial and the Contracting Parties to the Barcelona Convention, along with the MAP, have a booster role to play in harmony with tourist trade professionals and NGOs.

Among other things, its goal is to:

- further the development in the tourist demand for a tourism that takes the importance of protecting the environment and sustainable development into greater account and to highlight the market role to this aim,
- define and promote operational tools adapted to national and local authorities and tourist businesses, enabling the control of tourist development and contributing to its being better integrated into the sustainable development of the areas concerned.

Recommendations:

The Contracting Parties to the Barcelona Convention, along with the MAP, and in concert with tourist professionals and NGOs are urged to:

- ⇒ *strengthen awareness activities on a regional scale in tourist destinations as well as in the source countries,*
 - ⇒ *Organise experience-sharing between the actors involved in tourist destinations of the various countries,*
 - ⇒ *develop training programmes for those actors involved, especially local authorities and professionals,*
 - ⇒ *promote the implementation of Mediterranean networks (between professionals, between certain areas such as islands or certain kinds of tourism such as the cultural variety...),*
 - ⇒ *promote the implementation of Mediterranean eco-labels,*
 - ⇒ *stimulate a "regional co-operation mechanism" in this field that works in a network.*
-

4. Proposals for an action programme

4.1. Participation in networks and international initiatives for sustainable tourism

The goal is to make the Mediterranean region one of thought and action on a global scale and within this context to promote the implementation of Mediterranean networks (between professionals, between islands and so forth). With this goal in mind, the MAP will take part, especially in the following procedures:

- "Tour Operator Initiative", steered by UNEP-EI, following on the 7th session of the UN Commission of Sustainable Development,
- The "Islands" joint programme between the UNEP-EI and the WTO, initiated at the Lanzarote Conference (1998),
- the "Tourism and the Environment at the European Level" project initiated by the European Environmental Agency.

4.2. The implementation of a regional programme within the framework of the "sustainable management of coastal zones" part of the Euro-Mediterranean partnership

Within the framework of the Euro-Mediterranean partnership and its priority programme of action for the environment (SMAP—the management wing of the coastal areas), the MAP will submit and ensure the follow-up of a regional programme for the sustainable management of the Mediterranean tourist coastal areas.

This three-year programme will consist of the following activities:

i) Experience-sharing between Mediterranean tourist destinations

This will concern the destination areas selected by the states. Among other things it will enable,:

- a better identification of the actors concerned and their roles as well as past and current developments and their environmental, social and economic impact (in particular by means of appropriate indicators);
- the pinpointing of the tools used and their range;
- a contribution in developing strategies and projects for better integrating tourism with sustainable development;
- the definition and promotion on regional and local levels of the real tools for the authorities and businesses concerned.

ii) Promoting Mediterranean eco-labels

This consists of looking at the opportunity and the methods for granting Mediterranean eco-labels, in particular for the tourist destination areas striving to reconcile environmental protection and tourist development.

iii) Awareness campaigns on the regional level

In particular this means:

- producing and distributing practical reference documents ("white book", "good practice guides" and so forth);
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- conducting awareness campaigns for the general public in the source countries to contribute to a better awareness by tourists of the environmental and social stakes involved.

iv) Promoting economic and financial tools for protecting and managing sites

This means pinpointing and promoting those economic and financial tools for enhancing an effective contribution from the tourist sector for protecting sites and improving the sustainable development of the destination areas.

v) A study for a "regional co-operation mechanism"

This means carrying out a feasibility study of a "regional co-operation mechanism" for contributing to a better integration of tourism in sustainable development in the Mediterranean region by contributing to the follow-up of the implementation of the present recommendations (following on the three-year plan). It is advisable to specify what, among other things, could be its functions and its operational mode.

vi) The year 2002 for a regional symposium

A regional symposium in 2002 has been suggested, the goal of which would be to:

- draw conclusions from the present programme;
 - derive a common view for integrating tourism with sustainable development in the Mediterranean and to draw up main lines for a long-term programme of action;
- stimulate sustainable tourism regional co-operation in the Mediterranean region.
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Appendix IV

MAP INFORMATION STRATEGY as adopted by the Contracting Parties (Malta, 27-30 October 1999)

Introduction

At their Tenth Ordinary Meeting (Tunis, 18-21 November 1997), the Contracting Parties to the Barcelona Convention requested of the Secretariat to present to the Bureau a concrete action programme in the area of information within the MAP system. A report presenting such a programme was submitted by the Secretariat to the Bureau Meeting (Tripoli, 16-17 November, 1998) for its consideration. Following the review of the document presented, the Bureau requested the Secretariat to convene a Working Group meeting on the MAP Information Strategy.

This document represents the initial document originally presented, and then amended, mainly as regards recommendations, to reflect the conclusions of the Working Group Meeting on MAP Information Strategy, Athens, 1-2 April 1999.

1. MAP's mandate

In June 1992, the United Nations Conference on Environment and Development (UNCED) brought together in Rio de Janeiro, the greatest number of Heads of State and Government ever assembled in one place to discuss environment and sustainable development.

The "Rio Declaration" adopted, includes an important statement on the right of the general public to be considered in matters related to the environment. Principle 10 of the Rio Declaration on Environment and Development states:

"At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes"

Recognizing the important role which public information and public awareness may play in the success of any MAP strategy for the protection of the Mediterranean environment and the sustainable development of the region, appropriate provisions were made in MAP Phase II, and various amendments have been introduced to the Barcelona Convention and its Protocols as well as the three new protocols approved during the period 1994-1997.

These legal instruments should constitute the legal basis for a MAP Information and Public Awareness Strategy.

2. The role of MAP

The role which MAP is called to play on information is to coordinate action and act as a catalyst for the protection of the Mediterranean environment and the promotion of sustainable development in the region.

Specifically:

- 2.1 to provide relevant information to decision-makers in order to assist them in the promotion and the implementation of sustainable development and the protection of the environment;
- 2.2 to provide information to the public in connection with the state of the environment of the Mediterranean region and the measures adopted for improvement in order that environmental awareness in the Mediterranean region be enhanced;
- 2.3 to encourage public access to and participation in information activities for the protection of the environment in the Mediterranean region;
- 2.4 to mobilize participation and the involvement of major actors concerned.

3. MAP's strategy on information and public awareness

In order to enable MAP to fulfill its role, a detailed MAP Information and Public Awareness Strategy should be formulated. This strategy should describe the kind of information and the message(s) to be communicated to the MAP partners and the public at large as well as the most effective Environmental Communication procedure. Information may be defined as follows:

- 3.1 **Information for decision-making:** A critical component of environmental policy making. In fact, communication and development are inseparable. Policy makers, business and industry leaders and government officers soon came to realize that public sentiment had become an important consideration in matters related to the environment, and that policy decisions should be based on sound information.
- 3.2 **Public Information, general awareness raising:** The process of conveying information to the public or sometimes to special target groups (e.g. schoolchildren, tourists, industrialists etc) with a view to enlisting their support for particular MAP objectives and promoting general MAP aims. Participation is not a solitary thing, rather it refers to a combination of activities and outcomes.
- 3.3 **Public access and participation:** Publicizing the issues addressed, objectives pursued and breakthroughs made under MAP, to as large and mixed a public as possible through various means of communication, providing access to information and encouraging the public to participate and engage in dialogue.

In order to formulate a fundamental strategy with explicit public information and awareness objectives, and timetables for achieving them, the entire process must be sensitive to the cultural, social, political and economic concerns of region's and adapt accordingly. Therefore, different and strategic roles need to be assigned to the various categories of Focal Points of the Contracting Parties and to the Regional Activity Centres (RACs).

MAP Information and Awareness Strategy should be based on a well-defined plan with clear objectives: WHAT, TO WHOM, HOW.

Recommendations

- **Create a full time Information Officer post at MEDU;**
- **invite the Contracting Parties to appoint contact persons on information;**
- **design and use a common MAP template (MAP brand identification) in all MAP (MEDU, RACs) publications including a MAP logo.**

4. The Product: What is to be communicated

The Barcelona Convention, its mandate and MAPs profile and work. The activities, products and MAP's 20 years of experience in the protection of the environment and the promotion of sustainable development in the region together with other selected and useful information in order to support decision making and enhance environmental awareness.

Recommendation

- **The Contracting Parties should define the kind of information to be communicated.**

5. The Target: To whom the Product is to be communicated

The term Target, in this context, refers to the public at which MAP information and awareness outputs are aimed. This public should be the beneficiary of MAP's information strategy and are grouped as follows:

- 5.1 - Decision-makers (eg. Contracting Parties, Government agencies, MAP Focal Points);
 - IGOs (UNEP, UNDP, IOC, IMO, FAO, WHO, IAEA, WMO, European Commission, Convention Secretariats etc.).
- 5.2 - Economic and social sectors;
 - business community/private sector, including banks;
 - Universities, libraries, scientific community;
 - NGOs.
- 5.3 - Children and youth ;
 - the mass media;
 - tourist population.

In order to reach all target groups the key element is "nationalization". The Regional Activity Centres and the Contracting Parties must be supported in information capacity building, and be urged to assist both in the preparation and dissemination of MAP information. It is unlikely that MAP and its human resources, however efficient, could be effective in reaching regional, national and local audiences without the assistance of the competent authorities at the regional and national levels.

However until the necessary assistance to the present staff is actually funded (to be defined in relation to the scope of the MAP information strategy adopted), improvements could indeed be implemented by the existing MAP human resources.

Recommendations

- **the target groups should be broadened and updated periodically according to the needs;**
- **the MEDU, the RACs and the prospective Information Focal Points should play an active role in the dissemination of MEDU and MAP information on the international, regional, national and local levels;**
- **the MEDU, the RACs and the prospective Information Focal Points should ensure that the MAP mailing list is properly reviewed and routinely updated and that cooperation between MEDU and RACs, regarding the mailing list and the dissemination of information in general, is enhanced;**
- **RACs should ensure the timely deposit of all publications and reports with the MEDU library;**
- **whenever the relevant bodies within the Contracting Parties issue publications on the environment, these publications should refer to MAP and MAP activities when related.**

6. The Means: Ways and resources to be used

The following should be taken into consideration:

Conditions for the wide dissemination of MAP information vary greatly from country to country within the region. Apart from cultural, economic geopolitical and language differences, there are very distinct differences in the technology for the accession, management and dissemination of information among MAP countries.

The Contracting Parties differ in their receptiveness to information about MAP. For example, political and public sensitivity to environmental issues is much keener in some countries than in others, and some have much longer-established traditions, institutions and means for the dissemination of information.

Public information varies greatly in different parts of the region. Certain issues which are of great public concern in some Contracting Parties may have little or no relevance in others.

The processes for reaching the public vary from country to country, and certain media are more developed than others in different countries and situations.

Target groups are presently reached through a mailing list containing approximately

1714 entries compiled by the Athens MEDU and by the RACs. The following means are being used or have been used:

6.1 Publications

- a. SPECIAL PUBLICATIONS
 - MAP Technical Report Series (MTS)
 - Convention and Protocols
 - MAP and RACs Reports of Meetings
 - RACs publications

- b. GENERAL INFORMATION MATERIAL
 - MedWaves
 - Brochures and Leaflets
 - Posters and Stickers

- a. SPECIAL PUBLICATIONS

- MAP Technical Report Series (MTS)

- The series contains selected reports resulting from the various activities performed within the framework of the components of MAP.

- So far, 124 volumes have been published and disseminated as per the MEDU mailing list, and on request.

Recommendations

- **Upgrade the presentation of MTS; immediate action to be taken on the presentation of the MTS. In the medium term the MTS should be systematically proofread and edited by a qualified editor, preferably with a scientific background, prior to publication;**
- **encourage RACs to publish in the MTS;**
- **urge National Focal Points to assist MEDU in the enhancement of the MTS mailing list by supplying a list of national NGOs and libraries.**

Convention and Protocols

- *Mediterranean Action Plan and the Final Act of the Conference of Plenipotentiaries of the Coastal States of the Mediterranean Region for the Protection of the Mediterranean Sea*, 52 pages. United Nations, New York 1980. Languages: English, French, Spanish, Arabic.

- *Mediterranean Action Plan Conference of Plenipotentiaries of the Coastal States of the Mediterranean Region for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources. Final Act and Protocol*, 18 pages. Published by the United Nations, New York 1980.

- *Protocol concerning Mediterranean Specially Protected Areas*, 32 pages. MEDU, Athens, 1986. Languages: English, French, Spanish, Arabic (in one

volume).

- *Mediterranean Action Plan and Convention for the Protection of the Mediterranean Sea against Pollution and its related Protocols*, 61 pages. MEDU, Athens, 1992. Languages: English, French, Spanish, Arabic.
- *Mediterranean Action Plan and Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocols*, Informal Document. MEDU, Athens, 1997.

These have been distributed to a selected group of the MAP family (Focal Points, Government experts, IGOs, NGOs, libraries) and, upon request, to institutions and the media.

Recommendations

- **Improve the presentation (easy-to read, easy-to-access, easy reference); the medium term goal should be a common design template and potential MAP logo;**
- **publications should be available in English and French, special efforts should be made to have them also in Arabic, moreover, publications should be distributed at an information stand during meetings.**

MAP and RAC Meeting Reports

All MAP meeting reports and documents, 1975 to present, are deposited with the MEDU library, and constitute the MEDDOC database. *A MAP List of Meetings and Documents* is published and distributed biennially.

Reports of MAP meetings are distributed to a selected group of the MAP and RAC family (Focal Points, Government experts, IGOs, NGOs) and upon request, to Institutions, academics, researchers, students as well as the mass media.

RAC Publications

Recommendations

- **Encourage RACs to upgrade their publications as they produce and distribute their own;**
- **RACs publications to conform to the common design template (MAP brand identification) and include MAP logo in the long term.**

b. GENERAL INFORMATION MATERIAL

Recommendation

- **MAP Information material should be also published in the Arabic language and when sources are available, in Spanish.**

MedWaves (MW)

The first issue of MedWaves was published in July 1985 in English and French. Since 1990, following the decision of the Contracting Parties, MedWaves has been published in English, French and Arabic. The first issue of MedWaves in Arabic is no 19, January 1990. MedWaves magazine is issued three to four times annually and mailed by MEDU to nearly 2,000 recipients in multiple copies worldwide. It is distributed to Focal Points, Government experts, libraries, scientists, NGOs, IGOs, journalists and others upon request.

Recommendations

- **Place electronic version of MedWaves on the MAP Web Site;**
- **improve the design and layout of MedWaves, though progress has already been made. Restructure contents (analytical part, per major theme and per issue, activities, achievements, RAC/NGO information, list of meetings etc.);**
- **ensure the timely delivery of reports to the MW Editor by the Focal Points and other sources;**
- **allocate a one or a one-half page for each RAC and one page for NGO- MAP Partners, and make these contributors responsible for providing the text for the updating of the page;**
- **send MW to RACs, Focal Points and NGOs, and urge them to distribute MW to National/local NGOs and libraries, institutions, scientists and the media;**
- **appraise the feasibility of increasing the frequency of MW publication (6 issues per year) in conjunction with reducing the number of pages.**

Brochures and leaflets

- The first MAP brochure, the *Mediterranean Action Plan*, 28 pages, was prepared and published in 1985 by MEDU in all Mediterranean languages. It has been distributed by MEDU to international recipients and by the Focal Points on a national level.
- *Genoa Declaration on the Second Mediterranean Decade*, prepared and published by MEDU in 1988. Languages: All Mediterranean languages (in one volume).
- *High and Dry brochure*, 48 pages, designed and published by MEDU and OCA/PAC (Nairobi), in 1991. Languages: English, French, Arabic.
- MAP brochure, the *Mediterranean Action Plan*, 40 pages, prepared for the Rio Summit, compiled and published by MEDU in 1991. Languages: English and French.
- MAP brochure on MCSD, *Mediterranean Commission on Sustainable Development: A Regional Channel for Agenda 21*, prepared and published by MEDU in 1997. Languages: English and French (in one volume).
- MAP brochure, the *Mediterranean Action Plan: A Contribution to Sustainable Development in the Mediterranean Basin*, 36 pages, prepared and published by MEDU in 1996. Languages: English, French.

- MAP leaflet, four-fold prepared and published by MEDU in 1997. Languages: English, French.
- Various Blue Plan and SPA/RAC brochures.

Recommendations

- **Update the institutional MAP brochure as necessary; possibly with the addition of a back page pocket for inserting updated information. Languages: English, French, Arabic;**
- **create a) promotional, analytical eye-catching, easy-to-read, easy-to-absorb brochure**
b) leaflet with focus on the Mediterranean environment.
Languages: English, French, Arabic; all Mediterranean languages in the long term;
- **create a special brochure for children and youth (seek the assistance of a country with proven experience in such types of brochures), possibly as part of a comprehensive educational pack. Languages: All Mediterranean languages.**

Posters and Stickers

- *Turtle poster*
Printed in Athens in 1986 by MEDU. Photograph A. Demetropoulos. 5000 copies;
- *Monk Seal poster*
Printed by Water Branch, UNEP, Nairobi in 1998. Design by J. Lamb. 10000 copies were sent to MEDU;
- *Dolphin poster*
Printed in Athens in 1985 by MEDU. 1000 copies;
- *MEDUNIT poster (Art)*
Printed in Athens in 1986 by MEDU. 1000 copies.

Stickers mentioned hereunder were financed by Water Branch, UNEP, Nairobi. It must be noted that none of these stickers were originally designed to serve MAP purposes.

- *SOS Message in a bottle*: Designed and printed in two sizes by MEDU, in 1984, 100000 copies. Reprinted in 1985, 1986 and 1993.

It must be noted that this sticker is being used by UNEP for the "Year of the Ocean 1998" and appears in the UNEP letterheads;

- *Dolphin*: Designed and printed by MEDU in 1984. 150000 copies. Reprinted in 1985, 1987, 1991, 1993;
- *Pink Whale*: Designed and printed by MEDU in 1985. 50000 copies. Reprinted in 1985 and 1993;

- *Keep our Seas Alive*: Designed and printed by MEDU in 1985. 150.000 copies. Reprinted in 1987 and 1993;
- *Help Stop Global Warming and Sea-level Rise*: Designed by the Water Branch, Nairobi. Printed in Athens by MEDU in 1988. 100000 copies. Reprinted in 1991.

Recommendations

- **A well designed series of posters and stickers is an excellent way to reach the general public. The impact should be mainly visual and include the MAP logo. Where textual message exists this should be in the local language.**

6.2 *The MEDU Library*

The MEDU library, established in May 1986, houses a small special collection of monographs, scientific periodicals, technical reports and reference publications on marine pollution, sustainable development, environmental policy and law, climate change and other related topics. It serves as a depository for RAC publications and reports as well as for UNEP and other United agencies scientific and technical publications, and maintains a complete official documents collection and data base of meetings organized and convened by MAP from 1975 to present. Designated for the use of the MEDU staff, the library, despite its limited resources, has continued to offer assistance and to provide reference services and training to the Mediterranean scientific, professional and student community.

Recommendations

- **Define the policy and set guidelines regarding the MEDU library status, services, as well as its potential in the framework of MAP and MAP policy on information;**
- **organize the library's collection in electronic form in order to facilitate collection management and development and enhance library services;**
- **design and compile a MAP library database of MEDU and RACs library holdings (documents, publications). Make the database accessible and searchable via conventional means and via the Internet;**
- **create a MAP library information network with the MEDU library serving as the Focal Point and the active participation of RACs for effective information exchange and dissemination;**
- **enhance the MEDU library's presence on the MAP Web Site;**
- **support the library and the library's role in order that its growing responsibilities as a Centre for the deposit/acquisition, management and dissemination of environmental information in the region, be met. To that end, full time library staffing and a librarian's post should be established.**

6.3 *MAP Web Site*

The MAP Web Site was designed by Data Processing and the Library and was uploaded to UNEP server in August 1997, upon approval by the professional

staff meeting. It consists of, Information on MAP; History and Milestones; Legal Framework of MAP; Institutional Structure; Partnerships; Programme of Activities; Publications; and up-to-date news as well as glossary of terms. Moreover, it provides downloading option for copies of selected MAP meeting reports, the Barcelona Convention and Protocols, copies of 73 MAP Technical Reports and various other documents and publications.

The Web Site may be accessed at: <http://www.unepmap.org> and is updated approximately, every three weeks.

Recommendations

- **Assign responsibility for the contents and updating of the MAP Web Site to the prospective MEDU Information Officer;**
- **recruit professional services for enhancing the Web Site design;**
- **make contents of Web Site bilingual, English and French.**

6.4 *Mass media*

The press is contacted through, press releases, interviews, direct contact with individual journalists, press conferences on the occasion of the Contracting Parties meetings.

It must be taken into consideration that the Mass Media (Newspapers, magazines, written publications, radio, television) is a very special target group, as they have the potential of reaching a great number of people.

The print medium, most often available to a mass audience, is the newspaper. However, it must be noted that:

- Environmental journalists are often presented with technical and sometimes conflicting information and are required, under deadlines, to make sense of material referring to complex issues and make it readable and comprehensible. This leads to a confusing picture for the public and, at times, undermines the credibility of journalists on environmental issues;
- there is too much press release journalism, crisis-oriented, inconsistent, lacking in follow-up and not enough analysis of the issue;
- MEDU has to manage the press for maximum efficiency in promoting the goals and activities of MAP.

Recommendations

- **Improve liaison with mass media through the prospective Information Officer at MEDU;**
- **prepare a press kit with basic information on MAP goals and activities for distribution at press conferences, during Mediterranean Environment Week etc.;**
- **issue periodic MAP press releases and feature stories in English, French and Arabic;**
- **utilize prospective MAP Information Focal Points for the dissemination of MAP**

information to the local media.

6.5 Other means

- Exhibitions
- TV/Video Film outputs
- special events

Exhibitions

MAP has organized the following exhibitions:

- *The 1983 Exhibition panels:*
In 1983 Mr. T. Farcas, consultant, Water Branch, Geneva, created an exhibition consisting of 12 light-weight panels, which was shown in 1983 during the meeting of the Contracting Parties in Dubrovnik.
- *The 1985 Exhibition panels:*
In 1985, a new MAP exhibition was created by Mr. N. Gabrielli, architect and consultant of the Municipality of Genoa. The exhibition consisted of 35 plastic-coated aluminum panels, each weighing 5 kilos. This exhibition was shown at the 1985 meeting of the Contracting Parties in Genoa; in Athens, December 1985 as part of the celebrations for the 10th anniversary of MAP; in Algiers, March 1986; in Tunis, November 1986; in Nairobi (French Cultural Week), March 1987; in Malta, July 1988; and in Tripoli (Libya), February 1989.

In March 1990, MAP discontinued the use of this exhibition since the data shown had become obsolete.
- *The 1992 Exhibition panels:*
In 1992, a new MAP exhibition was created by Ms. M. Caparis, consultant, and the Senior Information/Conference Assistant. The exhibition consisted of 18 light-weight, easy to transport panels, 43 pictures with photographs and texts. It was shown at the Thessaloniki International Fair, September 1992; in Piraeus at the Music, Vision, Media Exhibition in November 1992; in Athens at the Multimedia Exhibition in December 1992; and at the HELECO Exhibition in April 1993; in Nicosia, in September 1993; at the Thessaloniki International Fair in September 1993; in Antalya, in October 1993; at the Thessaloniki International Fair in September 1994. In January 1995, MAP discontinued the use of this exhibition since the data shown had become obsolete.
- *Computer slide show on MAP:*
Prepared by Data Processing and shown to the delegates at the Contracting Parties Meeting in Barcelona in 1995.
- *UNEP Photo Exhibition:*
On loan by UNEP Nairobi, 60 photographs, no text. Shown at the Cultural Centre of the Municipality of Athens, in September 1994. Inaugurated by the Coordinator and the Deputy Mayor of Athens.

It should be noted that these exhibitions, intended as a portable display for frequent use around the region, are in fact, only barely mobile and are costly to transport.

Recommendations

- **Develop a good set of transparencies and/or slides for the use of professional staff and RACs;**
- **discontinue such type of exhibitions which are costly to transport;**
- **encourage and support exhibitions organized on a national and local level, especially exhibitions for children.**

TV/video Film output

- MAP produced a 15 minute video in 1995 that follows closely along the thematic lines of the MAP first booklet.
This video lacks creative and local appeal and is outdated.
- In 1990, Television Trust for the Environment (TVE) produced a 52 min. video: "*Mucking up the MED*". The video, a great success, is now outdated.

Recommendations

- **Secure funds (external) for an updated video and TV spots on the Mediterranean environment and the Mediterranean Action Plan, promoting MAP and its activities;**

Special Events

World Environment Day

The material for World Environment Day is prepared, produced and disseminated directly by UNEP Headquarters. It must be noted that this material reaches the Contracting Parties and RACs late in May.

Mediterranean Environment Week (Genoa Declaration 1985)

Until now, Mediterranean Environment Week has occasionally been observed. However, it could become the highest expression of Contracting Parties solidarity. Mediterranean Environment Week is a unique opportunity to bring MAP alive for its public.

In order to achieve results, careful planning as well as production of relevant material, timely dissemination and careful planning of events should be organized by MEDU in close cooperation with the Contracting Parties and RACs.

Recommendations

- **Engage schools with a painting competition, the awards to be given during the Mediterranean Environment Week;**
- **consider instituting special awards, e.g. "Most Environment-Conscious Business"**

Enterprise”.

Summary of Recommendations

Introduction

These recommendations were finalized and approved at the conclusion of the meeting of the Working Group on the MAP Information Strategy (Athens, 1-2 April 1999). They are arranged in short-medium-and long term action and are separated by topic in main body of the document.

Recommendations

Short Term (0-12 months)

- Create a full time Information Officer post at MEDU;
- create a full time Librarian post at MEDU;
- invite the Contracting Parties to appoint contact persons on Information;
- upgrade the presentation and the printing quality of MTS;
- recruit professional services for enhancing the MAP Web Site design;
- place electronic version of MedWaves on the MAP Web Site;
- assign responsibility for the contents and updating of the Web Site to the prospective MEDU Information Officer;
- each RAC to assign responsibility on information to a designated staff member;
- in cooperation with the prospective Information Focal Points and the RACs, ensure the proper review and the regular updating of the MAP mailing list for more efficient use;
- ensure the timely deposit of all RACs reports and publications with the MEDU library;
- develop a good set of transparencies and/or slides for the use of professional staff and the RACs.

Medium Term (12-24 months)

- Design and use a common MAP template (MAP brand identification) in all MAP (MEDU, RACs) publications including a MAP logo;
- improve the design/layout of MedWaves. Appraise the feasibility of increasing the frequency of publication (6 issues per year) in conjunction with reducing the number of pages;
- allocate a one or one-half page for each RAC and one page for NGO-MAP Partners, and make these contributors responsible for the updating of the page;
- update the institutional MAP brochure as necessary, Languages: English, French, Arabic;
- create:a) a promotional, analytical, eye-catching, easy-to-read, easy-to-absorb brochure,
 - b) a leaflet with focus on the Mediterranean environment. Languages: English, French, Arabic; all Mediterranean languages in the long term;
- organize the MEDU library's collection in electronic form in order to facilitate collection management and development, and enhance library services;

- enhance the MEDU library's presence on the MAP Web Site;
- make contents of the Web Site bilingual, English and French;
- improve liaison with mass media through the prospective Information Officer at MEDU;
- issue periodic MAP press releases and feature stories in English, French and Arabic;
- utilize prospective MAP Information Focal Points for the dissemination of MAP Information to the local media;
- prepare a press kit with basic information on MAP goals and activities for distribution at press conferences, during Mediterranean Environment Week etc;
- engage schools with a painting competition, the awards to be given during Mediterranean Environment Week;
- have MTS proofread and edited by a qualified editor, preferably with a scientific background, prior to publication.

**Long Term
(24-36 months)**

- Make MAP publications available in English and French and, special efforts should be made to have them also in Arabic and distribute them at an information stand during meetings;
- create a special brochure for children and youth, possibly as part of a comprehensive educational pack;
- design a series of posters and stickers, as an excellent way to reach the general public, with the impact being mainly visual, and include the MAP logo. Where textual message exists, this should be in the local language;
- create a MAP library information network with the MEDU library serving as the Focal Point and the active participation of RACs for effective information sharing and dissemination;
- organize training programmes on information management and public awareness for nationals of developing Mediterranean countries;
- secure funds (external) for an updated video and for TV spots on the Mediterranean environment and the Mediterranean Action Plan, promoting MAP and its activities;
- consider instituting special awards, e.g. "Most Environment-Conscious Business Enterprise".

Appendix V

Recommendations on MAP/NGO COOPERATION as adopted by the Contracting Parties (Malta 27-30 October 1999)

Introduction

1. At their Tenth Meeting, the Contracting Parties to the Barcelona Convention and its protocols (Tunis, 18-21 November 1997), decided to undertake a methodological reflection in relation to NGO participation in MAP® and for this purpose, decided to establish a Working Group composed of representatives of the Contracting Parties® to review this subject and propose the necessary recommendations.
2. At its recent meeting (Tunis, 28 March 1998), the Bureau of the Contracting Parties reviewed the subject, made various comments and requested the Secretariat to convene the meeting of the Working Group and report the results of its deliberation of the Working Group to the next Bureau meeting,
3. In conformity with those decisions, the meeting of the Working Group was convened at MAP premises in Athens on 9 October 1998. The meeting thoroughly reviewed a secretariat report, including draft recommendations on the subject, and made various amendments and modifications thereon. The meeting report was issued as document UNEP(OCA)/MED WG.147/3.
4. During its recent meeting held in Tripoli, Libyan Arab Jamahiriya, on 16 and 17 November 1998, the Bureau of the Contracting Parties reviewed the draft recommendations of the Working Group. Various comments were made by the members of the Bureau, including:
 - acknowledgement of the importance of the issue and the role of NGOs in the field of public awareness and participation;
 - support for the networks approach, which should function as focal points for the various NGOs they represent and should ensure the widest possible dissemination of information on MAP activities to other NGOs and the public at large;
 - relevant NGOs and the private sector should be encouraged to become involved in specific environmental and sustainable development issues;
 - the role of NGOs should be complementary to that of governments and NGOs that are genuinely working to protect the Mediterranean environment should be welcomed;
 - the selection of NGOs to be MAP partners should be established on a solid basis. They should not request funds to assume their responsibilities and should offer their contributions to MAP and to the Mediterranean countries;
 - MAP should select environmental and sustainable development themes, on which NGOs can help and contribute.
5. At the end of the Bureau discussion, the Secretariat was requested to continue

its work on the issue and submit a report to the meeting of the MAP National Focal Points.

6. The following draft recommendations have been suggested by the Working Group on MAP/NGO Cooperation for the consideration of the NFPs meeting, taking into account the above mentioned comments of the Bureau:

Proposed Recommendations

The main objectives of MAP/NGO cooperation are:

1. to advance the general purposes of MAP and to promote the policies, strategies and programmes derived from the Barcelona Convention and its Protocols and the decisions of the meetings of the Contracting Parties;
2. to obtain expert information, law and advice, technical cooperation and assistance from international, regional and national NGOs;
3. to enable NGOs which represent important sectors of public opinion in the Mediterranean to express the views of their members on environmental issues, raise public awareness and influence public opinion and action for the benefit of the environment.

With a view to attaining these objectives, the following specific recommendations are suggested for the consideration of the Contracting Parties:

A. At the Contracting Parties level

1. At the regional level, the Contracting Parties shall endeavour to create the appropriate working conditions for NGOs and to facilitate their involvement and active participation in tasks for which they are specialized, or have expertise, through a capacity-building programme involving financial assistance, legal assistance (such as bringing cases to courts), preparation of environmental projects and techniques of raising public awareness.
2. At the national level, encourage partnership among Contracting Parties, the private sector and relevant NGOs, which could produce positive results in dealing with specific environmental and sustainable development issues.
3. At the national level, encourage NGOs' role in organizing and supporting Apublic hearings@ on particular environmental issues.

B. At the NGO level

1. NGOs shall fully cooperate with the Mediterranean countries and MAP Secretariat for the furtherance of the objectives of the Barcelona Convention and its Protocols.
2. NGOs shall provide the MAP Secretariat regularly with information on their activities and changes in their structures.
3. NGOs shall build and strengthen national and regional networks, with wider representation of Mediterranean NGOs in the Networks.

4. NGOs shall cooperate individually and collectively (Networks) in the implementation of MAP programmes and shall prepare qualitative inputs to policy and research projects of MAP.
5. Sharing of experience and lessons, communication and exchange of information within the various NGOs shall be strengthened
6. Encourage Networks of NGOs to be present in MAP meetings by sending relevant experts.
7. NGO Networks shall guarantee to act as focal points for the various NGOs they represent.
8. NGOs shall disseminate information on MAP activities through their Newsletters, Internet web pages and through other channels in order to make MAP's efforts and importance in the Mediterranean better known to the public at large.
9. NGOs shall be encouraged to invite MAP representatives to participate in their ordinary meetings.

C. At the Secretariat level

1. The MAP Secretariat shall strengthen and upgrade its support to NGOs from the Southern and Eastern parts of the Mediterranean region, so as to enhance their capabilities and encourage their active participation in MAP activities.
2. The MAP Secretariat shall play a facilitating and enabling role to help NGOs build on and strengthen existing mechanisms of collaboration and networking.
3. Review and update the MAP/NGOs profile database on a regular basis.
4. Devote one-page in the MAP Bulletin (Medwaves@), to NGOs activities.
5. Explore the possibility of a multi-party collaboration of NGOs, international and regional financial institutions, the MAP Secretariat and the Contracting Parties, in the form of joint projects.
6. The MAP Secretariat shall designate a MAP official with overall responsibility for NGOs.
7. The MAP Secretariat shall provide information to NGOs on projects being financed through the Mediterranean Trust Fund (MTF) or through joint projects of MAP and regional and international financial institutions.
8. Encourage broad participation by NGOs in MAP activities, not just a selected few.
9. Selection of NGOs to be incorporated in the MAP/NGO List of Partners shall be based on the real profile (competence in the thematic field) of the organization which will be illustrated in a Dossier to be submitted by the NGO in question containing information on:
 - main objectives and field of competence of the organization;
 - NGO constitution, terms of reference, or articles of association;

- activity and financial reports;
 - bulletins and media articles published by the organization.
10. The selection of organizations to be incorporated in the MAP/NGO list of partners is to follow the same criteria used in the selection of the members of the Mediterranean Commission on Sustainable Development (MCSD), namely selection of organizations representing three categories: Local Authorities, Socio-economic Actors and Environmental NGOs.
 11. The selection process shall start with an official request by the organization, and a proposal by the MAP Secretariat to be reviewed by the meeting of the MAP National Focal Points for subsequent approval by the Ordinary Meeting of the Contracting Parties.

Appendix VI

**Guidelines for the MANAGEMENT OF DREDGED MATERIAL
as adopted by the Contracting Parties (Malta, 27-30 October 1999)**

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Preface

These guidelines are designed to assist the Contracting Parties in the implementation of the Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea, hereinafter referred to as "the Protocol", with regard to the management of dredged material; the Protocol was signed by 16 Contracting Parties in 1995, but has not yet entered into force.

Some aspects of these guidelines are an adaptation to the technical-economic context of the Mediterranean basin of the Dredged Material Assessment Framework, adopted on 8 December 1995 by the Contracting Parties to the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, of 13 November 1972, as amended in 1993.

It is, however, implicitly recognised that the general considerations and detailed procedures described in the guidelines are not applicable in their entirety to all national or local situations.

Introduction

Dredging activities are an essential part of port and harbour activities.

Two main dredging categories can be distinguished:

- **Capital dredging**, mainly for navigational purposes, to enlarge or deepen existing channel and port areas, or to create new ones; this type of dredging activity also includes some technical activities on the seabed such as trenches for pipes or cables, tunnelling, removal of material unsuitable for foundations, or removal of overburden for aggregate extractions;
- **Maintenance dredging**, to ensure that channels, berths or construction works are maintained at their designed dimensions.

All these activities may produce large quantities of material that have to be eliminated. A small part of this material may be polluted by human activities to such an extent that serious ecological conditions have to be imposed where the sediments are dredged or dumped.

It must be also recognised that dredging operations as such may harm the marine environment, especially when they take place in the open sea close to sensitive areas (aquaculture areas, recreational areas, ...). This is the case in particular when dredging operations have a physical impact (increased turbidity) or lead to the re-suspension or the re-releasing of major pollutants (heavy metals, organic or bacterial pollutants).

In view of the foregoing, the Contracting Parties are urged to exercise control over dredging operations in parallel with that exercised over dumping. Use of Best Environmental Practice (BEP) for dredging activities is an essential pre-condition for dumping, in order to minimise the quantity of material that has to be dredged and the impact of the dredging and dumping activities in the maritime area.

Advice is available from a number of international organisations, including the Permanent International Association of Navigation Congresses (PIANC) 1986: Disposal of Dredged Material at Sea (LDC/SG9/2/1). Through its Environmental Policy Framework and close links with industry in developing Cleaner Industrial Production Technologies, the United Nations Industrial Development Organisation (UNIDO) is able to offer expert advice and training to enhance capabilities to develop an integrated management plan for dredged waste materials.

1. REQUIREMENTS OF THE DUMPING PROTOCOL

1.1 Under Article 4.1 of the Protocol, the dumping of waste and other matter is prohibited.

Nevertheless, pursuant to Article 4.2 (a) of the Protocol, this principle may be waived and the dumping of dredged material authorised under certain conditions.

1.2 Under Article 5, dumping requires a prior special permit from the competent national authorities.

1.3 Furthermore, in accordance with Article 6 of the Protocol, the permit referred to in Article 5 shall be issued only after careful consideration of the factors set forth in the Annex to the Protocol. Article 6.2 provides that the Contracting Parties shall draw up and adopt criteria, guidelines and procedures for the dumping of wastes or other matter listed in Article 4.2 so as to prevent, abate and eliminate pollution.

1.4 These Guidelines for the Management of Dredged Material, which include advice on dredged material sampling and analysis, have been prepared for the purpose of providing guidance to the Contracting Parties on:

- (a) fulfilment of their obligations relating to the issue of permits for the dumping of dredged material in accordance with the provisions of the Protocol;
- (b) transmission to the organisation of reliable data on the input of contaminants to Protocol waters by the dumping of dredged material.

1.5 In view of the foregoing, these guidelines are designed to allow Contracting Parties to manage dredged material without polluting the marine environment. In accordance with Article 4.2 (a) of the Dumping Protocol, these guidelines relate specifically to the dumping of dredged material from ships and aircraft. They do not concern either dredging operations or the disposal of dredged material by methods other than dumping.

1.6 The guidelines are presented in two parts. Part A deals with the assessment and management of dredged material, while part B provides guidance on the design and conduct of monitoring of marine dumping sites.

The guidelines commence with a guidance on the conditions under which permits might be issued. Sections 4, 6 and 7 address the relevant considerations in the Annex to the Protocol, namely, the characteristics and composition of the dredged material (part A), the characteristics of the dumping site and method of deposit (part B), and general considerations and conditions (part C). Section 5 provides additional guidance on the sampling and analysis of dredged material.

**CONDITIONS UNDER WHICH PERMITS FOR DUMPING OF DREDGED MATERIAL
MAY BE ISSUED**

PART A

ASSESSMENT AND MANAGEMENT OF DREDGED MATERIAL

1. CHARACTERISATION OF DREDGED MATERIAL

1.1 For the purpose of these guidelines, the following definition[s] apply[s]:

- "dredged material" means any sedimentary formation (clay, silt, sand, gravel, rocks, and any indigenous parent rock material) removed from areas that are normally or regularly covered by sea water, by using dredging or other excavation equipment;

For any other relevant definition, the text of Art. 3 of the Protocol for the Prevention and Elimination of Pollution of the Mediterranean Sea by Dumping from Ships and Aircrafts or Incineration at Sea, applies.

2. DISPOSAL OF DREDGED MATERIAL

2.1 In the vast majority of cases, dumping harms the natural environment so before taking any decision to grant a dumping permit other methods of disposal should be considered. In particular, all possible uses of dredged material should be considered (see Technical Annex 3)

3. DECISION MAKING PROCESS

3.1 Proper dumping site selection rather than a test application is recommended. Site selection to minimise the impact on commercial or recreational fishery areas is a major consideration in resource protection and is covered in greater detail in Part C of the Annex to the Protocol. (Further guidance for the application of Part C of the Annex is given in Section 7 below).

3.2 In order to define the conditions under which permits for the dumping of dredged material may be issued, the Contracting Parties should develop on a national and/or regional basis, as appropriate, a decision-making process for evaluating the properties of the material and its constituents, having regard to the protection of human health and the marine environment.

3.3 The decision-making process is based on a set of criteria developed on a national and/or regional basis, as appropriate, which meet the provisions of Articles 4, 5, and 6 of the Protocol and are applicable to specific substances. These criteria should take into consideration the experience acquired on the potential effects on human health and the marine environment.

These criteria may be described in the following terms:

- (a) physical, chemical and geochemical characteristics (e.g. sediment quality criteria);
- (b) biological effects of the products of the dumping activity (impact on marine ecosystems);
- (c) reference data linked to particular methods of dumping or to dumping sites;
- (d) environmental effects that are specific to dumping of dredged material and are considered undesirable outside and/or in close proximity to the designated dumping sites;
- (e) the contribution of dumping to already-existing local contaminant fluxes (flux criteria)

3.4 Criteria should be derived from studies of sediments that have similar geochemical properties to those to be dredged and/or to those of the receiving system. Depending upon the natural variation in sediment geochemistry, it may be necessary to develop individual sets of criteria for each area in which dredging or dumping is conducted.

3.5 The decision-making process, with respect to the background natural baseline reference level and to some specified contaminants or biological responses, may lay down an upper and a lower reference threshold, giving rise to three possibilities:

- (a) material which contains specified contaminants or which causes biological responses in excess of the relevant upper threshold should generally be considered as unsuitable for dumping at sea;
- (b) material which contains specified contaminants or which causes biological responses below the relevant lower threshold should generally be considered of low environmental concern for dumping at sea;
- (c) material of intermediate quality should be subject to more detailed assessment before suitability for dumping at sea can be determined.

3.6 When the criteria and the associated regulatory limits cannot be met (case (a) above), a Contracting Party should not issue a permit unless detailed consideration in accordance with Part C of the Annex to the Protocol indicates that dumping at sea is, nonetheless, the least detrimental option, compared with other disposal techniques. If such a conclusion is reached, the Contracting Party should:

- (a) implement a programme for the reduction at source of pollution entering the dredged area, where there is a source that can be reduced by such a programme, with a view to meeting the established criteria;
- (b) take all practical steps to mitigate the impact of the dumping operation on the marine environment including, for example, the use of containment (capping) or treatment methods;
- (c) prepare a detailed marine environment impact hypothesis;
- (d) initiate monitoring (follow-up activity) designed to verify any predicted adverse effects of dumping, in particular with respect to the marine environment impact hypothesis;
- (e) issue a specific permit;
- (f) report to the Organisation on the dumping which has been carried out, outlining the reasons for which the dumping permit was issued.

When it is unlikely that dredging management techniques will alleviate the harmful effects of contaminated material, physical separation on land of the more contaminated fractions (e.g. by use of hydrocyclones) may be employed to minimise the quantities of material for which such measures are required.

3.7 With a view to evaluating the possibility of harmonising or consolidating the criteria referred to in paragraphs 3.3 - 3.6 above, including any sediment quality criteria, the Contracting Parties are requested to inform the Organisation of the criteria adopted, as well as the scientific basis on which these criteria were developed.

3.8 An important element of these guidelines for the management of dredging activities is the preparation of a marine environment impact hypothesis (see Part B, paragraphs 5.1 and 5.2) for each marine dumping operation. In concluding their assessments of the environmental implications of these

operations, prior to the issue of a permit, the Contracting Parties should formulate impact hypotheses in accordance with the guidance provided in Part B, paragraphs 5.2 - 7.1. This impact hypothesis will provide the principal basis for the design of post-operational monitoring activities.

4. ASSESSMENT OF THE CHARACTERISTICS AND COMPOSITION OF DREDGED MATERIAL

Physical characterisation

4.1 For all dredged material to be dumped at sea, the following information should be obtained:

- quantity of dredged material (gross wet tonnage);
- method of dredging (mechanical dredging, hydraulic dredging, pneumatic dredging, and application of BEP¹;
- rough preliminary determination of sediment characteristics (i.e. clay / silt / sand / gravel / rock).

4.2 In order to assess the capacity of the site to receive dredged material, both the total amount of material and the anticipated or actual loading rate at the dumping site should be taken into consideration.

Chemical and biological characterisation

4.3 A chemical and biological characterisation will be needed to fully assess the potential impact. Information may be available from existing sources, for example from field observations on the impact of similar material at similar sites, or from previous test data on similar material tested not more than five years previously, and from knowledge of local discharges or other sources of pollution, supported by a selective analysis. In such cases, it may be unnecessary to measure again the potential effects of similar material in the vicinity.

4.4 Chemical, and as appropriate biological, characterisation will be necessary as a first step in order to estimate gross loading of contaminants, especially for new dredging operations. The requirements for the elements and compounds to be analysed are set out in Section 5.

4.5 The purpose of testing under this section is to establish whether the dumping at sea of dredged material containing contaminants might cause undesirable effects, especially the possibility of chronic or acute toxic effects on marine organisms or human health, whether or not arising from their bioaccumulation in marine organisms and especially in food species.

4.6 The following biological test procedures might not be necessary if the previous physical and chemical characterisation of the dredged material and of the receiving area, and the available biological information, allows an assessment of the environmental impact on an adequate scientific basis.

If, however:

- the previous analysis of the material shows the presence of contaminants in quantities exceeding the upper reference threshold in paragraph 3.5 (a) above or of substances whose biological effects are not understood,
- if there is concern for the antagonistic or synergistic effects of more than one substance,
- or if there is any doubt as to the exact composition or properties of the material,

¹ Best Environmental Practice

it is necessary to apply suitable biological test procedures.

These procedures, which should involve bio-indicators species may include the following:

- acute toxicity tests;
- chronic toxicity tests capable of evaluating long-term sub-lethal effects, such as biotests covering an entire life cycle;
- tests to determine the potential for bioaccumulation of the substance of concern;
- tests to determine the potential for alteration of the substance of concern.

4.7 Substances in dredged material may undergo physical, chemical and biochemical changes when deposited in the marine environment. The susceptibility of dredged material to such changes should be considered in the light of the eventual fate and potential effects of the dredged material. This may be reflected in the impact hypothesis and also in a monitoring programme.

Exemptions

4.8 Dredged material may be exempted from the testing referred to in paragraphs 4.3 and 4.6 of these guidelines if it meets one of the criteria listed below; in such cases, the provisions of the Parts B and C of the Annex to the Protocol (see Sections 6 and 7 below) should be taken into account.

- (a) dredged material is composed almost exclusively of sand, gravel or rock; such materials are frequently found in areas of high current or wave energy, such as streams with large bed loads or coastal areas with shifting bars and channels;
- (b) dredged material is composed of previously undisturbed geological material;
- (c) dredged material is for beach nourishment or restoration and is composed predominantly of sand, gravel or shell, with particle sizes compatible with material on the receiving beaches.

In the case of Capital dredging projects national authorities may, taking into account the nature of the material to be dumped at sea, exempt part of that material from the provisions of these guidelines, after representative sampling. However Capital dredging in areas which may contain contaminated sediments should be subject to characterisation in accordance with these guidelines, notably paragraph 4.4.

5. GUIDELINES ON DREDGED MATERIAL SAMPLING AND ANALYSIS

Sampling for the purpose of issuing a dumping permit

5.1 For dredged material which requires detailed analysis (i.e. which is not exempted under paragraph 4.8 above), the following guidelines indicate how sufficient analytical information may be obtained for the purpose of issuing a permit. Judgement and knowledge of local conditions will be essential in the application of these guidelines to any particular operation (see paragraph 5.11).

5.2 An *in situ* survey of the area to be dredged should be carried out. The distribution and depth of sampling should reflect the size of the area to be dredged, the amount to be dredged and the expected variability in the horizontal and vertical distribution of contaminants. In order to evaluate the number of samples to be analysed, different approaches might be retained.

5.3 Two examples of these different approaches are given below:

- a. The number of sampling stations should be adjusted to the area to be dredged by applying the

formula $N=px/25$, where x is the area in square metres and N the number of sampling stations where $N \geq 4$. According to the exchange characteristics of the area to be dredged, the number of sampling stations should be smaller for open areas (cf. "Recommendations for the management of dredged material in the port of Spain" (Cedex 1994)).

b. The table that follows gives an indication of the number of samples to be analysed in relation to the number of m^3 to be dredged in order to obtain representative results, assuming a reasonably uniform sediment in the area to be dredged.

Amount dredged (m^3 <i>in situ</i>)	Number of stations
Up to 25 000	3
from 25 000 to 100 000	4 - 6
from 100 000 to 500 000	7 - 15
from 500 000 to 2 000 000	16 - 30
> 2 000 000	extra 10 per million m^3

Core samples should be taken where the depth of dredging and the expected vertical distribution of contaminants warrant; otherwise a grab sample is considered appropriate. Sampling from the dredger is not acceptable.

5.4 Normally, the samples from each location should be analysed separately. However, if the sediment is clearly homogeneous with respect to sediment features (grain-size fractions and organic matter load) and expected level of contamination, it may be possible to take composite samples from adjacent locations, two or more at a time, provided care has been taken to ensure that the results give a justified mean value for the contaminants. The original samples should be retained until the procedure for the issue of a permit has been completed, in case the results indicate that further analysis is necessary.

Sampling in the case of the renewal of a dumping permit

5.5 If a survey indicates that the material is essentially below the lower reference threshold in paragraph 3.5 (b) above and no new events of pollution have taken place indicating that the quality of the material has deteriorated, surveys need not be repeated.

5.6 If the dredging activity involves material with a contaminant content between the upper and lower reference thresholds in paragraph 3.5 (a) and (b) above, it may be possible, on the basis of the initial survey, to reduce either the number of sampling stations or the number of parameters to be measured. However, sufficient information must be provided to confirm the initial analysis for the purpose of issuing a permit. If such a reduced sampling programme does not confirm the earlier analysis, the full survey should be repeated. If the number of parameters for repetitive measurement is reduced, a further analysis of all the parameters listed in Technical Annex I list is advisable at appropriate intervals not exceeding 5 years.

5.7 However, in areas where there is a tendency for sediments to show high levels of contamination, or where contaminant distribution changes rapidly in response to varying environmental factors, analysis of the relevant contaminants should be frequent and linked to the permit renewal procedure.

Provision of Input Data

5.8 The sampling scheme described above provides information for the purpose of issuing permits. However, the scheme can at the same time provide a suitable basis for estimating of total inputs and, for the time being in the current situation, can be considered the most accurate approach available for this purpose. In this context it is assumed that materials exempt from analysis represent insignificant inputs of contaminants and therefore it is not necessary to calculate or to report contaminant loads.

Parameters and methods

5.9 Since contaminants concentrate mainly in the fine fraction (# 2 mm) and even more specifically in the clay fraction (# 2 Fm), analysis should normally be carried out on the fine fraction sample (# 2 mm). It will also be necessary, in order to assess the likely impact of contaminant levels to provide information on:

- grain size fractions (% sand, silt, clay);
- load of organic matter;
- dry matter (% solids).

5.10 In those cases where analysis is required, it should be mandatory for metal substances listed in Technical Annex 1 (Primary group determinants). With respect to organochlorines, polychlorobiphenyls (PCBs) should be analysed on a case-by-case basis in non-exempt sediments because they remain a significant environmental contaminant. Other organohalogens should also be measured if they are likely to be present as a result of local inputs.

5.11 In addition, the authority responsible for issuing permits should carefully consider specific local inputs, including the likelihood of contamination by arsenic, polycyclic aromatic hydrocarbons (PAH) and organotin compounds. The authority should make provision for the analysis of these substances as necessary.

The following should be taken into account in this connection:

- potential routes by which contaminants could reasonably have been introduced into the sediments;
- probability of contamination from agricultural and urban surface run-off;
- spills of contaminants in the area to be dredged, in particular as a result of port activities;
- industrial and municipal waste discharges (past and present);
- source and prior use of dredged material (e.g. beach nourishment); and
- substantial natural deposits of minerals and other natural substances.

5.12 Further guidance on the selection of determinants and methods of contaminant analysis under local conditions, and on procedures to be used for harmonisation and quality assessment purposes, will be found in the Technical Annexes to these guidelines as adopted, and updated periodically, by the Contracting Parties.

6. CHARACTERISTICS OF THE DUMPING SITE AND METHOD OF DEPOSIT

6.1 Matters relating to dumping site selection criteria are addressed in greater detail in studies prepared by GESAMP¹ (Reports and Studies No. 16: Scientific Criteria for the Selection of Waste Disposal Sites at Sea, IMO 1982) and by ICES (Ninth Annual Report of the Oslo Commission, Annex 6).

The selection of a site for dumping at sea does not only involve the consideration of environmental parameters, but also economic and operational feasibility.

6.2 In order to be able to assess a new dumping site, basic information on the characteristics of the dumping site have to be considered by national authorities at a very early stage of the decision-making process.

For the purpose of studying the impact, this information should include the geographical coordinates of the dumping area (latitude, longitude), the distance to the nearest coastline as well as proximity of the dumping area to the following:

- recreational areas;
- spawning, recruitment and nursery areas of fish, crustaceans and molluscs;
- known migration routes of fish or marine mammals;
- commercial and sport fishing areas;
- mariculture areas;
- areas of natural beauty or significant cultural or historical importance;
- areas of special scientific, biological or ecological importance;
- shipping lanes;
- military exclusion zones;
- engineering uses of the seafloor (e.g. potential or ongoing seabed mining, undersea cables, desalination or energy conversion sites).

The dumping of dredged material should not interfere with nor devalue legitimate commercial and economic uses of the marine environment. The selection of dumping sites should take into account the nature and extent of both commercial and recreational fishing, as well as the presence of aquaculture areas, spawning, nursery and feeding areas.

6.3 In view of uncertainties regarding in the diffusion of marine contaminants giving rise to transboundary pollution, dumping of dredged material in the open sea is not considered to be the most suitable environmental solution to prevent marine pollution and should not be carried out.

6.4 For dredged materials, the only data to be considered for this purpose should include information on:

- disposal method (e.g. vessels, hopper discharge; and other controlled methods, like discharge through pipes);
- dredging method (e.g. hydraulic or mechanical), having regard to Best Environmental Practice (BEP).

6.5 For the evaluation of dispersal characteristics, the use of mathematical diffusion models requires the collection of certain meteorological, hydrodynamic and oceanographic data. In addition, data on the speed of the vessel dumping the material and the rate of dumping should also be made available.

6.6 The basic assessment of a site, whether a new or existing includes the consideration of possible effects that might arise due to the increase in certain constituents or to interaction (e.g. synergistic effects) with other substances introduced in the area, either through other dumping, input from rivers, discharges from coastal areas, exploitation areas, maritime transport, or through the atmosphere.

The existing stress on biological communities as a result of such activities should be evaluated before any new or additional dumping operations are conducted.

The possible future uses of resources and amenities in the sea receiving area should be kept in mind.

6.7 Information from baseline and monitoring studies at existing dumping sites will be important in the evaluation of any new dumping activity at the same site or nearby.

7. GENERAL CONSIDERATIONS AND CONDITIONS

NATURE, PREVENTION AND MINIMISATION OF THE IMPACT OF DISPOSAL OF DREDGED MATERIAL

7.1 Particular attention should be given to dredged material contaminated by hydrocarbons and containing substances that have a tendency to float following re-suspension in the water column. Such materials should not be dumped in a manner or at a location which may interfere with fishing, shipping, amenities or other beneficial uses of the marine environment.

7.2 In selecting dumping sites, the habitats of rare, vulnerable or endangered species must be avoided, taking into account the preservation of the biodiversity.

7.3 In addition to toxicological effects and bioaccumulation of the constituents of dredged material, other potential impacts on marine life should be considered, such as:

- alteration of the sensorial and physiological capacities and the behaviour of fish in particular in respect of natural predators;
- nutrient enrichment;
- oxygen depletion;
- increased turbidity;
- modification of the sediment composition and blanketing of the sea floor.

Physical impact

7.4 All dredged materials, whether or not contaminated, have a significant physical impact at the point of disposal. This impact includes covering of the seabed and a localised increase in the levels of suspended solids.

The physical impact may also extend to zones outside the dumping zone as such, resulting from the forward movement of the dumped material due to wave and tidal action and residual current movements, especially in the case of fine fractions.

In relatively enclosed waters, oxygen-consuming sediments (e.g. organic carbon-rich) could adversely affect the oxygen regime of receiving systems. In the same way, dumping of sediments with high levels of nutrients may significantly affect the nutrient fluxes and, subsequently, in extreme cases, contribute significantly to the eutrophication of the receiving zone.

Chemical impact

7.5 The chemical impact of dredged material disposal on the marine water quality and the marine biota, is mainly from the dispersion of pollutants in association with suspended particles, and the release of pollutants from the dumpsite sediments.

The binding capacity of contaminants may vary considerably. Contaminant mobility is dependant upon several factors among which are chemical form of contaminant, contaminant partitioning, type of matrix, physical state of the system (e.g. pH, TE, ..), waterflow, suspended matter (organic matter), physico-chemical state of the system, type of interactive processes, such as sorption/desorption - or precipitation/dissolution - mechanisms, and biological activities.

Bacteriological impact

7.6 Bacteriologically, dredging activities and dumping of dredged material may involve a resuspension, of sedimentary flora, particularly faecal bacteria, which are trapped in the sediment. Studies carried out show that, in particular on dredging sites, there is a significant correlation between turbidity and concentrations of germs tested (faecal coliforms, faecal streptococci).

Biological impact

7.7 The immediate biological consequence of this physical impact includes smothering of benthic flora and fauna in the dumping area.

Nevertheless, in some instances, after dumping activities stop, there may be a modification of the ecosystem, in particular when the physical characteristics of the sediments in the dredged material are very different to those in the receiving zone.

In certain special circumstances, disposal may interfere with migration of fish or crustaceans (e.g. if dumping is in the coastal migration path of crabs).

In other respects, the chemical pollution impact resulting from the dispersion of pollutants associated with suspended matter, and from the contaminants "relargage" from the sediments which are accumulated on the dumping site, can induce a change in the composition, biodiversity and abundance of benthic communities.

Economic impact

7.8 An important consequence of the physical presence of dumping of dredged material is interference with fishing activities and, in some instances, with navigation and recreation. The former concerns both the smothering of areas that may be used for fishing and interference with fixed fishing gear; shoaling following dumping can lead to navigational hazards and clay or silt deposition may be harmful in recreational areas. These problems can be aggravated if the spoil is contaminated with bulky harbour debris such as wooden beams, scrap metal, pieces of cable etc.

Approaches to management

7.9 This section deals only with management techniques to minimise the physical effects of disposal of dredged material. Measures to control the contamination of dredged materials are covered in other sections of these guidelines.

7.10 The key to management lies in careful site selection (see section 5) and assessment of the conflict between marine resources, the marine environment and activities. These notes are intended to supplement these considerations.

7.11 To avoid excessive use of the seabed, the number of sites should be limited as far as possible and each site should be used to the maximum extent possible without interfering with navigation (sand-shoals formation).

All measures should be taken to allow recolonization to take place once deposition stops.

7.12 Effects can be reduced by ensuring as far as possible that the sediments in the dredged material and receiving area are similar. Locally, the biological impact may be further reduced if the sedimentation area is naturally subject to physical disturbance (horizontal and vertical currents). Where this is not possible, and the materials are clean and fine, a deliberately dispersive style of dumping should be utilised so as to limit blanketing to a small site.

7.13 With capital and maintenance dredging, the material may be different in character to the sediments at the receiving site and re-colonisation may be affected. Where bulky material such as rock and clay are deposited, there may be interference with fishing activity, even in the long term.

7.14 Temporal restrictions on dumping activities may have to be imposed (for example tidal and seasonal restrictions). Interference with fish or crustacean migration or spawning or with seasonal fishing activities may be avoided by imposing a calendar for dumping operations.

Trench digging and refilling activities may also interfere with migratory patterns and similar restriction measures are needed.

7.15 Where appropriate, disposal vessels should be equipped with accurate positioning systems for example, satellite systems. Disposal vessels should be inspected and operations controlled regularly to ensure that the conditions of the dumping permit are being observed and that the crew is aware of its responsibilities under the permit. Ships' records and automatic monitoring and display devices (e.g. black-boxes), where these have been fitted, should be inspected to ensure that dumping is taking place at the specified dumping site.

Where solid waste is a problem, it may be necessary to specify that the disposal vessel (or dredger) is fitted with a grid to facilitate removal for disposal (or recovery) on land, rather than being dumped at sea.

7.16 Monitoring is an essential component of management action (see Part B).

8. DISPOSAL MANAGEMENT TECHNIQUES

8.1 Ultimately, the problem of disposal of contaminated dredged material can only be resolved effectively by implementing programmes and adopting measures for the progressive elimination of polluting discharges into the waters from which the dredged materials are taken.

Until this objective is met the problems caused by contaminated dredged material could be resolved by using appropriate disposal management techniques.

8.2 "Disposal management techniques" are actions and processes by which the impact of persistent

and potentially toxic substances contained in dredged material may be reduced to or maintained at a level that does not constitute a hazard to human health, harm living resources and marine life, damage amenities or interfere with other legitimate uses of the sea.

8.3 In any event, such techniques must be used in full conformity with relevant considerations in the Annex to the Dumping Protocol such as comparative assessment of alternative disposal options, and should always be associated with post-disposal monitoring (ecological follow-up) to assess the effectiveness of the techniques and the need for any follow-up management action.

9. PERMITS

9.1 The permit authorising sea disposal will contain the terms and conditions under which sea disposal may take place as well as provide a framework for assessing and ensuring compliance.

9.2 Permit conditions should be drafted in plain and unambiguous language and will be designed to ensure that:

- (a) only those materials which have been characterised and found acceptable for sea disposal, based on the impact assessment, are dumped;
- (b) the material is disposed of at the selected disposal site;
- (c) any necessary disposal management techniques identified during the impact analysis are carried out; and
- (d) any monitoring requirements are fulfilled and the results reported to the permitting authority.

10. REPORTS

10.1 Contracting Parties should transmit to the Organisation of the issued permits, the total amount of dredged material and the loads of contaminants. They should also inform the Organisation of their monitoring activities (see Part B).

10.2 Report to the Organisation of materials exempted from analysis will be voluntary.

PART B

MONITORING OF DREDGED MATERIAL DUMPING OPERATIONS

1. DEFINITION

1.1 In the context of assessing and regulating the environmental and human health impacts of dredged material dumping operations, monitoring is defined as all measures whose purpose is to determine, from the repeated measurement of a contaminant or an effect, whether direct or indirect, of the introduction of this contaminant into the marine environment, the spatial and temporal modifications undergone by the receiving zone as a result of the activity under consideration.

2. RATIONALE

2.1 Monitoring of dredged material dumping operations is generally undertaken for the following reasons:

- (i) to establish whether the permit conditions have been respected - conformity control - and consequently have, as intended, prevented adverse effects on the receiving area as a consequence of dumping;
- (ii) to improve the basis on which permit applications are assessed by improving knowledge of the field effects of major discharges which cannot be directly estimated by a laboratory evaluation or from the literature;
- (iii) to provide the necessary evidence to demonstrate that within the framework of the Protocol the monitoring measures applied are sufficient to ensure that the dispersive and assimilative capacities of the marine environment are not exceeded, and so do not cause damage to the environment.

3. OBJECTIVES

3.1 The purposes of monitoring are to determine contaminant levels in all sediments above the lower reference threshold in paragraph 3.5(b) of the guidelines and in bio-indicator organisms, the biological effects and consequences for the marine environment of the dumping of dredged material and, ultimately, to help managers to combat exposure of organisms to dredged materials and associated contaminants.

4. STRATEGY

4.1 Monitoring operations are expensive since they require considerable resources both to carry out measurement and sampling programmes at sea and the subsequent analytical work on the samples.

In order to approach the monitoring programme in a resource-effective manner, it is essential that the programme should have clearly defined objectives, that the measurements made can meet those objectives, and that the results should be reviewed at regular intervals in relation to the objectives.

Since the effects of dredged material dumping are likely to be similar in many areas, there appears to be little justification for monitoring all sites, particularly those receiving small quantities of dredged material. It would be more effective to carry out more detailed investigations at a few carefully chosen sites (e.g. those subject to large inputs of dredged material) in order to obtain a better understanding of the processes and effects involved.

In zones which present the same physical, chemical and biological characteristics, or nearly the same characteristics, there is strong presumptive evidence that the effects of dredged material dumping

are similar. On scientific and economic grounds, it is very difficult to justify monitoring of all sites, particularly those receiving small quantities of dredged material (e.g. less than 25,000 tons per year). It is therefore more appropriate and cost-effective to concentrate on detailed investigations at a few carefully chosen sites (e.g. those subject to large inputs of dredged material) in order to obtain a better understanding of the processes and effects involved.

5. IMPACT HYPOTHESIS

5.1 In order to establish such objectives, it is first necessary to derive an impact hypothesis describing predicted effects on the physical, chemical and biological environment both of the dumping zone and of the zones outside it. The impact hypothesis forms the basis for defining the field monitoring programme.

5.2 The aim of an impact hypothesis is to provide, on the basis of the available information, a concise scientific analysis of the potential effects of the proposed operation on human health, living resources, marine life, amenities and other legitimate uses of the sea. For this purpose, an impact hypothesis should incorporate information on the characteristics of the dredged material and on conditions at the proposed dumping site. It should encompass both temporal and spatial scales of potential effects.

One of the main requirements of the impact hypothesis is to produce criteria which describe the specific environmental effects of dumping activities, taking into account the fact that such effects have to be avoided outside the designated dredging and dumping zones (see Part A, Section 3).

6. PRELIMINARY EVALUATION

6.1 The preliminary evaluation should be as comprehensive as possible. The primary areas of potential impact should be identified as well as those considered to have the most serious consequences for human health and the environment. Alterations to the physical environment, risks to human health, devaluation of marine resources, and interference with other legitimate uses of the sea are often seen as priorities in this regard.

6.2 The expected consequences of dumping (targets) could be described in terms of the habitats, processes, species, communities and uses affected by the dumping. The precise nature of the change, response, or interference (effect) predicted could then be described. The target and the effect could be described (quantified) together in sufficient detail to eliminate any doubt as to the parameters to be measured during post-operational field monitoring. In the latter context, it might be essential to determine "where" and "when" the impacts can be expected.

7. REFERENCE BASELINE

7.1 In order to develop an impact hypothesis, it may be necessary to conduct a baseline survey which describes not only the environmental characteristics, but also the variability of the environment. It may also be helpful to develop sediment transport, hydrodynamic and other mathematical models, to determine the possible effects of dumping.

Where either physical or chemical effects at the seabed are expected, it will be necessary to examine the benthic community structure in areas where the dredged material disperses. In the case of chemical effects, it may also be necessary to examine the chemical quality of the sediments and the biota (including fish), in particular the major pollutant contents.

In order to assess the impact of the proposed activity on the surrounding environment, it will be necessary to compare the physical, chemical and biological quality of the affected areas with reference sites located away from dredged material dumping pathways. Such areas can be identified during the early stages of the impact assessment.

8. IMPACT HYPOTHESIS VERIFICATION: DEFINING THE MONITORING PROGRAMME

8.1 The measurement programme should be designed to ascertain that physical, chemical and biological changes in the receiving environment are within those projected and do not exceed the predicted impact hypothesis.

The measurement programme should be designed to determine:

- (a) whether the zone of impact differs from that projected; and,
- (b) whether the extent of changes outside the zone of direct impact is within the scale predicted.

The first question can be answered by designing a sequence of measurements in space and time that circumscribe the projected zone of impact to ensure that the projected spatial scale of change is not exceeded.

The second question can be answered by making physical, chemical and biological measurements that provide information on the extent of change that occurs outside the zone of impact, after the dumping operation takes place (verification of a null hypothesis).

Then, before any programme is drawn up and any measurements are made, the following questions should be addressed:

- (i) what testable hypothesis can be derived from the impact hypothesis?
- (ii) what exactly should be measured to test these impact hypotheses?
- (iii) in what compartment or at which locations can measurements most effectively be made?
- (iv) for how long should measurements continue to be made to meet the original aim?
- (v) what should be the temporal and spatial scale of the measurements made?
- (vi) how should the data be processed and interpreted?

8.2 It is recommended that the choice of contaminants to be monitored should depend primarily on the ultimate purposes of monitoring. It is definitely not necessary to monitor regularly all contaminants at all sites and it should not be necessary to use more than one substrate or effect to meet each aim.

9. MONITORING

9.1 The dumping of dredged material has its primary impact at the seabed. Thus although a consideration of water column effects cannot be discounted in the early stages of monitoring planning, it is often possible to restrict subsequent monitoring to the seabed.

9.2 Where it is considered that effects will be largely physical, monitoring may be based on remote methods such as side-scan sonar, to identify changes in the character of the seabed, and bathymetric techniques (e.g. echo sounding) to identify areas of dredged material accumulation. Both of these techniques will require a certain amount of sediment sampling to establish ground-truth. In addition, multispectral scanning can be used for monitoring the dispersion of suspended material (plumes, etc.).

9.3 Tracer tests may also prove useful in following the dispersal of the dredged material and assessing any minor accumulation of material not detected by bathymetric surveys.

9.4 Where, in relation to the impact hypothesis, either physical or chemical effects at the seabed are expected, it will be necessary to examine the benthic community structure in areas where the dredged material disperses. In the case of chemical effects, it may also be necessary to examine the chemical quality of the biota (including fish).

9.5 The spatial extent of sampling will need to take into account the size of the area designated for dumping, the mobility of the dumped dredged material and water movements which determine the direction and extent of sediment transport. It should be possible to limit sampling within the dumping site itself if effects in this area are considered to be acceptable and their detailed definition unnecessary. However, some sampling should be carried out to aid the identification of the type of effect which may be expected in other areas and for reasons of scientific rigour.

9.6 The frequency of surveying will depend on a number of factors. Where a dumping operation has been going on for several years, it may be possible to establish the effect at a steady state of input and repeated surveys would only be necessary if changes are made to the operation (quantities or type of dredged material dumped, method of disposal, etc.).

9.7 If it is decided to monitor the recovery of an area which is no longer used for dumping dredged material, more frequent measurements might be needed.

10. NOTIFICATION

10.1 The Contracting Parties should inform the Organisation of their monitoring activities.

Concise reports on monitoring activities should be prepared and transmitted to the Organisation as soon as they are available, in conformity with Article 26 of the Barcelona Convention.

Reports should detail the measurements made, results obtained and how these data relate to the monitoring objectives and confirm the impact hypothesis. The frequency of reporting will depend upon the scale of dumping activity, the intensity of monitoring and the results obtained.

11. FEEDBACK

11.1 Information gained from field monitoring (and/or other related research) can be used to:

- (a) modify or, in the best of cases, terminate the field monitoring programme;
- (b) modify or revoke the permit;
- (c) refine the basis on which applications for permits are assessed.

TECHNICAL SUPPLEMENTS TO THE GUIDELINES FOR THE MANAGEMENT OF DREDGED MATERIAL

TECHNICAL ANNEX 1

Analytical Requirements for the Assessment of Dredged Material

1. This Annex amplifies the analytical requirements set out in paragraphs 5.9 - 5.12 of the Guidelines for the Management of Dredged Material.
2. An integrated approach is essential. It includes a tiered approach under which the following are assessed in sequence:
 - the physical properties;
 - the chemical properties;
 - the biological properties and effects.

At each tier it will have to be determined whether there is sufficient information to allow a management decision to be taken or whether further analysis is required. Further information determined by local circumstances can be added at each tier.
3. As a preliminary to the tiered analysis scheme, information required under section 4.1 of the guidelines will be available. In the absence of appreciable pollution sources and if the visual determination of sediment characteristics leads to the conclusion that the dredged material meets one of the exemption criteria under paragraph 4.9 of the guidelines, the material will not require further analysis.
4. It is important that, at each stage, the assessment procedure takes account of the method of analysis.
5. Analysis should be carried out on the fraction of the sediment (# 2 mm).

Tier I: PHYSICAL PROPERTIES

In addition to the preliminary assessment of the characteristics of the sediments required by paragraph 4.1 of these guidelines, it is strongly recommended that the following be determined:

- distribution of grain size (% of sand, silt, clay);
- humidity ratio (%);
- amount of organic matter.

Tier II: CHEMICAL PROPERTIES

Primary group determinants:

In all cases where chemical analysis is required, the concentrations of the following trace metals should be determined:

Cadmium (Cd)	Chromium (Cr)
Copper (Cu)	Lead (Pb)
Mercury (Hg)	Nickel (Ni)
Zinc (Zn)	Tin (Sn)

In certain cases, the analysis may also include other metal pollutants. In the case of mercury, special attention should be paid to speciation.

Where dry matter analysis is required, the ratio of fresh weight/dry weight has to be considered, and the analysis has to be made on the interstitial water.

When examining the toxic trends of contaminated dredged sediment, the analysis should also include the leaching water before the dumping operation. Lastly, the total organic carbon should be measured.

With regard to organic pollutants, the total PCB content should be estimated. If local circumstances so require, the analysis should be extended to families of congeners.

In any event, the analysis must be carried out on the fraction of the sediment (# 2mm).

The polycyclic aromatic hydrocarbons (PAH) and the tributyltin compounds (TBT) and their degradation products should also be measured.

The measurement of PCB and PAH and TBT will not be necessary when:

- sufficient information from previous investigations indicates the absence of contamination ;
- there are no known sources (point or diffuse) of contamination nor historic inputs;
- the sediments are predominantly coarse; and
- the levels of total organic carbon are low.

Secondary group determinants:

Based upon local information on sources of contamination (point or diffuse sources) or historic inputs, other determinants may need to be measured for instance: arsenic; organophosphorus pesticides; organochlorine pesticides; organotin compounds; polychlorinated dibenzodioxins (PCDD); polychlorinated dibenzofurans (PCDF).

Tier III: BIOLOGICAL PROPERTIES AND EFFECTS

In a significant number of cases the physical and chemical properties do not allow the biological impact to be measured directly. Moreover, they do not adequately identify all the physical disturbances nor constituents associated with sediments present in the dredged material.

If the potential impact of the dredged material to be dumped cannot be adequately assessed on the basis of chemical and physical characteristics, biological measurements should be made.

1. Toxicity bioassays

The primary purposes of the biological bioassays is to provide direct measures of effects of all sediment constituents acting together, taking into account their bioavailability. For ranking and classifying the acute toxicity of harbour sediments prior to maintenance dredging, short term bioassays may often suffice as screening tool :

- C To evaluate the effects of the dredged material, bioassays for acute toxicity can be carried out with pore water, on elutriate or the whole sediment. In general, a set of 2-4 bioassays is recommended with organisms from different taxonomic groups (e. g. crustaceans, molluscs, polychaetes, bacteria, echinoderms);
- C In most bioassays, survival of the test species is used as an endpoint. Chronic bioassays with sub-lethal endpoint (growth, reproduction, etc.) covering a significant part of the test species life cycle may provide a more accurate prediction of potential impacts of dredging operations. However, standard test procedures are still under developments.

The outcome of sediment bioassays can be unduly influenced by factors other than sediment-associated chemicals. Confounding factors like ammonia, hydrogen sulphide, grain size, oxygen content and pH should therefore be determined during the bioassays.

Guidance on the selection of appropriate test organisms, use and interpretation of sediment bioassays is given by e.g. EPA/CE (1991/1994) and IADC/CEDA (1997) while guidance on sampling of sediments for toxicological testing is given by e.g. ASTM (1994).

2. Biomarkers

Biomarkers may provide early warning of more subtle (biochemical) effects at low and sustained levels of contamination. Most biomarkers are still under development but some are already applicable for routine application on dredged material (e.g. one which measures the presence of dioxin-like compounds - Murk *et al.*, 1997) or organisms collected in the field (e.g. DNA strand/breaks in flat fish).

3. Microcosm experiments

There are short-term microcosm tests available to measure the toxicant tolerance of the community e.g. Pollution Induced Community Tolerance (PICT) (Gustavson and Wangberg, 1995).

4. Mesocosm experiments

Because of the costs and time involved these experiments cannot be used for issuing permits but are useful in cases where the extrapolation of laboratory testing to field conditions is complicated or when environmental conditions are very variable and hinder the identification of toxic effects as such. The results of these experiments would be then available for future decisions on permits.

5. Field observations of benthic communities

In situ monitoring of benthic communities (fish, benthic invertebrates) in the area of the disposal site can provide important indications of the condition of marine sediments. Field observations give an insight into the combined impact of physical disturbance and chemical contamination. Guidelines on the monitoring of benthic communities are provided by e.g. the Paris Convention, 1992, ICES.

6. Other biological properties

Where appropriate, other biological measurements can be applied in order to determine, for example, the potential for bioaccumulation and for tainting.

SUPPLEMENTARY INFORMATION

The need for this information will be determined by local circumstances and may form an essential part of the management decision. Appropriate data might include: redox potential, sediment oxygen demand, total nitrogen, total phosphorus, iron, manganese, mineralogical information or parameters for normalising trace metal data (e.g. aluminium, lithium, scandium see Technical Annex 2).

TECHNICAL ANNEX 2

NORMALISATION TECHNIQUES FOR STUDIES ON THE SPATIAL DISTRIBUTION OF CONTAMINANTS²

1. Introduction

Normalisation in this discussion is defined as a procedure to compensate for the influence of natural processes on the measured variability of the concentration of contaminants in sediments. Most contaminants (metals, pesticides, hydrocarbons) show high affinity to particulate matter and are, consequently, enriched in bottom sediments of estuaries and coastal areas. In practice, natural and anthropogenic substances entering the marine system are subjected to a variety of biogeochemical processes. As a result, they become associated with fine-grained suspended solids and colloidal organic and inorganic particles. The ultimate fate of these substances is determined, to a large extent, by particulate dynamics. They therefore tend to accumulate in areas of low hydrodynamic energy, where fine material is preferentially deposited. In areas of higher energy, these substances are "diluted" by coarser sediments of natural origin and low contaminant content.

It is obvious that the grain size is one of the most important factors controlling the distribution of natural and anthropogenic components in the sediments. It is, therefore, essential to normalise for the effects of grain size in order to provide a basis for meaningful comparisons of the occurrence of substances in sediments of various granulometry and texture within individual areas or among areas. Excess levels, above normalised background values, could then be used to establish sediment quality.

For any study of sediments, a basic amount of information on their physical and chemical characteristics is required before an assessment can be made on the presence or absence of anomalous contaminant concentrations. The concentration at which contamination can be detected depends on the sampling strategy and the number of physical and chemical variables that are determined in individual samples.

The various granulometric and geochemical approaches used for the normalisation of trace elements data as well as the identification of contaminated sediments in coastal sediments has been extensively reviewed by Loring (1988). Two normalisation approaches widely used in oceanography and in atmospheric sciences have been selected here. The first is purely physical and consists of characterising the sediment by measuring its content of fine material. The second approach is chemical in nature and is based on the fact that the small size fraction is usually rich in clay minerals, iron and manganese oxides and organic matter. Furthermore, these components often exhibit a high affinity for organic and inorganic contaminants and are responsible for their enrichment in the fine fraction. Chemical parameters (e.g., Al, Sc, Li) representative of these components may thus be used to characterise the small size fraction under natural conditions.

² Extract from 1989 ACMP Report (Section 14) ICES Coop. Res. Rep. 167, pp. 68-75

It is strongly suggested that several parameters be used in the evaluation of the quality of sediments. The types of information that can be gained by the utilisation of these various parameters are often complementary and extremely useful considering the complexity and diversity of situations encountered in the sedimentary environment. Furthermore, measurements of the normalising parameters selected here are rather simple and inexpensive.

This report presents general guidelines for sample preparation, analytical procedures, and interpretation of physical and chemical parameters used for the normalisation of geochemical data. Its purpose is to demonstrate how to collect sufficient data to normalise for the grain-size effect and to allow detection, at various levels, of anomalous concentrations of contaminants within coastal sediments.

2. Sampling Strategy

Ideally, a sampling strategy should be based on a knowledge of the source of contaminants, the transport pathways of suspended matter and the rates of accumulation of sediments in the region of interest. However, existing data are often too limited to define the ideal sampling scheme. Since contaminants concentrate mainly in the fine fraction, sampling priority should be given to areas containing fine material that usually correspond to zones of deposition.

The high variability in the physical, chemical and biological properties of sediments implies that an evaluation of sediment quality in a given area must be based on a sufficient number of samples. This number can be evaluated by an appropriate statistical analysis of the variance within and between samples. To test the representativity of a single sediment specimen at a given locality, several samples at one or two stations should be taken.

The methodology of sampling and analysis should follow the recommendations outlined in the "Guidelines for the Use of Sediments as a Monitoring Tool for Contaminants in the Marine Environment" (ICES 1987). In most cases, the uppermost layer of sediments collected with a tightly closing grab sampler (Level I in the Guidelines) is sufficient to provide the information concerning the contamination of the sediments of a given area compared to sediments of uncontaminated locations or other reference material.

Another significant advantage of using sediments as monitoring devices is that they have recorded the historical evolution of the composition of the suspended matter deposited in the area of interest. Under favourable conditions, the degree of contamination may be estimated by comparison of surface sediments with deeper samples, taken below the biological mixing zone. The concentrations of trace elements in the deeper sediment may represent the natural background level in the area in question and can be defined as baseline values. This approach requires sampling with a box-corer or a gravity corer (Levels II and III in the Guidelines).

3. Analytical Procedures

Typical analytical procedures to be followed are outlined in Figure 2. The number of steps that are selected will depend on the nature and extent of the investigation.

3.1 Grain size fractionation

It is recommended that at least the amount of material <63 μm , corresponding to the sand/silt classification limit, be determined. The sieving of the sample at 63 μm is, however, often not sufficient, especially when sediments are predominantly fine grained. In such cases, it is better to normalise with lower size thresholds since the contaminants are mainly concentrated in the fraction <20 μm , and even more specifically in the clay fraction (<2 μm). It is thus proposed that a determination be made, on a sub-sample, of the weight fraction <20 μm and that <2 μm with the aid of a sedimentation pipette or by elutriation. Several laboratories are already reporting their results relative to the content of fine fractions of various sizes and these results may be useful for comparison among areas.

3.2 Analysis of contaminants

It is essential to analyse the total content of contaminants in sediments if quality assessment is the goal of the study, and it is thus recommended that the unfractionated sample (#2 mm) be analysed in its entirety. The total content of elements can be determined either by non-destructive methods, such as X-ray fluorescence or neutron activation, or by a complete digestion of the sediments (involving the use of hydrofluoric acid (HF)) followed by methods such as atomic absorption spectrophotometry or emission spectroscopy. In the same way, organic contaminants should be extracted with the appropriate organic solvent from the total sediment.

An individual size fraction of the total sediment may be used for subsequent analysis, if required, to determine the absolute concentrations of contaminants in that fraction, providing that its contribution to the total is kept in perspective when interpreting the data. Such size fraction information might be useful in tracing the regional dispersal of metals associated with specific grain-size fractions, when the provenance of the material remains the same. However, sample fractionation is a tedious procedure that introduces considerable risk of contamination and potential losses of contaminants due to leaching. The applicability of this approach is thus limited.

4. Normalisation Procedures

4.1 Granulometric normalization

Since contaminants tend to concentrate in the fine fraction of sediments, correlations between total concentrations of contaminants and the weight percent of the fine fraction, determined separately on a sub-sample of the sediment by sieving or gravity settling, constitute a simple but powerful method of normalisation. Linear relationships between the concentration and the weight percentage of the fine fraction are often found and it is then possible to extrapolate the relationships to 100% of the fraction studied, or to characterise the size dependence by the slope of the regression line.

4.2 Geochemical normalisation

Granulometric normalisation alone is inadequate to explain all the natural trace variability in the sediments. In order to interpret better the compositional variability of sediments, it is also necessary to attempt to distinguish the sedimentary components with which the contaminants are associated throughout the grain-size spectrum. Since effective separation and analysis of individual components of sediments is extremely difficult, such associations must rest on indirect evidence of these relationships.

Since contaminants are mainly associated with the clay minerals, iron and manganese oxides and organic matter abundant in the fine fraction of the sediments, more information can be obtained by measuring the concentrations of elements representative of these components in the samples.

An inert element such as aluminium, a major constituent of clay minerals, may be selected as an indicator of that fraction. Normalised concentrations of trace elements with respect to aluminium are commonly used to characterise various sedimentary particulate materials (see below). It may be considered as a conservative major element, that is not affected significantly by, for instance, early diagenetic processes and strong redox effects observed in sediments.

In the case of sediments derived from the glacial erosion of igneous rocks, it has been found that contaminant/Al ratios are not suitable for normalising for granular variability (Loring, 1988). Lithium, however, appears to be an ideal element to normalise for the grain size effect in this case and has the additional advantage of being equally applicable to non-glacial sediments.

In addition to the clay minerals, Mn and Fe compounds are often present in the fine fraction, where they exhibit adsorption properties strongly favouring the incorporation of various contaminants. Mn and Fe are easily analysed by flame atomic absorption spectrometry and their measurement may provide insight into the behaviour of contaminants.

Organic matter also plays an important role as scavenger of contaminants and controls, to a major

degree, the redox characteristics of the sedimentary environment.

Finally, the carbonate content of sediments is easy to determine and provides additional information on the origin and the geochemical characteristics of the sediments. Carbonates usually contain insignificant amounts of trace metals and act mainly as a diluent. Under certain circumstances, however, carbonates can fix contaminants such as cadmium and copper. A summary of the normalisation factors is given in Table 1.

4.3 Interpretation of the data

The simplest approach in the geochemical normalization of substances in sediments is to express the ratio of the concentration of a given substance to that of the normalising factor.

Normalisation of the concentration of trace elements with respect to aluminium (or scandium) has been used widely and reference values on a global scale have been established for trace elements in various compartments: crustal rocks, soils, atmospheric particles, river-borne material, marine clays and marine suspended matter (cf., e.g., Martin and Whitfield, 1983; Buat-Menard and Chesselet, 1979).

This normalisation also allows the definition of an enrichment factor for a given element with respect to a given compartment. The most commonly used reference level of composition is the mean global normalised abundance of the element in crustal rock (Clarke value). The enrichment factor EF is given by:

$$EF_{\text{crust}} = (X/Al)_{\text{sed}} / (X/Al)_{\text{crust}}$$

where X/Al refers to the ratio of the concentration of element X to that of Al in the given compartment.

However, estimates of the degree of contamination and time trends of contamination at each sampling location can be improved upon by making a comparison with metal levels in sediments equivalent in origin and texture.

These values can be compared to the normalised values obtained for the sediments of a given area. Large departures from these mean values indicate either contamination of the sediment or local mineralization anomalies.

When other variables (Fe, Mn, organic matter and carbonates) are used to characterise the sediment, regression analysis of the contaminant concentrations with these parameters often yields useful information on the source of contamination and on the mineralogical phase associated with the contaminant.

A linear relationship between the concentration of trace constituents and that of the normalisation factor has often been observed (Windom *et al.*, 1989). In this case and if the natural geochemical population of a given element in relation to the normalising factor can be defined, samples with anomalous normalised concentrations are easily detected and may indicate anthropogenic inputs.

According to this method, the slope of the linear regression equation can be used to distinguish the degree of contamination of the sediments in a given area. This method can also be used to show the change of contaminant load in an area if the method is used on samples taken over intervals of some years (Cato, 1986).

A multi-element/component study in which the major and trace metals, along with grain size and organic carbon contents, have been measured allows the interrelationships between the variables to be established in the form of a correlation matrix. From such a matrix, the most significant ratio between trace metal and relevant parameter(s) can be determined and used for identification of metal carriers, normalisation and detection of anomalous trace metal values. Factor analyses can sort all the variables into groups (factors) that are associations of highly correlated variables, so that specific and/or non-specific textural, mineralogical, and chemical factors controlling the trace metal variability may be inferred from the

data set.

Natural background levels can also be evaluated on a local scale by examining the vertical distribution of the components of interest in the sedimentary column. This approach requires, however, that several favourable conditions are met: steady composition of the natural uncontaminated sediments; knowledge of the physical and biological mixing processes within the sediments; absence of diagenetic processes affecting the vertical distribution of the component of interest. In such cases, grain-size and geochemical normalisation permits compensation for the local and temporal variability of the sedimentation processes.

5. Conclusions

The use of the granulometric measurements and of component/reference element ratios are useful approaches towards complete normalisation of granular and mineralogical variations, and identification of anomalous concentrations of contaminants in sediments. Their use requires that a large amount of good analytical data be collected and specific geochemical conditions be met before all the natural variability is accounted for, and the anomalous contaminant levels can be detected. Anomalous metal levels, however, may not always be attributed to contamination, but rather could easily be a reflection of differences in sediment provenance.

Geochemical studies that involve the determination of the major and trace metals, organic contaminants, grain size parameters, organic matter, carbonate, and mineralogical composition in the sediments are more suitable for determining the factors that control the contaminant distribution than the measurement of absolute concentrations in specific size fractions or the use of potential contaminant/reference metal ratios alone. They are thus more suitable for distinguishing between uncontaminated and contaminated sediments. This is because such studies can identify the factors that control the variability of the concentration of contaminants in the sediments.

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TECHNICAL ANNEX 3

CONSIDERATIONS BEFORE TAKING ANY DECISION TO GRANT A DUMPING PERMIT

This technical Annex was prepared bearing in mind that, although the guidelines strictly only apply to the disposal of dredged material, Contracting Parties are urged to consider other methods of disposal than dumping (e.g. land disposal), and to explore all possible beneficial uses of dredged material, before taking any decision to grant a dumping permit (See Part A, par. 3). The goal of this Technical Annex is not to screen all the possibilities offered by the different techniques, but to give some indications about them.

I. BENEFICIAL USES OF DREDGING MATERIAL

Material arising from Capital dredging are often used for construction purposes. This is, however, not normally the case when dredged material result from maintenance dredging. However that may be, if the dredged material is clean or slightly contaminated, it might be regarded as a valuable resource, and consequently, be considered for beneficial use. Nevertheless, before choosing a specific beneficial use, it is necessary to make a cost/benefit analysis to establish that the cost of such an option is not prohibitive (BATNEEC principle : Best available techniques not entailing excessive costs).

Depending on the composition and grain size distribution of the dredged material, it might be used beneficially for construction or environmental enhancement.

Construction uses

Generally these uses are located in or adjacent to coastal areas or within the waterway margin. Examples are land creation, beaches nourishment, formation of suitable offshore berms, construction of dikes or dams, replacement fill (restoration of former excavation sites of construction materials, obsolete canals and docks, ...).

Environmental enhancement

Numerous applications of dredged material for the enhancement of the environment can be envisaged. These range from restoration and establishment of wetlands to multipurpose site development, including restoration and establishment of terrestrial habitats, nesting islands, and fisheries;. It also included the construction of artificial reefs, particularly if the dredged material is bulky (for example, rocks). (Any construction of an artificial reef, however, should be preceded by a specific study of the structure's impact on the natural environment: in this case, advice from biologists specialising in fisheries is essential.). In any case, during and after the execution of the project, the impact and the performance of the beneficial use should be monitored.

To assess the possibilities for the beneficial use of material in a specific situation, the following parameters have to be considered : physical characterisation, contaminant status, beneficial use options, site selection, technical feasibility, regulatory acceptability, cost/benefit analysis.

When considering the possibilities other than dumping, if no acceptable beneficial use solution is found, land disposal and/or treatment are the other options.

II. LAND DISPOSAL

When neither sustainable relocation nor beneficial use options are appropriate, disposal in land based confined disposal facilities is usually the only remaining option.

In principle, land based confined disposal sites are preferred for polluted dredged material which

is unsuitable for open water disposal.

Various configurations are possible but no one presents a complete safeguard against risk of environmental pollution. Possible pathways resulting in risk are : effluent which is expelled from the disposal sites, during and after the disposal ; leaching and transport of contaminants into surrounding ground and surface water ; animal and plant uptake, dust and gaseous emissions, and excavations.

The potential effects of such sites therefore depend on both the characteristics of the site and its environs (mainly regarding the ground water table situation), and on the characteristics of the dredged material, the latter including the contaminants that are present.

To minimise the transport of contaminants into the ground water and surrounding surface water through advection and diffusion processes, application of insulation layers or hydrological management might be considered. Treatment of surplus water resulting from the expellation of water from the compressed dredged material, might also be considered.

III. TREATMENT OF DREDGED MATERIAL

Treatment is defined as a way of processing with the aim of reducing the amount of contaminated material (e.g. separation) or reducing the contamination to meet regulatory standards and criteria.

Treatment processes can in general be classified as follows :

- Pretreatment, the goal of which being to reduce the volume of dredged material requiring further treatment or disposal, and to improve the physical quality of the material for further handling and treatment ; the main categories of pretreatment are : dewatering ; size separation ; washing ; density separation ; magnetic separation.
- Biological treatment (degradation of organic substances by micro-organisms);
- Chemical treatment (pH adjustment, oxidation, ion exchange, etc.) ; the categories of chemical treatment are : destruction of organic compounds ; extraction of organic compounds ; extraction of metals ;
- Thermal treatment (thermal desorption, incineration, thermal reduction and vitrification) (Most technologies in this category provide a product such as gravel or bricks which can be used as building material);
- Immobilisation treatment (by chemically binding of the contaminants to the solid particles - fixation - or by physically preventing the contaminants from moving - solidification).
- Pretreatment excess water treatment.

The cost of treatment is generally higher, sometimes considerably greater than the cost of disposal. The cost versus effectiveness ratio is one of the most important questions which every national controlled authority will have to face.

TECHNICAL ANNEX 4

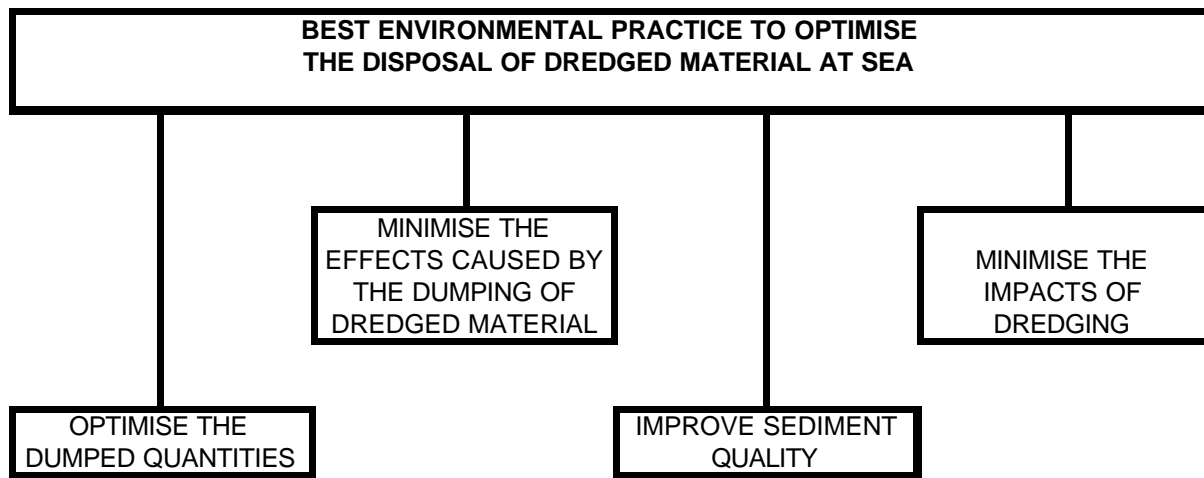
DREDGING ACTIVITIES : BEST ENVIRONMENTAL PRACTICE (BEP)

This Technical Annex was prepared bearing in mind that, although the guidelines strictly only apply to the disposal of dredged material, Contracting Parties are encouraged also to exercise control over dredging operations.

This Technical Annex has as its aim to provide guidance to national regulatory authorities,

operators of dredging vessels and port authorities on how to minimise the effects on the environment of dredging and disposal operations. Careful assessment and planning of dredging operations are necessary to minimise the impacts on marine species and habitats.

The items given as BEP under the different headings of this Technical Annex are given as examples. Their applicability will generally vary according to the particular circumstances of each operation and it is clear that different approaches may then be appropriate. More detailed information on dredging techniques and processes can be found in Guide 4 of the IADC/CEDA series on Environmental Aspects of Dredging.



Point A - Minimisation of the effects caused by the disposal of dredged material is comprehensively described in the main body of these guidelines

Point B - Optimisation of the disposed quantities; **Point C** - "Improvement of sediment quality "; and **Point D** - "Minimise the impacts of dredging" do not fall within the strict remit of the Protocol, but are relevant to the prevention of pollution of the marine environment resulting from the dumping of dredged material.

Figure 1: INDICATIVE FLOW DIAGRAM

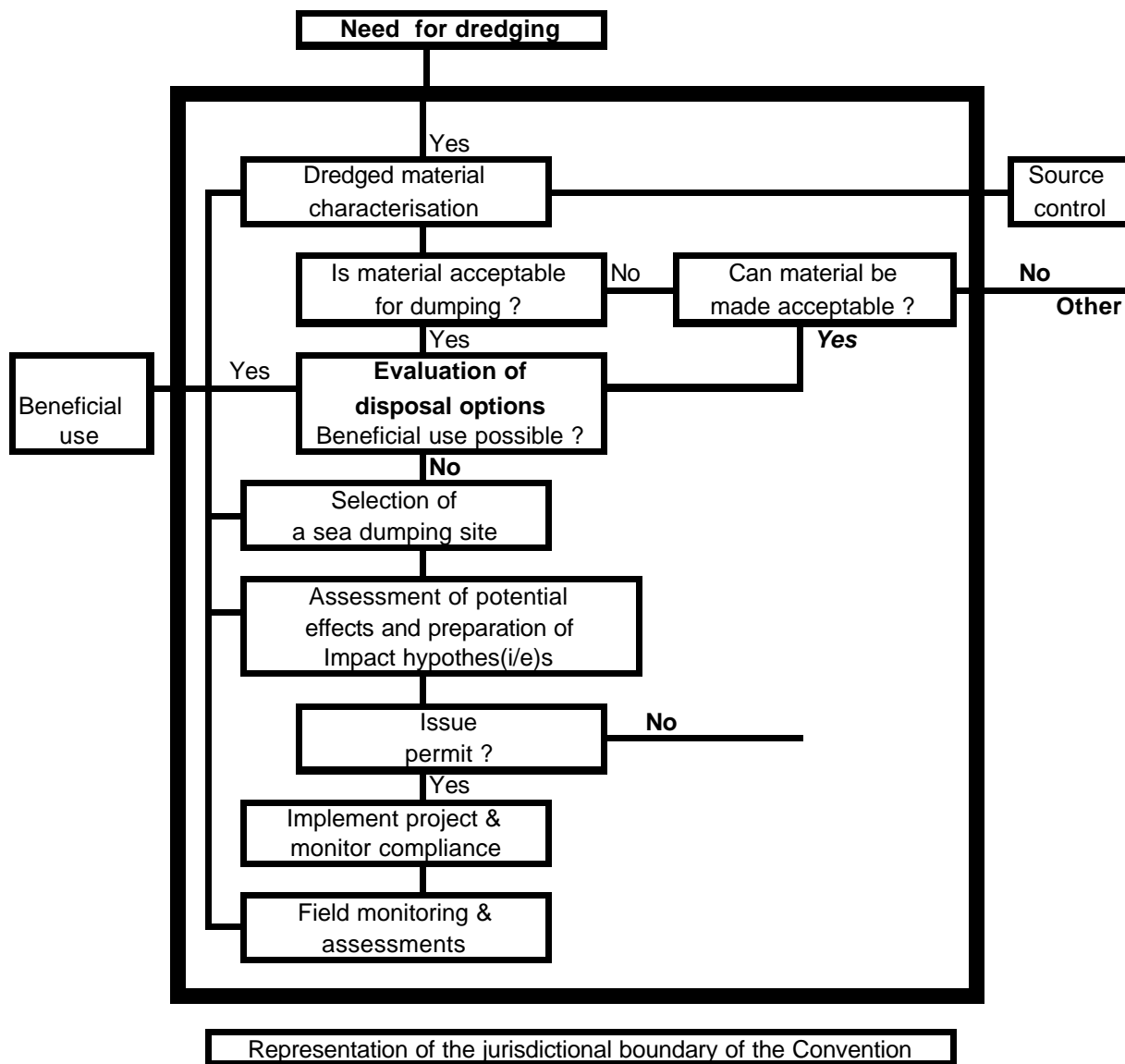


Figure 2 : A TYPICAL APPROACH FOR THE DETERMINATION OF PHYSICAL AND CHEMICAL PARAMETERS IN MARINE SEDIMENTS

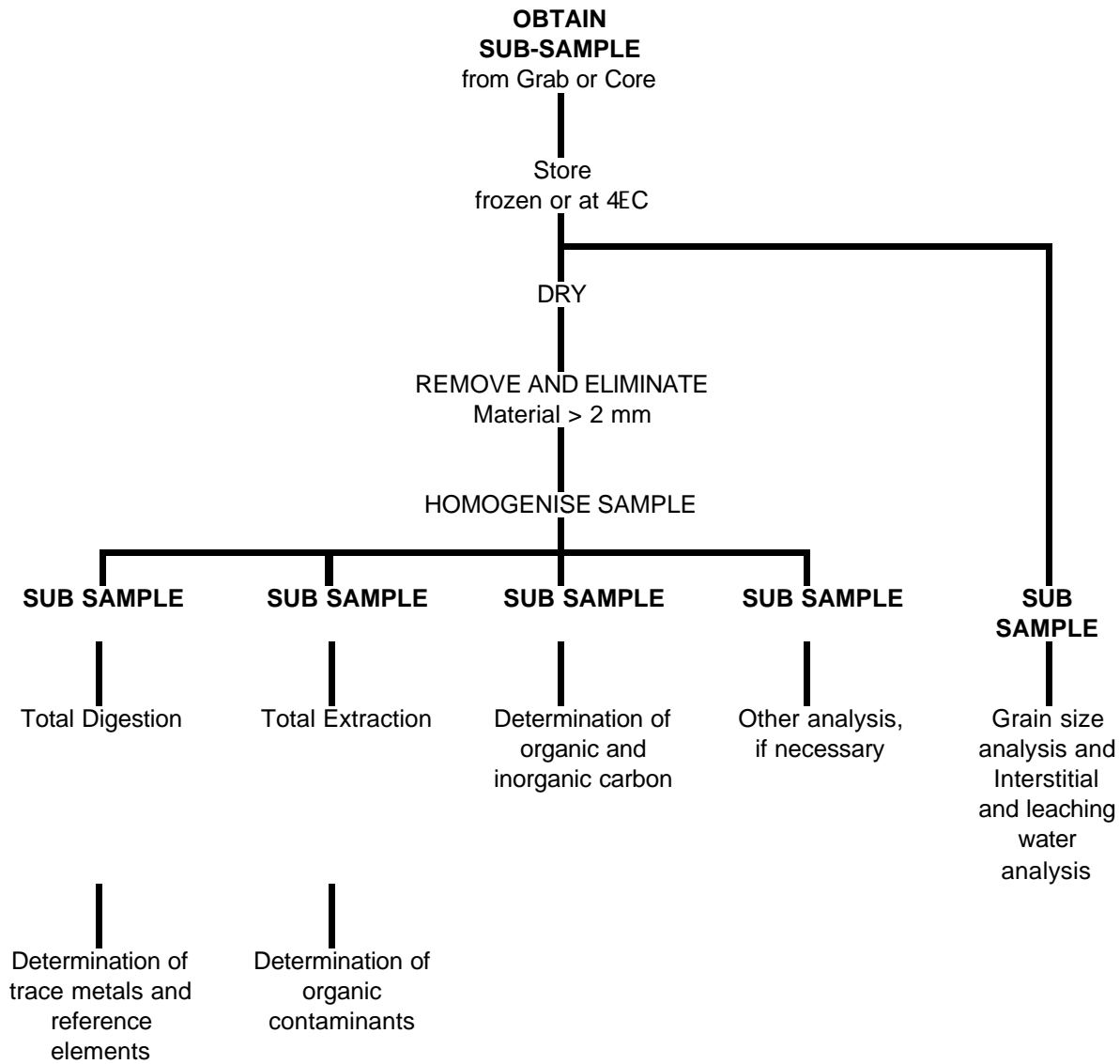


Table 1: SUMMARY OF NORMALISATION FACTORS

NORMALISATION FACTOR	GRAIN SIZE (Fm)	INDICATOR	ROLE
<u>Textural</u>			
Sand	2000 to 63	Coarse-grained metal-poor minerals / compounds	Determines physical sorting and depositional pattern of metals Usually diluent of trace metal concentrations
Mud	< 63	Silt and clay size metal-bearing minerals / compounds	Usually overall concentrator of trace metals
Clay	< 2	Metal-rich clay minerals	Usually fine-grained accumulator of trace metals
<u>Chemical</u>			
Si		Amount and distribution of metal-poor quartz	Coarse-grained diluter of contaminants
Al		All silicates but used to account for granular variations of metal-rich fine silt and clay size Al-silicates	Chemical tracer of Al-silicates, particularly the clay minerals
Li, Sc		Structurally combined in clay minerals and micas	Tracer of clay minerals, particularly in sediments containing Al-silicates in all size fractions
Organic carbon		Fine-grained organic matter	Tracer of organic contaminants. Sometimes accumulator of trace metals like Hg and Cd.
Fe, Mn		Metal-rich silt and clay size Fe-bearing clay minerals. Fe-rich heavy minerals and hydrous Fe and Mn oxides	Chemical tracer for Fe-rich clay fraction. High absorption capacity of organic and inorganic contaminants
Carbonates		Biogenic marine sediments	Diluter of contaminants. Sometimes accumulate trace metals like Cd and Cu.

Appendix VII

REFERENCE CLASSIFICATION OF MARINE HABITAT TYPES FOR THE MEDITERRANEAN REGION

as adopted by the Contracting Parties (Malta, 27-30 October 1999)

FOREWORD

Aims of this working document

The present document includes the draft classification of benthic marine habitat types as it has been finalized by the 4th Meeting of the National Focal Points for SPA (Tunis, 12-14 April 1999) and cleared by the Meeting of MAP National Focal Points (Athens, 6-9 September 1999). It is submitted to the 11th Ordinary Meeting of the Contracting Parties for adoption.

Background information

Section 2.1 of the Mediterranean Action Plan - Phase II and Articles 3.3 and 15 of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean contain provisions for the preparation of inventories of the elements of biological diversity important for its conservation and sustainable use. MAP Phase II also provides for such inventories to be prepared according to common criteria jointly established by the Contracting Parties.

Within this framework, the Regional Activity Centre for Specially Protected Areas (RAC/SPA) was invited by the Extraordinary Meeting of the Contracting Parties held in Montpellier, 1-4 July 1996, to prepare common criteria and guidelines for the preparation of inventories.

To carry out this mandate, RAC/SPA convened a Meeting of Experts on criteria for the preparation of inventories of the elements of biological diversity in the Mediterranean region (Athens, 8-10 September 1997). The meeting finalized criteria for the preparation of national inventories of natural sites of conservation interest. To guide the identification of sites to be inventoried, the criteria provide inter alia for the establishment of a reference list of marine and coastal habitat types. The criteria also indicate that the list should be elaborated taking into account a model classification of habitat types to be established by RAC/SPA.

The criteria were adopted by the 10th Ordinary Meeting of the Contracting Parties to the Barcelona Convention (Tunis, 18-21 November 1997). The same meeting invited RAC/SPA to work on elaborating of the reference list of habitat types, as well as the model classification of habitat types for the Mediterranean region. It also decided that such tools will be finalized at the level of the meeting of the National Focal Points for SPA and adopted at the level of the Meeting of the Contracting Parties (Doc. UNEP(OCA)/MED IG.11/10, Annex IV).

With a view to providing input for the elaboration of the above-mentioned habitat classification and reference list, RAC/SPA convened a Meeting of Experts on marine habitat types in the Mediterranean region. The meeting, which received financial and technical support from France, was held in Hyères from 18 to 20 November 1998. The work of the meeting led to the elaboration of a draft classification of benthic marine habitat types for the Mediterranean region.

On the basis of the outcomes of the mentioned meeting of experts in Hyères, the 4th Meeting of the National Focal Points for SPA (Tunis, 12-14 April 1999) finalized the classification of benthic marine habitat types for the Mediterranean region with a view to transmitting it to the 11th Ordinary Meeting of the Contracting Parties for adoption.

In addition to the classification of marine benthic habitats thus finalized, the meeting recommended to work on the elaboration of a classification of habitats for the pelagic environment, and invited RAC/SPA to organize to this end a working group of experts. Following the meeting, the members of the group were identified in consultation with the National Focal Points for SPA.

1. INTRODUCTION

The present classification of the various marine habitats types for the Mediterranean region is being established within the framework of the Mediterranean Action Plan of UNEP, with the primary aim of serving as a common reference for the establishment of national inventories of marine and coastal natural sites of conservation interest, to be compiled pursuant to the Mediterranean Action Plan - Phase II and art. 15 of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean.

The specificity of the Mediterranean Sea, its high level of diversity, and the density of the knowledge already acquired call for harmonisation and for a specific study to be carried out. The types of habitats taken into account constitute most often the general case, whereas the local specificities are dealt with within the framework of national studies.

Numerous initiatives, meetings, and reports enabled hierarchical lists of European marine habitats to be established. The main purpose of these initiatives (CORINE¹-biotopes, EEC Habitat Directive 92/43 - Annex 1, Palaeartic Classification, EUNIS² habitat classification) was to establish valid lists of all the habitats in Europe.

As early as 1988, France published a zoning scheme covering the whole of the land and part of the coastal areas as Natural Zones of Fauna, Flora and Ecological Interest (ZNIEFF³). The classification of the biocenoses established by Peres and Picard (1964) was used for determining the sea-ZNIEFF (Anonymous, 1988) and was taken into account not only for the French coasts but also for the whole of the Mediterranean basin. For the Provence-Alpes-Cote d'Azur Region 107 Sea-ZNIEFF have been created, the main objective of which was to present a synthesis of the scientific data available on this environment to optimise its management.

The inventory of the ZNIEFFs concerns knowledge and is considered as a scientific instrument and not as a legal tool although it is used as a protection and management administrative decision making support tool.

The inventory of the ZNIEFFs is of primary importance for the French state as a basis for international programmes and obligations (inventory of Important Bird Areas, Special Protection Areas in keeping with the EEC "Bird" Directive, inventory as a prerequisite for the designation of Special Conservation Areas in keeping with the EEC "Habitats, Fauna, Flora" Directive, Alpine Convention, Statistics for the European Environment Agency, etc.).

As early as 1991, when the inventory of ZNIEFFs was widely used, a reflection process took place that involved the real estate developers, the users and the scientists in order to:

- learn from the utilisation of the existing inventory,
- improve the legibility of the forms established,
- include new data,
- harmonise and standardise information at national level and with foreign partners.

In 1993, a first list of Parameters and Biocenoses of the metropolitan French coasts (Dauvin *et al.*, 1993) was established by a working group composed of French Mediterranean and

¹ CORINE: Coordination of Information on the Environment

² EUNIS: European Nature Information System of the European Environment Agency, managed by its Topic Centre on Nature Conservation in Paris

³ ZNIEFF: Zones Naturelles d'Intérêt Ecologique, Faunistique et Floristique: Inventory of natural sites in France

Atlantic experts on the benthos.

In 1994, a second updated and completed edition (Dauvin *et al.*, 1994) provided a detailed typology based on the CORINE-biotopes list for the metropolitan French coast.

At the European level, the document 'CORINE biotopes manual' (1988) updated in 1989 and edited in 1991 (Anonymous, 1991) and which is a reference for the EEC Directive 92/43 EEC proved to be of difficult use for maritime purpose and more so in the Mediterranean zone. Not only was it too schematic but it also contained several errors and some misleading information.

For the north-east part of the Atlantic coast, Connor *et al.* (1995), taking as a model the typology of the ZNIEFFs and after several meetings of European experts, could establish a classification of the benthic marine biotopes of the United Kingdom and of the Republic of Ireland. This activity was carried out within the BIOMAR programme.

The classification of Palaeartic habitats (Devilliers and Devilliers-Terschuren, 1996) is a development and a geographical extension of the CORINE biotopes which does not provide significantly more information for the Mediterranean Sea.

For the Mediterranean Sea several more or less complete documents suited to the problem can be used for the demarcation of zones of heritage or ecological interest, zones that require a certain level of protection or for which sensible management is sought:

- the definition of benthic biocenoses resulting from the works in the line of Peres and Picard (1964) and for which there are only few syntheses available (Gamulin Brida, 1967; Augier, 1982; Peres, 1982; Ros *et al.*, 1985; Bellan-Santini *et al.*, 1994);
- the CORINE biotopes classification which is too succinct;
- the classifications of Palaeartic and BIOMAR habitats, unsuitable for the Mediterranean Sea;
- the list of marine biocenoses for the French metropolitan coasts (Dauvin *et al.* 1994) which has been validated for France but which must be completed and reviewed for the Mediterranean Sea; this work is in progress within the framework of the French programme for the revision of ZNIEFFs started in 1995.

The list of marine biocenoses of the French metropolitan coasts (Dauvin *et al.*, 1994) is the result of a compilation made by scientists who worked on benthic populations (communities or biocenoses; habitats as defined by the EEC Directive) in the Mediterranean Sea and on the Atlantic and Channel coasts, followed by a common reflection of these scientists.

Biocenoses have been classified as a function of the zonation and granulometric nature of the sediment.

Priority environments are those that contribute to the identification of the zone either for their own value or for that of the species that dwell in them leaving aside any consideration about the surface. Most assemblages of plants and animals (biocenoses, facies) are fairly easy to identify but the sole mention of the biocenosis can justify the creation of a ZNIEFF in as much as it is sufficiently determinant and most of all accompanied with a list of significant priority species.

This document which concerns the Mediterranean Sea only is based on the document written by Dauvin *et al.* (1994), but since the homogeneity with the Atlantic coasts is no

longer necessary it has been completely revised and adapted to the specificities of the Mediterranean zone for the French coastlines (ZNIEFFs re-actualisation programme), and then extended to the whole of the Mediterranean Sea to meet the needs of RAC/SPA. This document has been revised and amended with the assistance of the "biotopi marini" group of the "Ministero dell Ambiente" (Italy).

The typology proposed for the Mediterranean Sea, elaborated from the CORINE biotopes nomenclature, is hierarchical, phytosociological and uses the following as bases of references:

- the zonation as defined by Peres and Picard in 1964 (Appendix I),
- the granulometric nature of the sea beds classified as per the model adopted by Dauvin *et al.* 1994 (Appendix II).

The levels of the facies and sub-facies are mainly limited to those most widely distributed since their number increases as a function of the number of works on benthic communities and they most often constitute a strictly local datum. The facies mentioned have indicative value only. Environments affected by human activity (polluted environments and harbours) are not considered in the text.

The terms used in this report may have appeared with rather different meanings in referenced documents. A lexicon (Appendix III) gives the meaning adopted herein.

2. TYPOLOGY: LIST OF MEDITERRANEAN BENTHIC MARINE BIOCENOSES

I. SUPRALITTORAL

I. 1. MUDS

- I. 1. 1. Biocenosis of beaches with slowly-drying wracks under glassworts

I. 2. SANDS

- I. 2. 1 Biocenosis of supralittoral sands

- I. 2. 1. 1. Facies of sands without vegetation, with scattered debris
- I. 2. 1. 2. Facies of depressions with residual humidity
- I. 2. 1. 3. Facies of quickly-drying wracks
- I. 2. 1. 4. Facies of tree trunks which have been washed ashore
- I. 2. 1. 5. Facies of phanerogams which have been washed ashore (upper part)

I. 3. STONES AND PEBBLES

- I. 3. 1. Biocenosis of slowly drying wracks

I. 4. HARD BEDS AND ROCKS

- I. 4. 1. Biocenosis of supralittoral rock

- I. 4. 1. 1. Association with *Entophysalis deusta* and *Verrucaria amphibia*
- I. 4. 1. 2. Pools with variable salinity (mediolittoral enclave)

II. MEDIOLITTORAL

II. 1. MUDS, SANDY MUDS AND SANDS

II. 1. 1. Biocenosis of muddy sands and muds

II. 1. 1. 1. Association with halophytes

II. 1. 1. 2. Facies of saltworks

II. 2. SANDS

II. 2. 1. Biocenosis of mediolittoral sands

II. 2. 1. 1. Facies with *Ophelia bicornis*

II. 3. STONES AND PEBBLES

II. 3. 1. Biocenosis of mediolittoral coarse detritic bottoms

II. 3. 1. 1. Facies of banks of dead leaves of *Posidonia oceanica* and other phanerogams

II. 4. HARD BEDS AND ROCKS

II. 4. 1. Biocenosis of the upper mediolittoral rock

II. 4. 1. 1. Association with *Bangia atropurpurea*

II. 4. 1. 2. Association with *Porphyra leucosticta*

II. 4. 1. 3. Association with *Nemalion helminthoides* and *Rissoella verruculosa*

II. 4. 1. 4. Association with *Lithophyllum papillosum* and *Polysiphonia* spp.

II. 4. 2. Biocenosis of the lower mediolittoral rock

II. 4. 2. 1. Association with *Lithophyllum lichenoides* (= entablature with *L. tortuosum*)

II. 4. 2. 2. Association with *Lithophyllum byssoides*

II. 4. 2. 3. Association with *Tenarea undulosa*

II. 4. 2. 4. Association with *Ceramium ciliatum* and *Corallina elongata*

II. 4. 2. 5. Facies with *Pollicipes cornucopiae*

II. 4. 2. 6. Association with *Enteromorpha compressa*

II. 4. 2. 7. Association with *Fucus virsoides*

II. 4. 2. 8. *Neogoniolithon brassica-florida* concretion

II. 4. 2. 9. Association with *Gelidium* spp.

II. 4.2.10. Pools and lagoons sometimes associated with vermetids (infralittoral enclave)

II. 4. 3. Mediolittoral caves

- II. 4. 3. 1. Association with *Phymatolithon lenormandii* and *Hildenbrandia rubra*

III. INFRALITTORAL

III. 1. SANDY MUDS, SANDS, GRAVELS AND ROCKS IN EURYHALINE AND EURYTHERMAL ENVIRONMENT

III. 1. 1. Euryhaline and eurythermal biocenosis

- III. 1. 1. 1. Association with *Ruppia cirrhosa* and/or *Ruppia maritima*
III. 1. 1. 2. Facies with *Ficopomatus enigmaticus*
III. 1. 1. 3. Association with *Potamogeton pectinatus*
III. 1. 1. 4. Association with *Zostera noltii* in euryhaline and eurythermal environment
III. 1. 1. 5. Association with *Zostera marina* in euryhaline and eurythermal environment
III. 1. 1. 6. Association with *Gracilaria* spp.
III. 1. 1. 7. Association with *Chaetomorpha linum* and *Valonia aegagropila*
III. 1. 1. 8. Association with *Halopithys incurva*
III. 1. 1. 9. Association with *Ulva laetevirens* and *Enteromorpha linza*
III. 1. 1. 10. Association with *Cystoseira barbata*
III. 1. 1. 11. Association with *Lamprothamnium papulosum*
III. 1. 1. 12. Association with *Cladophora echinus* and *Rytiphloea tinctoria*

III. 2. FINE SANDS WITH MORE OR LESS MUD

III. 2. 1. Biocenosis of fine sands in very shallow waters

- III. 2. 1. 1. Facies with *Lentidium mediterraneum*

III. 2. 2. Biocenosis of well sorted fine sands

- III. 2. 2. 1. Association with *Cymodocea nodosa* on well sorted fine sands
III. 2. 2. 2. Association with *Halophila stipulacea*

III. 2. 3. Biocenosis of superficial muddy sands in sheltered waters

- III. 2. 3. 1. Facies with *Callianassa tyrrhena* and *Kellia corbuloides*

- III. 2. 3. 2. Facies with fresh water resurgences with *Cerastoderma glaucum* and *Cyathura carinata*
- III. 2. 3. 3. Facies with *Loripes lacteus*, *Tapes* spp.
- III. 2. 3. 4. Association with *Cymodocea nodosa* on superficial muddy sands in sheltered waters
- III. 2. 3. 5. Association with *Zostera noltii* on superficial muddy sands in sheltered waters
- III. 2. 3. 6. Association with *Caulerpa prolifera* on superficial muddy sands in sheltered waters
- III. 2. 3. 7. Facies of hydrothermal oozes with *Cyclope neritea* and nematodes

III. 3. COARSE SANDS WITH MORE OR LESS MUD

- III. 3. 1. Biocenosis of coarse sands and fine gravels mixed by the waves
 - III. 3. 1. 1. Association with rhodolithes
- III. 3. 2. Biocenosis of coarse sands and fine gravels under the influence of bottom currents (also found in the Circalittoral)
 - III. 3. 2. 1. Maërl facies (= Association with *Lithothamnion corallioides* and *Phymatolithon calcareum*) (can also be found as facies of the biocenosis of coastal detritic).
 - III. 3. 2. 2. Association with rhodolithes

III. 4. STONES AND PEBBLES

- III. 4. 1. Biocenosis of infralittoral pebbles
 - III. 4. 1. 1. Facies with *Gouania wildenowi*

III. 5. POSIDONIA OCEANICA MEADOWS

- III. 5. 1. Posidonia oceanica meadows (= Association with *Posidonia oceanica*)
 - III. 5. 1. 1. Ecomorphosis of striped meadows
 - III. 5. 1. 2. Ecomorphosis of "barrier-reef" meadows
 - III. 5. 1. 3. Facies of dead "mattes" of *Posidonia oceanica* without much epiflora
 - III. 5. 1. 4. Association with *Caulerpa prolifera*

III. 6. HARD BEDS AND ROCKS

III. 6. 1. Biocenosis of infralittoral algae⁴:

III. 6. 1. 1. **Overgrazed facies with encrusting algae and sea urchins**

III. 6. 1. 2. Association with *Cystoseira amentacea* (var. *amentacea*, var. *stricta*, var. *spicata*)

III. 6. 1. 3. Facies with Vermetids

III. 6. 1. 4. Facies with *Mytilus galloprovincialis*

III. 6. 1. 5. Association with *Corallina elongata* and *Herposiphonia secunda*

III. 6. 1. 6. Association with *Corallina officinalis*

III. 6. 1. 7. Association with *Codium vermilara* and *Rhodymenia ardissoni*

III. 6. 1. 8. Association with *Dasycladus vermicularis*

III. 6. 1. 9. Association with *Alsidium helminthochorton*

III. 6. 1. 10. Association with *Cystoseira tamariscifolia* and *Saccorhiza polyschides*

III. 6. 1. 11. Association with *Gelidium spinosum* v. *hystrix*

III. 6. 1. 12. Association with *Lobophora variegata*

III. 6. 1. 13. Association with *Ceramium rubrum*

III. 6. 1. 14. Facies with *Cladocora caespitosa*

III. 6. 1. 15. Association with *Cystoseira brachycarpa*

III. 6. 1. 16. Association with *Cystoseira crinita*

III. 6. 1. 17. Association with *Cystoseira crinitophylla*

III. 6. 1. 18. Association with *Cystoseira sauvageauana*

III. 6. 1. 19. Association with *Cystoseira spinosa*

III. 6. 1. 20. Association with *Sargassum vulgare*

III. 6. 1. 21. Association with *Dictyopteris polypodioides*

III. 6. 1. 22. Association with *Calpomenia sinuosa*

III. 6. 1. 23. Association with *Stypocaulon scoparium* (= *Halopteris scoparia*)

III. 6. 1. 24. Association with *Trichosolen myura* and *Liagora farinosa*

⁴ the facies and associations of the biocenosis of infralittoral algae are presented in accordance with the two dominant factors affecting this biocenosis, namely hydrodynamics and light, in descending order.

- III. 6. 1. 25. Association with *Cystoseira compressa*
- III. 6. 1. 26. Association with *Pterocliadiella capillacea* and *Ulva laetevirens*
- III. 6. 1. 27. Facies with large Hydrozoa
- III. 6. 1. 28. Association with *Pterothamnion crispum* and *Compsothamnion thuyoides*
- III. 6. 1. 29. Association with *Schottera nicaeensis*
- III. 6. 1. 30. Association with *Rhodymenia ardissoni* and *Rhodophyllis divaricata*
- III. 6. 1. 31. Facies with *Astroides calycularis*
- III. 6. 1. 32. Association with *Flabellia petiolata* and *Peyssonnelia squamaria*
- III. 6. 1. 33. Association with *Halymenia floresia* and *Halarachnion ligulatum*
- III. 6. 1. 34. Association with *Peyssonnelia rubra* and *Peyssonnelia* spp.
- III. 6. 1. 35. Facies and Associations of Coralligenous biocenosis (in enclave)
- II. 6. 1. 36. Facies with *Chondrilla nucula*
- III. 6. 1. 37. Facies with *Microcosmus exasperatus*

IV. CIRCALITTORAL

IV. 1. MUDS

IV. 1. 1. Biocenosis of coastal terrigenous muds

- IV. 1. 1. 1. Facies of soft muds with *Turritella tricarinata communis*
- IV. 1. 1. 2. Facies of sticky muds with *Virgularia mirabilis* and *Pennatula phosphorea*
- IV. 1. 1. 3. Facies of sticky muds with *Alcyonium palmatum* and *Stichopus regalis*

IV. 2. SANDS

IV. 2. 1. Biocenosis of the muddy detritic bottom

- IV. 2. 1. 1. Facies with *Ophiothrix quinquemaculata*

IV. 2. 2. Biocenosis of the coastal detritic bottom

- IV. 2. 2. 1. Association with rhodolithes

- IV. 2. 2. 2. Maërl Facies (*Lithothamnion corallioides* and *Phymatholithon calcareum*)
- IV. 2. 2. 3. Association with *Peyssonnelia rosa-marina*
- IV. 2. 2. 4. Association with *Arthrocladia villosa*
- IV. 2. 2. 5. Association with *Osmundaria volubilis*
- IV. 2. 2. 6. Association with *Kallymenia patens*
- IV. 2. 2. 7. Association with *Laminaria rodriguezii* on detritic
- IV. 2. 2. 8. Facies with *Ophiura texturata*
- IV. 2. 2. 9. Facies with Synascidies
- V. 2. 2. 10. Facies with large Bryozoa

IV. 2. 3. Biocenosis of shelf-edge detritic bottom

- IV. 2. 3. 1. Facies with *Neolampas rostellata*
- IV. 2. 3. 2. Facies with *Leptometra phalangium*

IV. 2. 4. Biocenosis of coarse sands and fine gravels under the influence of bottom currents (biocenosis found in areas under specific hydrodynamic conditions - straits-; also found in the Infralittoral)

IV. 3. HARD BEDS AND ROCKS

IV. 3. 1. Coralligenous biocenosis

- IV. 3. 1. 1. Association with *Cystoseira zosteroides*
- IV. 3. 1. 2. Association with *Cystoseira usneoides*
- IV. 3. 1. 3. Association with *Cystoseira dubia*
- IV. 3. 1. 4. Association with *Cystoseira corniculata*
- IV. 3. 1. 5. Association with *Sargassum* spp. (indigenous)
- IV. 3. 1. 6. Association with *Mesophyllum lichenoides*
- IV. 3. 1. 7. Association with *Lithophyllum frondosum* and *Halimeda tuna*
- IV. 3. 1. 8. Association with *Laminaria ochroleuca*
- IV. 3. 1. 9. Association with *Rodriguezella strafforelli*
- IV. 3. 1. 10. Facies with *Eunicella cavolinii*
- IV. 3. 1. 11. Facies with *Eunicella singularis*
- IV. 3. 1. 12. Facies with *Lophogorgia sarmentosa*
- IV. 3. 1. 13. Facies with *Paramuricea clavata*
- IV. 3. 1. 14. Facies with *Parazoanthus axinellae*
- IV. 3. 1. 15. Coralligenous platforms

IV.3. 2. Semi-dark caves (also in enclave in upper stages)

IV. 3. 2. 1. Facies with *Parazoanthus axinellae*

IV. 3. 2. 2. Facies with *Corallium rubrum*

IV. 3. 2. 3. Facies with *Leptopsammia pruvoti*

IV. 3. 3. Biocenosis of shelf-edge rock

V. BATHYAL

V. 1. MUDS

V. 1. 1. Biocenosis of bathyal muds

V. 1. 1. 1. Facies of sandy muds with *Thenaea muricata*

V. 1. 1. 2. Facies of fluid muds with *Brissopsis lyrifera*

V. 1. 1. 3. Facies of soft muds with *Funiculina quadrangularis* and *Apporhais seressianus*

V. 1. 1. 4. Facies of compact muds with *Isidella elongata*

V. 1. 1. 5. Facies with *Pheronema grayi*

V. 2. SANDS

V. 2. 1. Biocenosis of bathyal detritic sands with *Grypheus vitreus*

V. 3. HARD BEDS AND ROCKS

V. 3. 1. Biocenosis of deep sea corals

V. 3. 2. Caves and ducts in total darkness (in enclave in the upper stages)

VI. ABYSSAL

VI. 1. MUDS

VI. 1. 1. Biocenosis of abyssal muds

RECENT CASES OF HABITATS AFFECTED BY INTRODUCED AND/OR INVASIVE SPECIES

Two majors cases have been observed :

1. The species constitutes an individualized facies or association (eg. *Sargassum mutans*, *Brachydontes pharaonis*, *Styopodium shimperi*,...)
2. The species affects several habitats, possibly on several stages (eg. *Caulerpa taxifolia*, *Caulerpa racemosa*,...)

ZONATION OF BIOCENOSES IN THE MEDITERRANEAN REGION

(Bellan-Santini *et al.* 1994)

Two main systems can be distinguished as a function of the vertical light gradient:

- the phytal system which is the habitat of all types of flora;
- the aphythal system which is not the habitat of autotrophic flora except for certain algae in conditions still unclear.

Each of the two main systems comprises subdivisions or stages.

The phytal system comprises:

- the Supralittoral stage where organisms that require a high level of humidifying but that are never immersed are present. The upper limit corresponds to the zone splashed by the waves (including the spray of the waves);
- the Mediolittoral stage which corresponds to the zone affected by waves, submitted to sea level variations caused by the wind, atmospheric pressure and tides;
- the Infralittoral stage which is the immersed zone compatible with the life of the marine phanerogams and photophilous algae;
- the Circalittoral stage which stretches up to the survival boundary of autotrophic pluricellular algae (general case).

The aphythal system comprises:

- the Bathyal stage which stretches up to the boundary of the continental slope;
- the Abyssal stage, the presence of which is acknowledged in the Mediterranean sea (Pérès, 1984; Bellan-Santini, 1985; Laubier & Emig, 1993) and which corresponds to the plain that would start at about 2,000 m. A faunistic renewal is noticed there, the reasons of which are still unclear, and a high endemism rate.

The boundary between the last two stages is still insufficiently defined in the Mediterranean sea.

TYPES OF SEDIMENTS SELECTED

(Dauvin *et al.*, 1993, modified)

- Mud: more than 75% of fine particles < 63µm
- Sandy mud: 25 to 75% fine particles < 63µm
- Fine sand with more or less mud: 5 to 25% of fine particles < 63µm
- Fine sand: less than 5% of fine particles, fraction larger than 2 mm < 15%, median smaller than 250µm
- Dune medium sand: about 0% of fine particles, fraction larger than 2 mm < 15%, median between 315 and 800 µm
- Heterogeneous muddy sand: fine particles between 10 and 30%, sand, coarse sand and gravel between 50 and 80%
- Coarse sand: less than 5% of fine particles, more than 50% of sand + fine particles, median smaller than 2 mm
- Muddy heterogeneous sediment: more than 5% of fine, median larger than 500 µm, high percentage of pebbles or shells
- Gravel: less than 5% of fine particles, less than 50% of pebbles + shells, median larger than 2 mm
- Small stones: less than 5% of fine particles, more than 50% of pebbles + shells.

Granulometry (as per Larsonneur, 1977, modified)

- . Rock chaos;
- . Blocks: larger than 10 cm;
- . Pebbles and shells: elements larger than 2 cm ;
- . Coarse gravel: elements between 1 and 2 cm ;
- . Medium gravel: elements between 5 and 10 mm ;
- . Small gravel and particles: elements between 2 and 5 mm ;
- . Coarse sand: elements between 1 and 2 mm ;
- . Medium sand: elements between 0.5 and 1 mm ;
- . Fine sand: elements between 0.2 and 0.5 mm ;
- . Finer sand: elements between 0.1 and 0.2 mm ;
- . Finest sand: elements between 0.063 and 0.1 mm ;
- . Fine particles: mud + clay: fraction smaller than 0.063 mm.

- . well sorted sediment ;
- . poorly sorted sediment, heterogeneous.

LEXICON

- Association :** permanent aspect of a biocenosis with a vegetal physiognomic dominance where the species are linked by an ecological compatibility and a chorological affinity.
- Biocenosis :** grouping of living organisms, linked by relationships of interdependence within a biotope with relatively homogenous major characteristics; each biocenosis comprises mainly the phytocenosis, which includes flora, and the zoocenosis, which includes fauna. The notions of community or association in the phytosociological sense of the word are very close to the notion of biocenosis although they cannot exactly replace it.
- Biotope :** geographical area with variable surface or volume submitted to ecological conditions where the dominant elements are homogenous.
- Characteristics :** a species is considered as characteristic when it is exclusive or preferential for the biotope considered, whether it is represented widely or not, sporadic or not.
- Community :** grouping of living organisms linked by interdependence relationships within a biotope, typically characterized with respect to one or several dominant species.
- Ecomorphosis :** a particular morphology linked to local ecological conditions.
- Enclave :** local existence for microclimatic reasons of a habitat within a surface normally occupied by another habitat or another stage.
- Euryhaline :** which exhibits a large range of variation of the salinity.
- Facies :** aspect exhibited by a biocenosis when the local predominance of certain factors causes the prevalence of either one or a very small number of species, essentially animal ones.
- Habitat :** area distinguished by geographic, abiotic and biotic features (definition of EEC Directive 92/43). the definition of the habitat can be compared herein to that of a biocenosis, facies and association.

Introduced species : species whose remote (not marginal) extension of the range is linked, directly or indirectly, to human activity. Within its new area, populations of individuals are born *in situ*, without human assistance (it is naturalized).

Invasive species : is an introduced species which has become a key species, or which has a significant impact on key species, functional groups or landscape, and/or a species which has a negative economic impact.

Stage : vertical space of the marine benthic domain where the ecological conditions, as a function of its situation with respect to the sea level, are notably constant or fluctuate regularly between the two critical levels which indicate the boundaries of the stage.