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MEDITERRANEAN ACTION PLAN

Meeting of MAP National Focal Points

Athens, 15-18 September 2003

DRAFT
STRATEGIC ACTION PLAN
FOR THE CONSERVATION OF BIOLOGICAL DIVERSITY
(SAP BIO) IN THE MEDITERRANEAN REGION

UNEP/MAP
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MEDITERRANEAN ACTION PLAN

Sixth Meeting of National Focal Points for SPAs

Marseilles, 17-20 June 2003

DRAFT
STRATEGIC ACTION PLAN FOR THE CONSERVATION OF BIOLOGICAL DIVERSITY (SAP BIO) IN THE MEDITERRANEAN REGION

UNEP
RAC/SPA - Tunis, 2003

BACKGROUND INFORMATION[1]

1. HISTORICAL REVIEW

The Mediterranean Action Plan (MAP) was established in 1975, as the first Regional Seas Programme of UNEP, with the Convention on the Protection of the Mediterranean Sea Against Pollution (the Barcelona Convention) as its legal basis. 20 Mediterranean coastal states and the European Community (Union - later on) joined MAP as Contracting Parties to the Convention. Among MAP Regional Activity Centres, gradually established and developed, the Regional Activity Centre for Specially Protected Areas (RAC-SPA), located in Tunis, was established in 1981. In the initial phase of MAP, 4 Protocols related to the Convention were adopted, among them the Protocol on Specially Protected Areas (the SPA Protocol), adopted in 1981 and coming into force in 1982. This Protocol represented the legal basis and programmatic framework for the activities of the RAC-SPA. After 20 years of implementation, the Barcelona Convention was revised in 1995, including, among other things, a new article on Conservation of Biological Diversity, thus applying the provisions of the Convention on Biological Diversity (CBD). Consequently, the SPA Protocol was revised in 1995 as the "Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA Protocol)", entering into force in 1999 and including provisions for biodiversity protection and conservation in the Mediterranean region.

Applying the provisions of the revised Convention and SPA Protocol, in 1997 the project proposal for a "Strategic Action Programme to Address Pollution from Land-Based Sources in the Mediterranean Region", prepared under a GEF PDF-B Grant, was adopted by the Contracting Parties. As a follow-up, the Project proposal was submitted to GEF and approved by its Council in April 2000. The approved Project includes the "Preparation of a Strategic Action Plan for Biodiversity in the Mediterranean Region (SAP BIO)", to be implemented within the MAP framework, with RAC-SPA as the Lead Agency.

The preparatory activities for the implementation of SAP BIO consisted of: preparation of an Outline and of a set of specific Guidelines and instructions; preparatory meetings and training; and the establishing of the necessary institutional arrangements. These activities were implemented in the year 2000 and at the beginning of 2001, and the Project started to be implementated in early 2001. By September 2002 almost all the National Reports and NAPs had been prepared by national counterparts, allowing for the drafting of the final Project Strategic Document and its subsequent revisions. A list of all Project outputs appears in Annex I to this document.

2. INSTITUTIONAL ARRANGEMENTS FOR THE ELABORATION OF SAP BIO

Implementing of such a large multi- and inter-disciplinary project, covering a regional sea and its coastal areas, including 19 countries, to be implemented within a relatively short implementation period, requires a complex, comprehensive set of institutional arrangements. Therefore, in addition to the standard institutional arrangements of the MAP and RAC/SPA, and of the respective national counterparts, specific arrangements had to be looked for, agreed upon and established.

Overall guidance and responsibility for the Project came under the MAP Coordinating Unit in Athens as the standard for all MAP activities and programmes.

The RAC/SPA had operational responsibility within its regular mandate, and in the role of Project Lead Agency.

[1] This introductory section is not considered as integral part of SAPBIO

In addition to the standard role and responsibilities of the National Focal Points (NFPs), in this case of NFPs for SPAs, a network of National SAP BIO Correspondents was established, each Correspondent being nominated by the respective NFP. Their role was to coordinate the national consultation process and to stimulate and coordinate the national inputs to SAP BIO. Moreover, through the network of National Correspondents, they were directly involved in the process of discussing/evaluating/amending the draft SAP BIO Document.

Furthermore, an Advisory Committee was established to act as an advisory body to RAC-SPA. Members of the Committee were representatives from international and regional bodies with technical and scientific expertise in issues concerning marine and coastal biodiversity in the Mediterranean. In addition to its advisory function, the Committee ensured coordination with the respective international organisations and assisted in preparing of the inventory of activities and outputs relevant for SAP BIO.

In a number of countries, specific national SAP BIO bodies were set up to assist and guide the National Correspondents.

Finally, a number of international consultants were involved in assisting RAC/SPA, while at national level a great number of national authorities, institutions and institutes, scientists and experts participated in the preparation of the respective national documents.

Figures for the number of actors involved per category are given in Table1.

Table 1. Actors involved in SAP BIO, category and number

Actors	Number of actors/members
SAP/BIO Advisory Committee	11
RAC-SPA National Focal Points	21
National SAP/BIO Correspondents[2]	21
National SAP/BIO Committees or bodies	14
National authorities, institutions	10
Individual national professionals, scientists	61
International organisations and bodies[3]	3
International consultants	18
Other consultants[4]	19

A comprehensive list of : (i) members of the Advisory Committee, (ii) National Correspondents, (iii) national institutions and organisations, (iv) national experts, (v) international consultants and organisations involved, appears in Annex II to this Document.

A schematic diagram of SAP BIO institutional arrangements is presented in Figure 1, below.

[2] Some National Focal Points also acted as National Correspondents.
[3] In addition to the organisations reprsented in the Advisory Committee.
[4] Mainly scientists and experts in charge of revising and translating documents and other outputs.

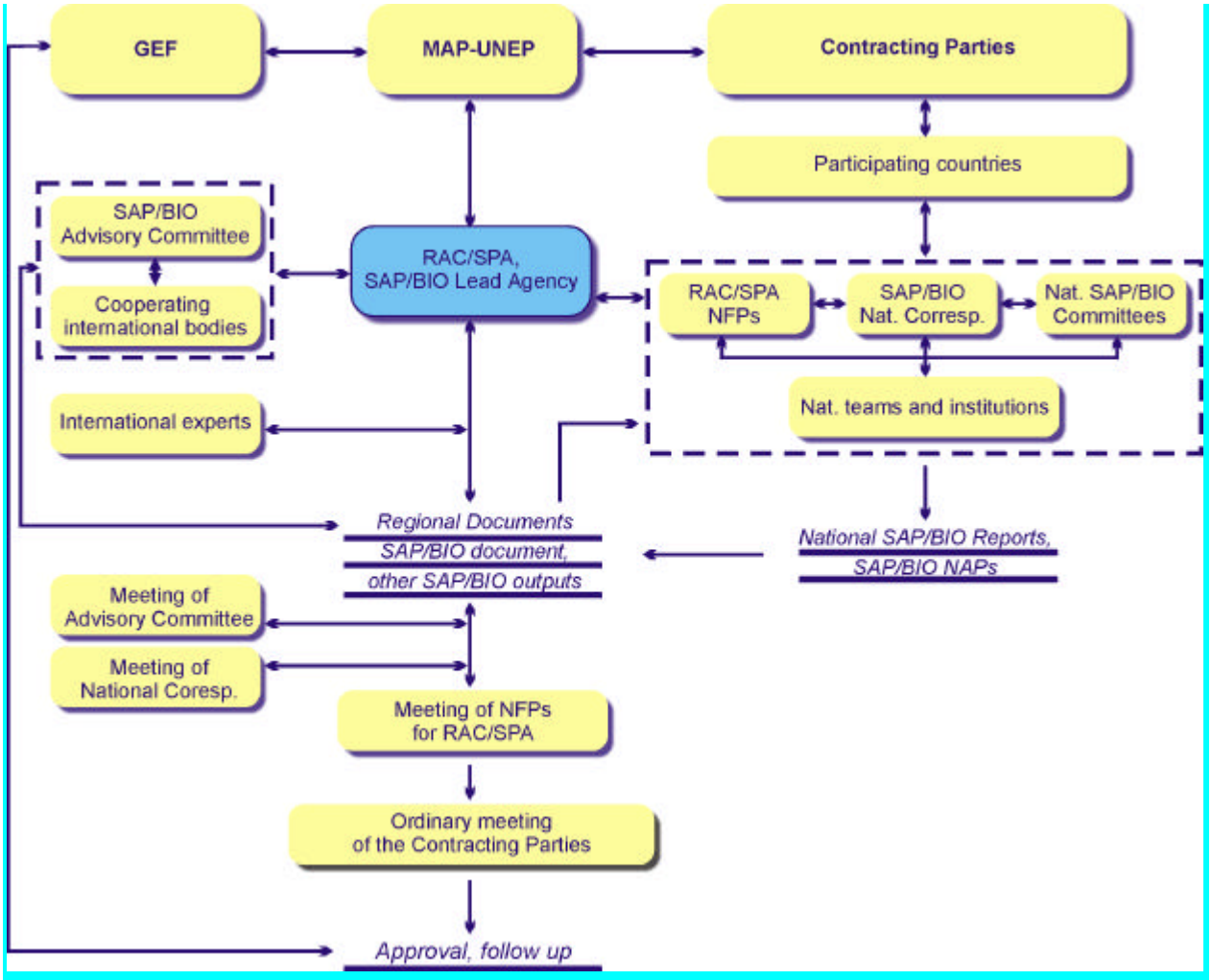

Figure 1 - SAP BIO institutional arrangement

3. THE ELABORATION PROCEDURE

The procedure for implementing the Project was designed and implemented respecting the provisions of the SAP/BIO Project Document, as well as the standard project management procedure, applied as appropriate for SAP/BIO. The main phases and activities of project implementation were as follows:

I. Preparatory activities: a) preparation of reference documents (SAP/BIO Outline, Terms of Reference for the National Correspondents and for the Advisory Committee, guidelines, instructions), b) formulation and establishment of institutional arrangements, c) consultative activities and exchange of information, d) initial training, and e) meeting the logistical and technical prerequisites (identification of experts/consultants/actors, nominations, terms of reference, contracting).

II. Activities at national level: (a) establishing a team of national consultants, (b) setting up national committees (c) preparating of the draft National Reports, (d) assistance provided to national teams, e) national consultation processes (f) preparation of NAPs, g) coordinating and consultative activities at national level, (h) finalisation of National Reports and NAPs.

III. Activities at regional level: (i) elaboration of regional documents on specific biodiversity issues by international bodies (e.g. FAO) or by international consultants, (ii) meetings at regional and subregional level, (iii) contacts with and involvement of regional bodies, competent, interested and/or involved in biological diversity issues in the region.

IV. Reviewing, assessing and summarising national documents: (a) setting up a team of consultants, (b) preparatory meeting, (c) review of national documents, (d) preparation of the draft extensive SAP/BIO report, assembling all national information and Investment Portfolios, (e) presentation and revision of the extensive report (Advisory Committee, MAP, GEF) providing instructions for the preparation of the final SAP BIO Document.

V. Drafting the final SAP BIO Document: a) Setting up a drafting team,(b) preparatory meeting, (c) quality control of NAPs, preparation of a NAPs Investment Portfolio, (d) preparation of the first draft of the SAP BIO Document, (e) presentation of the draft Document and instructions for its revision (Advisory Committee, RAC/SPA NFPs) *[to be implemented according to the dates of respective meetings.]*

VI. Preparation and adoption of the final SAP BIO Document: (a) preparation of the final version of the SAP BIO Document, including provisions for follow-up, (b) presentation of the document to the next Ordinary Meeting of the Contracting Parties (OMCPs) to the Barcelona Convention, and to GEF, with the respective recommendations of the NFP Meeting, (c) adoption of the Document by the OMCPs and GEF, amending it, if so recommended/requested, as appropriate, and d) preparation of the final document including recommendations made by the OMCPs, and its dissemination. *[to be implemented till the end of 2003.]*

VII. Follow-up activities: Implementation of follow-up activities, by RAC/SPA and MAP, and by SAP BIO national counterparts, as envisaged by the provisions for follow-up and in accordance with the recommendations made by the OMCPs and GEF.

The main phases, activities and outputs of Project implementation are presented in graphic form in Figure 2 .

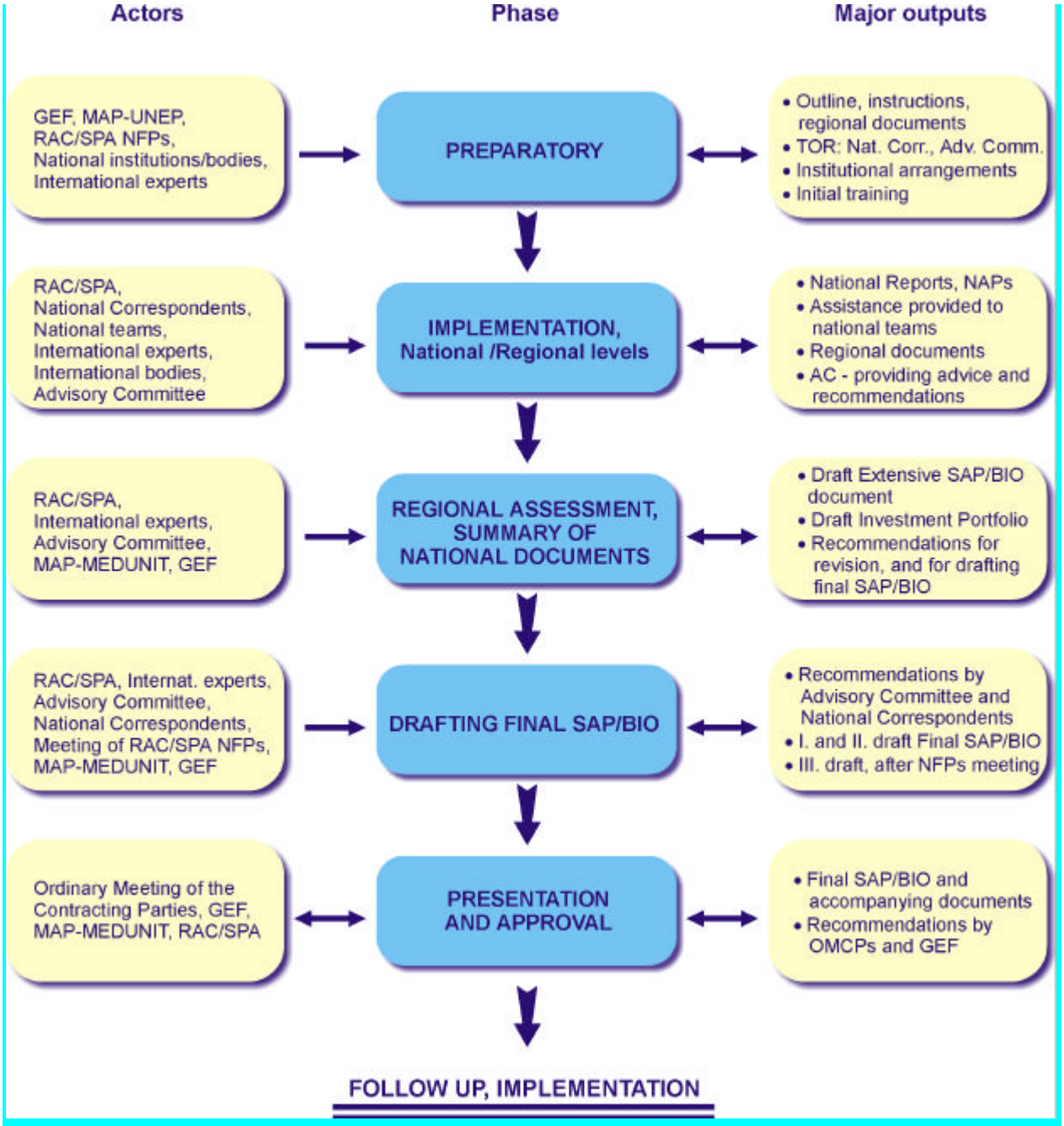

Figure 2 - Implementation of the SAP BIO Project: phases, activities and outputs

In addition to the extensive and complex in-house activities, the implementation of the project implied a number of meetings, at national and regional level. A review of the major meetings held appears in Table 2.

Table 2 - Review of major meetings held during the Project implementation

Type of meeting	Number of meetings held
Advisory Committee Meeting	4
Meetings of National Correspondents	2
Teams of international consultants	5
Missions to assist countries	14
National workshops	14
Ad-hoc international workshops /meetings	1
Meeting of National Steering Committees	More than 25
Meeting of National consultants	More than 100

Finally, it should be emphasised that the project was implemented, and the national and regional documents prepared, respecting the international conventions relevant for SAP BIO, and taking into account the relevant international and national documents and strategies. The national SAP BIO strategies and measures, as well as the resulting regional ones, were formulated and selected taking into account the standard selection criteria, and applying the consensually adopted scientific and professional approaches and methods.

4. THE CONCEPTUAL CONTEXT

The conceptual context of SAP/BIO is conditioned by: (i) the present scientific, social and ethical understanding of biodiversity and bioconservation, (ii) the concept of sustainable development, (iii) international conventions and documents relevant to biodiversity and its conservation, and (iv) the relevant scientific criteria, principles, and available knowledge and information.

The SAP BIO Project Document defined the aim of the Project as follows:

"The principal need is to identify and carry out measures to conserve Mediterranean coastal and marine biodiversity, within a framework of sustainable use, through implementation of the SPA Protocol. To this end, a Strategic Action Plan (SAP BIO) is needed for adoption by the Contracting Parties to the Barcelona Convention. "

This objective locates the broader SAP/BIO framework within the concept and principles of sustainability, and within the context of the Barcelona Convention and its SPA Protocol. In addition, the Project Document presupposes the use of the available scientific data and information, application of scientific methods and criteria, respect for the relevant international conventions, cooperation with other qualified bodies, participation as appropriate, etc.

Consequently, the following documents have to be considered as essential for the SAP BIO conceptual framework:

(i) the UNCED Rio 1992 Declaration and the Rio Principles
(ii) the Jakarta Mandate: In Jakarta, in 1997, the first Meeting of Experts on Marine and Coastal Biological Diversity within the CBD was held
(iii) the Agenda 21, in particular ch. 15 "Conservation of Biological Diversity"; also chapters related to: integration of the environment and development into the decision-making process; protection of oceans and seas and rational use of their living resources; protection and supply of freshwater resources; strengthening the role of NGOs; education/public awareness/and training; international cooperation; capacity-building in developing countries

(iv) the FAO Code of Conduct for Responsible Fisheries, 1995; the Mediterranean consultation on Article 9 in relation to responsible aquaculture; as well as its Article 10, concerning the integration of fisheries into coastal area management
(v) the MED Agenda 21 (Tunis,1994), and in particular ch. XV "Conservation of Biological Diversity",
(vi) the Mediterranean Action Plan Phase II
(vii) the Mediterranean Declaration for the Johannesburg Summit, adopted in 2001 by the Contracting Parties, calling *inter alia* for: "... actions at all levels, ... in order ... to sustain the precious biodiversity of the region ... "
(viii) the implementation plan adopted at the Johannesburg Earth Summit.

In addition, all international conventions and documents relevant to biodiversity were taken into account, following the present national practices and obligations, as well as those of MAP-UNEP.

Bearing in mind the present and future role of the European Union in the Mediterranean region and the on-going Euro-Mediterranean cooperation, the EC Directives relevant to SAP BIO, concerning environmental protection, resource management, integrated coastal management, and nature conservation, were taken into consideration, in particular those on the conservation of natural habitats and wild fauna and flora, and on the conservation of wild birds.

In addition, guidelines, recommendations and measures proposed and information provided by a number of international fora, as well as documents of a lower legal level were used, applied or taken into consideration, as appropriate.

Furthermore, the national teams involved in the project also respected and applied other international and national documents and strategies, according to the national conditions, commitments and relevant national programmes and initiatives.

Finally, the fact that SAP/BIO was targeted at the Contracting Parties to the Barcelona Convention defined this Convention, and in particular its Article 10 "Conservation of Biological Diversity"[5], and the revised Protocol on SPA, as the MAP and Mediterranean specific elements of the conceptual approach. In addition, the document "Priority Fields of Activities for the environment and development in the Mediterranean basin (1996-2005)", adopted on the same occasion, identified as one of the priority fields "Conservation of Nature, Landscape and Sites". The respective provisions of this chapter, related to threatened species, sites of natural and cultural value, wetlands, inspection mechanisms, land use tools, and regional action plans should be also considered as intrinsic parts of the conceptual approach.

Due to the multinational and multidisciplinary nature of the Project and its Mediterranean and MAP context, some specific operational approaches were applied:
- flexibility, in particular related to specific national contexts, sovereign rights of the Contracting Parties, and the applicability and acceptance of solutions and measures proposed,
- mobilisation and involvement of the relevant sectors of the society,
- cooperation with parallel programmes and initiatives, looking for synergy.

Concerning the geographical coverage of SAP BIO, it should be noted that its landward coverage respects the provisions of Article 1 of the revised Barcelona Convention. This Article states that "the application of the Convention may be extended to coastal areas, as defined by each Contracting Party within its own territory". In the case of SAP/BIO, this means that the notion of landward boundaries was applied in a flexible way, as defined by each country.

[5] Article 10: "The Contracting Parties shall, individually or jointly, take all appropriate measures to protect and preserve biological diversity, rare or fragile ecosystems, as well as species of wild fauna and flora which are rare, depleted, threatened or endangered, and their habitats, in the area to which this Convention applies."

As regards synergy, in addition to opportunities for and benefits from further cooperation and joint initiatives with international organisations and bodies, opportunities for enhancing cooperation and joint action, as well as for new initiatives within the MAP institutional framework, were taken into account.

5. POLICIES AND STRATEGIES: APPROACHES AND OPTIONS

A number of facts were determinant when approaching the formulation and selection of SAP/BIO policies and strategies. The essential inputs for defining national SAP BIO strategies were provided by regional documents and guidelines prepared specifically for the SAP BIO (a full list of them appears in Annex I). and discussed with the National Correspondents.

The strategies at regional level were formulated on the basis of: (i) national SAP/BIO inputs, (ii) the regional assessment presented in chapter 5, (iii) regional policies/strategies and documents already adopted, (iv) international legal documents, and first of all, (v) the relevant scientific and professional criteria.

In addition, the strategy selection criteria applied were as follows: significance of actions, equity, legal implications, financial implications, implementability, sustainability of expected results, flexibility and acceptability, predictability, reversibility, and socio-economic implications.

DRAFT STRATEGIC ACTION PLAN FOR THE CONSERVATION OF BIOLOGICAL DIVERSITY (SAP BIO) IN THE MEDITERRANEAN REGION

CONTENTS

PREFACE

About 150 million people, one third of the population of the Mediterranean coastal states, live in the coastal regions and islands. Economic activities in the coastal areas are constantly expanding. In addition, the Mediterranean region is the destination of about 200 m. tourists per year. A permanently increasing pollution has already resulted in disruption of or highly negative impacts on fragile ecosystems, impacts on quality of life of resident populations and loss of habitats and species. The resulting impacts on the Mediterranean coastal and marine biodiversity might be considered as dramatic. Present and future trends concerning adverse global phenomena, climate change in particular, are expected to worsen the situation.

The Mediterranean Sea covers only 0.7% of the world's oceans. Its continental-cradled position makes this "Inland Sea" a unique reservoir of European waters, connecting Europe to Asia and Africa in a biodiversity melting pot. It hosts 7.5% of the world's marine animal taxa and 18% of the world's marine flora and is possibly one of the richest seas for biodiversity in the world. The Mediterranean Sea may be considered as a hot spot of marine species diversity. The Mediterranean marine fauna and vegetation have evolved over millions of years in a unique mixture of temperate and subtropical elements, with a large proportion (28%) of endemic species. The uniqueness of Mediterranean biota comes from a combination of historical, morphological, chemical and biotic characteristics.

Also the biodiversity of the Mediterranean coastal ecosystems and wetlands is considered to be significant, because of the many sensitive habitats it includes for both flora and fauna species:

- Approximately 150 wetland sites have been recognised as of International Importance,
- Extensive sand dunes can be found all around the Mediterranean,
- There are thounsands of islands –very important for marine and migrating birds
- The region is reputed to have 13,000 endemic plants.

The rich variety of life in the waters and coastal zone of the Mediterranean Sea faces a bleak future due to growing human exploitation of nature and natural resources; the heaviest pressure connected to human activity is now to a great extent concentrated along the coast. The sea and the coast can be considered among the most threatened sites in the Mediterranean region.
Moreover the knowledge of Mediterranean biodiversity cannot be considered satisfactory, being neither complete nor systematic. Gaps in knowledge on Mediterranean biodiversity are evident at individual/population (genetic diversity), species and community/habitat level.

When the problems of biodiversity loss are defined in terms of their immediate causes, the response is to take defensive and often confrontational action, such as enacting laws, closing access to resources and declaring additional protected areas. Such responses are necessary in times of uncontrolled over-exploitation. They are seldom really suitable for changing the social and economic causes of the threats to biological diversity. When problems are defined in terms of their root causes a more constructive response can be stimulated, one that seeks cooperative effort to address the social and economic foundations of resource depletion. Conserving biological diversity needs to address both proximate and ultimate causes.

The complex threats to biological diversity call for a wide range of responses across a wide spectrum of public and private sectors, the implementation of national and regional actions and the participation and involvement of all the countries, stakeholders and users.
The answer to this wide and complex need is the elaboration of the present Strategic Action Plan for the conservation of marine and coastal biodiversity in the Mediterranean, achieved starting from the needs identified by countries, the available results and outputs so far

attained and with the participation and contribution of the widest number of actors. The elaboration process of SAP BIO consisted in an assessment at national and regional level of Mediterranean coastal and marine biodiversity, based on existing inventories and data bases.

OBJECTIVE OF THE STRATEGIC ACTION PLAN FOR THE CONSERVATION OF MARINE AND COASTAL BIODIVERSITY IN THE MEDITERRANEAN (SAP BIO)

The principal objective of SAP BIO is establishing a logical base for implementing the 1995 SPA Protocol, that is providing Contracting Parties to the Barcelona Conventions, international and national organisations, NGOs, donors and all other actors involved in the protection and management of the Mediterranean natural environment, with principles, measures and concrete and coordinated actions at national, transboundary and regional level for the conservation of the Mediterranean marine and coastal biodiversity, within the framework of sustainable use and through the implementation of the 1995 SPA Protocol.

The basic objective of this Strategic Action Plan is to be used within the context of the SPA Protocol to:

(i) foster the improving of knowledge of marine and coastal biodiversity
(ii) improve the management of existing, and favour the creation of new, Marine and Coastal Protected Areas
(iii) enhance the protection of endangered species and habitats
(iv) contribute to the reinforcement of relevant national legislation and national and international capacity building
(v) contribute to fund-raising efforts.

PRINCIPLES AND OPERATIONAL APPROACHES

The Rio principles, adopted by the United Nations Conference on the Environment and Development - UNCED, Rio 1992, should be considered as the basic ones to be taken into account for SAP BIO. Particularly relevant might be those related to:
(i) environmental protection as an integral part of the development process (pr. 4), (ii) poverty eradication (pr. 5), (iii) needs of developing countries (pr. 6), (iv) global partnership for conservation, protection and restoration of the earth's ecosystem (pr. 7), (v) capacity-building (pr. 9), (vi) participation (pr. 10), (vii) effective environmental legislation (pr. 11), (viii) precautionary approach (pr 15), and (ix) use of economic instruments and application of the “polluter pays” principle (pr.16). Each of these principles was applied, as appropriate, when formulating the respective approaches, policies and measures.

In addition, SAP BIO has been devised taking into account the targets formulated by the Johannesburg World Summit (September, 2002) and the following approaches:

- the participatory approach
- the holistic and ecosystem approaches
- the consistency principle
- the management and conservation principle
- the preventive, precautionary and anticipatory principle
- the responsible fisheries principle (FAO)
- the "no adverse effect" principle
- the "prevention better than last minute cure" principle
- the common but differenciated responsibility principle
- the principle of assistance, cooperation and partnership, in particular at regional level, not excluding potential bilateral and multilateral initiatives.

I. MEDITERRANEAN MARINE AND COASTAL BIODIVERSITY: STATUS, THREATS AND TRENDS

I. MEDITERRANEAN MARINE AND COASTAL BIODIVERSITY: Status, Threats and Trends

I. 1 ANALYSIS AND EVALUATION AT NATIONAL LEVEL

1.1. Introduction

The information presented below is based on an in-depth analysis carried out in 19 Mediterranean countries, following common guidelines, by national expert teams aiming at:
- identifying problems affecting biodiversity and their proximate/ultimate causes
- assessing their relative importance
- identifying national conservation priorities
- identifying remedial action.

The findings of the expert teams were further refined by national consultation processes carried out with different modalities and approaches that took into account the specific nature of each country (national rules, legislation, awareness and geographical extension). A detailed synthesis of the analysis carried out at national level appears in a separate document[1].

Overall, the rich biodiversity of the Mediterranean has not been studied enough; inventories are scarce, scientific research on it is very limited and uncoordinated (due to financial and administrative constraints) and public awareness of its functions and values should be increased. This combination of factors perhaps represents one of the key challenges in conserving the biodiversity of the region.

The availability of reliable data as well as the status of biodiversity differ between countries. Nevertheless there are several similarities and common situations as regards the species and habitats deserving particular care.

306 species belonging to Marine and terrestrial Mammals, Birds, Reptiles, Fishes, Crustaceans, Molluscs, Cnidarians, Sponges, Algae, sea Grasses and terrestrial flora and fauna appear on the list of threatened species. Notably in the list there are: the monk seal *Monachus monachus*, the sea turtles *Caretta caretta* and *Chelonia mydas*, the limpet *Patella ferruginea,* the sea grass *Posidonia oceanica* and the like.

Wetlands, steppes, river basins, rocky islands, sandy beaches, sand dunes, caves and underwater grottos, coralligenous assemblages, maerl beds, sea grass meadows, *Cystoseira* communities, vermetid reefs, marine lakes, underground water, vertical cliffs/islands, cliffs and wadis are among the most common habitats/assemblages deserving protection.

The main gaps to bridge in order to enhance knowledge of coastal and marine biodiversity and to better protect marine and coastal areas are:
- -Lack of basic knowledge of both physical and biological data and of spatial and temporal variation of marine and coastal systems, including statistical information concerning fisheries
- -Lack of adequate legislation and/or of its enforcement and overlap between the different subjects involved in the process of nature conservation
- -Lack of awareness at both public and governmental level
- -Lack of management of protected and coastal areas

[1] "Draft Synthesis of National Reports elaborated within the SAP BIO Project" – UNEP(DEC)/MED WG. 227/.4. Rev.1.

-Lack of funding for research and research facilities and specialists on species and on environmental issues.

1.2 Threats adversely affecting the states of marine and coastal biodiversity

From a country-by-country analysis, 149 specific threats affecting marine and coastal biodiversity have been identified. The following eight classes of threat can be derived. They are presented without ranking:

- **Uncontrolled coastal development and coastal tourism** include a series of seventeen problems quite widespread in all the Mediterranean countries. Most of these problems deal with coastal urbanization and increased tourism and also with aquaculture activities and coastal erosion. Tourism is also highlighted as a problem because of the excessive frequentation of Marine Protected Areas.
- **Fishing on sensitive ecosystems**. Fishing on *Posidonia* beds, on the coralligenous, on maërl beds, in small bays and caves; illegal fishing (extraction of date mussels, collection of commercial algae, offshore fishing by foreign vessels, poaching, use of explosives, etc.); incidental capture; over-fishing and lack of data and monitoring are the main problems identified by countries.
- **Invasion by non-indigenous species**. The consequent deformation of the natural dynamics and biodiversity, ballast water, out-competing of natural communities and tropicalization are the main emerging issues in this field.
- **Damming**. The main negative effects are: changes in food web structure, reduced freshwater supply to the estuaries, increasing salinity at river delta.
- **Pollution**, which includes a variety of problems, from eutrophication, light pollution and industrial/urban pollution to underwater pipeline deployment and harmful agriculture practices.
- **Global phenomena**, like desertification, soil erosion, sea level rise and the increase in salinity and water temperature.
- **Trade in endangered or threatened species**. Several endangered or threatened species populations are decreasing because of the takings for commercial purposes (sponges, sharks, turtles, sea horses, shells, etc.).

1.3 Priority actions

The priority actions identified at national level can be divided into four main groups, as follows:

- **Research, conservation, increase of awareness and reinforcement of legislation to protect populations of species or small groups of species**

Priorities are the monk seal, cetaceans, marine turtles, birds and sea grasses. A minor group of actions, aimed at safeguarding the coralligenous assemblage, the date shell, some shark species, sponge populations and marine vegetation can be assigned to this group as well.

- **Research, monitoring, mapping and increasing awareness of the value of wetlands**

Most of the suggested actions deal with the management of lagoons, the production of inventories and maps, lagoon restoration, increasing public awareness and creating a

computerized Wetland Information and Monitoring System (WIMS) for use by all relevant parties, especially for planners.

✍✍ **Assessment, monitoring, conservation strategies, awareness campaign, legislation and mitigation projects for maintaining biodiversity**

Many countries highlighted the lack of knowledge concerning biodiversity and proposed actions to fill this gap. These actions aim at doing studies to evaluate the biodiversity situation in the country, mapping sensitive habitats, establishing conservation strategies for coastal habitats, developing monitoring strategies for marine and coastal biodiversity and reducing the negative effects on coastal and marine biodiversity. The need for actions aiming at monitoring, reducing impact and controlling alien species is stressed in several Reports.

Other actions deal with the need to develop and/or update and/or implement legislation on marine and coastal conservation and to increase awareness and capacity-building at national level on issues connected with biodiversity and nature conservation.

Several actions aimed at establishing new protected areas and reinforcing those already existing are proposed. Finally actions aimed at promoting eco-tourism and others at building and carrying out research in artificial reefs are proposed.

✍✍ **Study on anthropogenic impacts and control of pollution**

Three groups of actions are proposed, dealing respectively with pollution, human activity along the coast and fishing and hunting. All are aimed at carrying out research or developing guidelines or actions to prevent pollution from domestic sewage, agriculture, industry, boat (waste water) or at regulating human activities such as fishing, hunting and coastal construction and tourism.

I.2 ANALYSIS AND ASSESSMENT AT REGIONAL LEVEL

2.1. METHODOLOGICAL REMARKS

The following section has been based primarily on the outcomes of the in-depth analysis made at national level (as summarized in Chapter III.1 of this document), and on regional-analysis reports and other documents issued by RAC/SPA concerning marine and coastal biodiversity. Also, other reports produced within the framework of other UNEP organisms, such as PAP/RAC (http://www.pap-thecoastcentre.org/), have been used.

Other sources used have been the following:

- National Reports on wetlands in a standard format, submitted by member states on the occasion of the Eighth Conference of the Contracting Parties (COP8) of the Convention on Wetlands (Valencia, November 2002)
- MedWet bibliography and experience
- Different documents from international organisms on the conservation and management of marine and coastal biodiversity, such as:
    - European Environment Agency (http://eea.eu.int/)
    - European Environmental Bureau (http://www.eeb.org/)
    - European Union (http://europa.eu.int/comm/environment/nature/)
    - FAO (http://www.fao.org/)
    - International Commission for the Scientific Exploration of the Mediterranean Sea (http://www.ciesm.org/)
    - The Blue Plan (http://www.planbleu.org/)
    - The Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (http://gesamp.imo.org/)
    - The MAB programme (http://www.unesco.org/mab/)
    - UN Environment Programme (http://www.grida.no/)
    - Ramsar Convention (http://www.ramsar.org/)
    - MedWet (http://www.medwet.gr/)

✍ Deliverables of European projects and electronic conferences on biodiversity, such as:

- BIOASSESS (http://www.gencat.es/mediamb/bioassess/)
- BIOMARE (http://www.biomareweb.org/)
- BIOPLATFORM (http://www.bioplatform.info/)
- ECOMARE (http://www.ctv.es/USERS/goni/)
- MARBENA (http://www.vliz.be/marbena/).

In addition, a diverse bibliography (scientific journals, reports, books…) about Mediterranean coastal and marine biodiversity has been used where pertinent.

It should be noted here that an exceptional consensus exists between these sources as to the main issues that affect coastal zones and their wetlands, as well as marine habitats in the Mediterranean.

2.2. THE PRINCIPAL PROBLEMS CONCERNING MARINE AND COASTAL BIODIVERSITY

The main issues of primary importance within the marine and coastal biodiversity context are listed below:

- Simplification of coastal and marine community (pelagic, planktonic, benthic)
- Dwindling population of sensitive species
- Decline of endangered species
- Decreasing population of fishery target species
- Habitat destruction, fragmentation, erosion or disturbance
- Deformation of natural dynamics of biodiversity
- Biological invasion.

In addition, other issues of a general nature and with indirect impact were identified:

- gaps in knowledge, (scientific, technical, management)
- inadequacy of several existing systems for the governance of biodiversity conservation, in particular:
  - weakness in institutional and human capacity for implementing, monitoring, assessing and updating
  - insufficient participation, involvement of the general public and stakeholders
  - lack of incentives
  - gaps and conflicts in legislation
- inadequate level of public and authority awareness.

2.3. MAIN THREATS AFFECTING MEDITERRANEAN MARINE AND COASTAL BIODIVERSITY

2.3.1 Pollution

Status

Pollution of marine and coastal areas is a recurrently cited problem threatening biodiversity. Most of the effects of pollution for Mediterranean biodiversity are treated in the "Strategic Action Plan to Address Pollution from Land-based Activities (SAP MED)", implemented by UNEP MAP/MEDPOL[1].

Types of pollution can be categorized as (1) organic, (2) microbiological, (3) chemical, and (4) radioactive (including thermal effluents). The causes of pollution can be identified as:

- Urban pollution: untreated sewage discharge (via rivers or outfalls), solid waste disposal (dumping)

[1] This Project aims at *"improving the quality of the marine environment through the prevention of pollution, and by reduction and, as far as possible, elimination of pollutant inputs, whether chronic or accidental; and to develop and implement national programmes of action for the protection of the marine environment from land-based sources"*.

- Industrial effluent: persistent organic pollutants, heavy metals, organometallic compounds, organohalogen compounds, radioactive substances, nutrients, and hazardous waste (such as lubricating oil or obsolete batteries)
- Agriculture: run-off of pesticides, fertilizers, metals, pathogens, salts, trace elements, etc.
- Aquaculture[2]
- Navigation and sea traffic (including the effects of ballast waters, cleaning tanks, and oil spills due to accidents)
- Thermal pollution due to power stations
- Light pollution
- Noise pollution
- Desalination of seawater
- Other (plastic debris, mucilaginous aggregates…).

Pollution of the coastal zone and its wetlands by solid and liquid domestic and industrial by-products is reported as a major problem by many Mediterranean countries, as the lack of appropriate treatment facilities is very common. In particular, chemical and petrochemical industries concentrated around major coastal cities are a major source of pollution[3]. To this is now added agricultural pollution from run-off containing high concentrations of fertilisers, pesticides and other agrochemicals. Their combined impact on the health of habitats and on particular species is often quite high. It should be noted, however, that this is not an irreversible effect, and that after the removal of the sources of pollution biodiversity can be re-established to a considerable degree.

The three last sources of marine pollution are relatively new, and will be treated separately in the following sections.

- *Noise pollution*

Undersea noise pollution comes from a variety of sources including large ships, underwater exploration and mining, and sonar systems. As examples:

- Supertankers cruise the oceans creating a sound pulse of 190 decibels or more at or below the 500Hz range; smaller boats such as tugs and ferries typically create a sound wave of 160-170 decibels
- Modern military sonar systems generate extremely loud, low-frequency sounds that can travel for hundreds of miles
- So called “pingers” are devices that emit a shrill sound to scare away marine mammals (and other species) from fishing boats and aquaculture installations.

The “white noise” generated by these human activities can block communication attempts between cetaceans or limit it to a very small area, or are so loud that they can cause physical pain to animals exposed to the sound.

- *Desalination of sea water*

Some National Reports (e.g. Spain) face the possibility that desalination has become important as a source of fresh water for human consumption and industrial and agricultural use. This process is likely to affect marine littoral species and communities through the combined effect of discharging hypersaline water (typically containing 70-80 g l^{-1} of salt), and the products used during the desalination process (products to wash and treat membranes and filters, flocculants,

[2] Issues of aquaculture practices will be treated below, due to their combined, complex potential effects on biodiversity.

[3] A typical case are the cities of Algiers, Oran and Annaba in Algeria, or Cartagena in Spain.

coagulants). However, the environmental impact of such discharge is not yet known, and several studies are being done at present.

- *Other threats to Mediterranean marine biodiversity*

National Reports also cite as threats to marine species and communities the following:

- Floating plastic objects and debris, mainly affecting sea turtles and marine mammals.
- Mucilaginous aggregates can sporadically appear in coastal waters[4]. The appearance of these benthic aggregates shows a seasonal pattern, becoming noticeable in the field as small, yellowish tufts in early spring that go on, until the end of summer forming, under favourable environmental conditions, extensive patches at the seabed, causing local episodes of anoxia and hindering the feeding mechanism of filtering species. Depending on the topographical features of the rocky bottom and local hydrodynamic conditions, benthic mucilaginous aggregates may develop in a wide depth range growing on various algal communities, *Posidonia oceanica* meadows, gorgonians and other benthic organisms. The relationship between the appearance of these aggregates and episodes of eutrophication or organic pollution remains unclear.

Problems

The main general consequence of these threats for marine biodiversity are, namely:

- Occurrence of eutrophication events, producing hypoxia/anoxia of water and sediments, algal blooms and, eventually, red tides
- Decreased species richness of benthic assemblages, due to the selection of a few opportunistic species
- Reduced density and biomass of benthic species
- Shifts in the relative importance of the different trophic guilds, and in the size of benthic organisms
- Alteration (and even destruction) of seagrass beds, through direct and indirect effects
- Accumulation of persistent substances (heavy metals, organic pollutants) in marine organisms, producing deformations in larval, juvenile and adult individuals of marine species, and causing an increase in mortality.

Several National Reports underline the effects of marine pollution on specially sensitive and endangered Mediterranean species, such as sponges, sea turtles, and cetaceans.

2.3.2 Impact of exploitation of natural resources

2.3.2.1 Marine fishing

Status

Negative impacts of inappropriate fishing activities on marine biodiversity are recorded in most of the Mediterranean countries, although the countries have approached this question differently.

As regards geographical distribution, sea fishing and aquaculture activities extend over areas that cover territorial waters, adjacent waters and the high seas[5].

[4] This phenomenon is caused by the secretion of exo-polysaccharides by filamentous, fast-growing multi-cellular diatoms, together with free-living brown algae, etc., which, in their turn, aggregate small pelagic particles (micro-organisms, phytoplankton, faecal dejections, organic and mineral particles).

[5] The Exclusive Economic Zone (EEZ) as defined by the Convention on Maritime Law, which can extend as far as up to 200 miles off the coasts, has not yet been declared by the Mediterranean states; certain

The most usual types of fishing in the Mediterranean are traditional fishing (with reference to the techniques used), trawling, seine, long-line and drift-net fishing. There are many fishing fleets (compared to the available resources), estimated at 140,000 units. Fishery is essentially coastal; fishing on the high seas (done outside the countries' territorial waters) targets a more restricted number of resources, particularly straddling stocks (made up of species whose biological cycle develops equally well in territorial waters and out at sea: fish, crustaceans, cephalopods and elasmobranchs) and pelagic fishes described as major migratory organisms, particularly tunas and swordfish.

The important socio-economic implications of fishery activity makes tacking this issue particularly delicate.

The impacts of fishing activity are felt by both benthic and pelagic species and are of various kinds:

- Direct over-exploitation of commercial species,
- Indirect ecosystem effects of fishing

Problems

- *Direct effects of over-fishing on the target species*

A feature of Mediterranean fisheries is their high level of exploitation, that often places the resources in a state of over-exploitation, and in the best of cases optimum exploitation, particularly in the three European countries which alone are responsible for 60% of fisheries production (Spain, France and Italy). Pressure on resources is exacerbated by the ever-growing demand for sea products, the Mediterranean hardly supplying one-third of the demand from the countries bordering on it; this ever-increasing pressure is accompanied in several fishing areas by the strong effects of other impact factors (see below), giving rise to situations that are critical for vulnerable habitats.

Concerning marine species that are threatened by fishing, those most cited are the cartilaginous fishes, particularly sharks (e.g. *Mustelus mustelus*, *Scylliorhinus stellaris* and *Squalus blainvillei*) and rays, some sponges (*Hypospongia communis*, *Spongia* spp. etc.), red coral (*Corallium rubrum*) and some crustacean species (such as *Homarus gammarus, Palinurus elephas*). Many fish species are overexploited (*Anguilla anguilla, Epinephelus marginatus, Sciaena umbra, Thunnus thynnus, Xiphas gladius*, etc.). Some of them, such as the Mediterranean bluefin tuna, have probably reached a maximum level of exploitation.

Special attention should be paid to the effects of harvesting wild populations of bluefin tuna (*Thunnus thynnus*) to be fattened in cage farming facilities. Actually this is not a true aquaculture practice, since the life cycle of this species is not closed in reared conditions. The enormous increase in this practice in the Mediterranean region[6] is greatly contributing to the collapse of stocks. Small species caught to feed tuna (e.g. mackerel) are also likely to be over-exploited.

Other species identified as threatened are also directly exploited by professional or pseudo-professional (i.e. illegal but lucrative) extractive activity, such as some species of mollusc (e.g.

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states, however, have extended their national jurisdiction beyond 12 miles (width of the territorial waters) as is the case for Malta (in 1978) and Algeria (1994), whilst in 1997 Spain claimed a protected fishing zone. Although most of the Mediterranean comes under the high seas system, it remains equally true that the present legal situation will not necessarily last *ad infinitum*.

[6] Production of tuna has risen from 173 tonnes in 1997 to 3 682 tonnes in 2000, the Murcia Region (SE Spain) being the most important producer of this species.

III. COORDINATION AND SYNERGY BETWEEN RELEVANT ORGANISATIONS

1. INTRODUCTION

In the Mediterranean, a vast number of organisations exist that have a degree of involvement in biodiversity. These include government services, intergovernmental organisations, local, national and international NGOs, academic institutions and research centres and many others. Their contribution to the further refinement and implementation of the Strategic Action Plan for Biodiversity may by:

- ✍✍ contributing to producing the knowledge essential for biodiversity comprehension, including applied research, inventories, mapping of habitats and species distribution, long-term population studies, etc.
- ✍✍ contributing to actually carrying out biodiversity conservation activities both at policy level and in the field.

2. SYNERGY AND COOPERATION

Cooperation and coordination between the organisations concerned by the SAP BIO should be assured at three levels:

- Coordination at national level
- Collaboration and coordination of the initiatives of intergovernmental organisations
- Coordination among NGOs whose activities cover the whole Mediterranean basin, or at least a large part of it.

Three different categories of organisation can be identified:

- Organisations/project members of the Advisory Committee already involved in the SAP BIO Project. The main areas to which these organisations/projects might be able to contribute significantly appear in Annex IV (Table 1).

- Other potential partners . Organisations and projects identified as other potential partners in the implementation of SAP BIO are listed Annex IV (Table 2)[1].

- Other MAP components . So far, RAC/SPA's cooperation with other MAP components, within the wider context of the RAC/SPA mandate, relates to a number of issues, interlinked or requiring integration. There are evident opportunities and needs for further strengthening cooperation, such as Synergy between RAC/SPA and other RACs and MAP Projects[2]

Organising a Mediterranean Conference to launch the implementation of the SAP BIO, with the participation all the potential partner organisations, should be the first step in cooperation and promoting synergy between international organisations for implementing the SAP BIO. The preparation and signing of Memoranda of Collaboration between the partner organisations should be the main output of this Conference.

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[1] The list should not be considered as definitive, but as an open call to partnership, to which some organisations might respond and others not, and which could be added to in the future

[2] Following the basic SAP/BIO strategies, this is related in particular to:
MED POL: further cooperation on pollution monitoring and abatement, the harmonised implementation of SAP MED and SAP/BIO and exchange of respective experience, trends, global change
PAP/RAC: integration of SAP/BIO actions and/or joint activities within ICAM, IWRM and IRBM, selected actions within CAMP projects, socio-economic aspects of SAP/BIO
BP: systemic prospective sustainability analysis, trends analysis, sustainability indicators for bioconservation.
ERS/RAC: use remote sensing to assess the monitoring of Mediterranean marine and coastal biodiversity
REMPEC**:** Mitigation of shipping-related impacts on marine biodiversity

Charonia lampas or *Lithophaga lithophaga*), some species of big decapod crustacean (such as *Scyllarides arctus*), and of course fishes,.

Above and beyond the generalised effects of an over-great fishing effort, several fishing gear have particularly harmful effects: "tonailles", 'long line' palangres and drift-nets, especially used for tuna and swordfish fishing, as well as fine-mesh fixed nets staked out for over-long periods (often at night) and seines, particularly the sliding seine for tuna fishing and dragged beach seines.

- *Indirect effects of fishing*

Among these effects, one can cite those affecting populations of both target and non-commercial species, such as:

- effect on populations (either commercial or not), due to by-catching, discarding, ghost fishing, etc.
- effect on other non-commercial (often endangered) species (chondrichthyans, sea turtles, sea birds, marine mammals…), incidentally captured in the fishing engines (and sometimes deliberately killed when trapped in passive, static gear)
- increased fishing on target, less valuable resources at lower trophic levels, due to decreases in the abundance of valuable species high in the food chain.

Other more complex effects of fishing activities are:

- cascading effects on the trophic structure of the marine ecosystem by the harvesting of top predators, either pelagic (tuna, etc.) or demersal (groupers, sea bass, etc.) species
- habitat disturbance or destruction (with special emphasis on particular habitats, such as *Posidonia oceanica* meadows and maërl beds).

Concerning the last point, the effects differ from one gear to the next, the most harmful being (1) active gear, particularly trawls, often used illegally at shallow depths, causing the destruction of vast stretches of *Posidonia* meadows and coralligenous bottoms, (2) dragnets for catching shellfish, (3) explosives and chemical substances that intoxicate fish, and also, though perhaps having a more local effect, (4) the gathering of algae (used for cosmetic and pharmaceutical purposes). Other equally illegal fisheries cause the destruction of bottoms, such as the exploiting of the date shell (*Lithophaga lithophaga*).

The problem of fishing affecting marine biodiversity is likely to increase due to recent improvements in fishing and navigation technology. This situation is leading to the risk that the fishing effort is maintained despite the eventual reduction of the fishing fleet.

2.3.2.2 The case of uncontrolled recreational fishing activities

Status

The increase of coastal tourism in the Mediterranean region is accompanied by an enormous increment in recreational sport fishing, associated to gear such as angling, handline, spearing, longline, rod-and-reel, etc.

Problems

- Angling and handline fishing threaten juveniles of most littoral, demersal fishes, because they are practiced on nursery areas (shallow rocky bottoms, seagrass beds)
- Spear fishing is one of the most noxious activities on littoral bottoms for endangered species such as groupers (*Epinephelus* spp) and brown meagre (*Sciaena umbra*), as

demonstrated by the huge differences in their abundance and mean size between Mediterranean areas protected and non-protected from this kind of fishing

- Regarding rod-and-reel, and longline fisheries, these are likely to heavily affect populations of swordfish and blue shark, while significantly affecting other species of commercial interest, such as jacks (Carangidae), tunas (Thunnidae) and dolphin fish (Coryphaenidae)
- A real problem of interference with professional fishery exists, since sport fishers usually market their catches illegally. We can also include in this group the pseudo-professional fishing, i.e. sport fishers utilizing professional gear such as traps or fishing nets, or targeting taxonomic groups that are forbidden to non-professionals (such as sponges, cnidarians, molluscs, echinoderms and crustaceans)
- A major problem with recreational fishing is the absolute lack of rigorous control of composition, abundance and size of catch; some studies have revealed that the biomass caught by sport fisheries is of the same order of magnitude as coastal artisanal fisheries.

2.3.2.3 The case of wetland natural resources

Status

Wetland resources are useful for the populations living around them for food, fibres and biomass. In some cases, though, the over exploitation of these resources leads to their collapse.

Problems

The following main problems can be listed:

- Fishing in coastal lakes and lagoons, where the use of finer nets and other methods can lead to the dramatic decrease of catch
- Excessive hunting of wetland and coastal birds can lead to their populations, dwindling markedly often beyond recovery levels
- Overgrazing of coastal areas can also result in the complete disappearance of vegetation and subsequent erosion of the topsoil
- Uncontrolled and excessive sand extraction from beaches and river beds for use in construction is a major problem in many countries, as it leads to the destruction of habitats, to erosion and to irreparable structural damage of natural formations
- Filling wetlands to obtain building or farm areas.

2.3.3 Uncontrolled expanding urbanization and construction of infrastructure

Status

Large parts of the coastal zone are now being rapidly converted from a natural state to an urbanised one, through urban expansion, construction of economic/recreational and other facilities, and technical infrastructure, such as harbours[7], airports[8] and road networks[9].

Problems

- The result is the total destruction of valuable habitats, or at best their fragmentation. It must be noted that most of the constructed and planned infrastructure is devoted to supplying facilities requested by the tourist industry. But, by doing so, it degrades the very

[7] Required both for the intensification of fishing activities and for nautical tourism.

[8] Many of the airports in the Mediterranean are constructed within wetlands, such as the ones in Corfu, Larnaca, Marseilles, Thessaloniki, Tunis.

[9] Very often built too close to the shoreline, as in some parts of Cyprus and the Malta islands.

resource on which it relies: the beauty and attraction of a pristine natural environment. In addition, unplanned distribution of land uses generates further problems of conflict with tourist activities

- In the marine environment, these infrastructures cause the modification of sedimentary coastal dynamics, and the subsequent destruction of large extensions of valuable marine coastal habitats, such as *Posidonia oceanica* meadows and maërl beds. (i) Special mention should be made of the extraction of marine sand to build artificial beaches; the deleterious effects of both types of action for sensitive marine ecosystems have been repeatedly demonstrated in the Mediterranean littoral. (ii) A special case of the physical alteration of the sea bottom is the effect of installing pipelines and sewage discharge outfalls (as well as the effects of urban and industrial effluent, discussed below).

2.3.4 Invasive species

Status

These have been either introduced directly by people (accidentally or on purpose), or they have been allowed passage by human actions (such as the opening of the Suez Canal, in the case of Lessepsian migrants). The algal species *Caulerpa taxifolia* is most popularised, although approximately 400 more alien species are already present. Frequently cited sources of exotic species are introduction by aquaculture (bait, aquariums, commercial species[10], planktonic organisms from imported live shellfish), and accidentally by ships (fouling, ballast waters). Plastic debris floating in the sea has been proposed as an important source of colonisation of alien species. In recent years such introduction of alien species has been favoured by the rise in temperature in the region (see below). Also, some fishing practices (e.g. trawls) are helping spread exotic algal species such as *C. taxifolia* and *C. racemosa* (the latter species has experienced a spectacular spread during recent years).

Problems

Potential effects of invasive species are:

- Competition or predation, and subsequent replacement of native species (e.g. replacement of *Penaeus kerathurus* by *Parapenaeus monoceros* in the Gulf of Gabès, the second species being of much less commercial value; spread of *Caulerpa taxifolia* on autochthonous benthic habitats and consequently uniformity of sea bottom)
- Hybridising with native species
- Introduction of pathogens
- Loss of habitats.

All these effects are likely to result in the loss of autochthonous marine and coastal biodiversity.

2.3.5 International trade in endangered species

Status

Although many Mediterranean countries are Parties to CITES, the international trade in endangered species is widespread in several Mediterranean countries; such is the case of turtles, sea horses, used as 'souvenirs' in many countries, or even, in one-off cases, sent to the Far East because of their pretended beneficial properties in some traditional medicines. On the other hand, the inclusion of Mediterranean species in the international aquaria market has not been detected, and, in any case, is unproven.

[10] Such as *Crassostrea gigas* in France, and *Ruditapes philippinarum* in Italy.

Problems

Global trade and economic policies have a profound impact on resource use, national development and income, and ultimately on biodiversity.

- Particularly important is the direct impact of this illegal traffic on the decline of endangered species
- Another effect of international trade is the risk of that allochthonous, invasive species will spread more widely (see below).

2.3.6 Global warming, sea level rise, and ultraviolet radiation

Status

Global warming is acknowledged to affect Mediterranean biodiversity. As was convincingly documented by the International Panel on Climate Change (IPCC), it is due to anthropogenic reasons mainly to atmospheric pollution by 'greenhouse gases'.
And as a consequence of ozone depletion (which is not related to climate change), UV-B radiation is increasing.

Problems

- Although it is just becoming visible in the region[11], the rise in sea level will certainly have a major impact, especially on coastal wetlands
- Temperature increase will affect coastal vegetation (vegetation belts on the northern coasts shifting northward, on southern coasts will be affected by increased aridity); rainfall pattern will be affected, soil humidity will decrease, water scarcity in some areas will increase
- Another event related to climate change is the "tropicalisation" of southern marine waters (and the subsequent appearance of exotic species[12]). Examples of this are the recent observation of Atlantic fish species in south-western Mediterranean coastal waters, or the increasing spread of Lessepsian migrants in the Adriatic Sea (such as *Epinephelus coloides*).This phenomenon also constitutes a risk for the species situated close to the upper limit of their optimal thermal habitat[13]. This is more evident in the marine environment, but also in the coastal and wetland one. The need for adequate physical and biological monitoring of this trend has become evident.

- There is little data that predicts effects on marine systems due to the increasing of UV-B radiation. It has been suggested that there will be reduced productivity of phytoplankton in surface waters, which includes the open ocean[14]. There is also concern about impacts on diatoms on sand and mud flats. More research is needed before reliable predictions can be made of the effects on marine biodiversity.

2.3.7 Changes in land use

Status

Generally speaking, Mediterranean countries have undergone drastic land use changes, from natural to bio-cultural landscapes (linked to traditional activities), and from there to urban

[11] A good indicator is the dramatic increase of the days when of St. Mark's Square in Venice floods.
[12] See, for example, the recently published "CIESM Atlas of Exotic Species" (http://www.ciesm.org/atlas/).
[13] As an example, these temperature changes are likely to be the proximate cause of the mass mortality of benthic invertebrates that occurred in the summer of 1999 in the north-western Mediterranean.
[14] See http://gesamp.imo.org/no62/index.htm.

environments. More recently, changes in agricultural use (namely from dry to irrigated practices) cause even greater threats for Mediterranean biodiversity. This phenomenon is associated with:

- intensive, generally harmful agricultural practices (green houses, use of biocides, organohalogen compounds, fertilizers, etc.)
- manipulation of water regime for irrigation (by damming, construction of canalisations, inter-connection of river basins, etc.)
- drainage, and even exhaustion of ground waters
- other activities: mining
- in some sites, reversion of this trend by reforesting wide areas of degraded landscapes, in some cases using autochthonous species, but not always with adequate planting techniques.

Problems

The main threats for coastal biodiversity of this phenomenon come from the following:

- Desertification (including soil erosion and increase in soil salinity)
- Destruction and fragmentation of sensitive coastal habitats (coastal cordilleras, wetlands, deltas, coastal plains, etc.) due to uncontrolled ploughing up, coastal erosion, fire, urbanization, construction of transport infrastructure, etc.

Beach erosion, as well as erosion of sandy spits dividing lagoons from the sea, is a common problem. To a large extent it is due to the straightening of rivers and torrents, thus increasing the speed of their flow and their impact on coastal currents, and the construction of dams, which retain silt and other materials necessary for the structural integrity of natural coastal elements. In many countries, excessive sand and pebble extraction from both beaches and river beds (especially torrents and oueds) plays an additional negative role.

For its part, marine biodiversity suffers from these threats due to land use changes, such as:

- Changes in the sedimentary imbalance, due to shifts in the hydrological regime. Two scenarios are possible: (i) increase in the frequency and intensity of flash floods, producing catastrophic episodes of turbidity (leading to hyper-sedimentation), and (ii) reduction in the sedimentary deposits (leading to erosion)
- Variation in the inputs of nutrients to coastal areas, which are likely to: (i) affect the volume of fishing catches, (ii) produce eutrophication episodes, etc.
- Probable arrival in the sea of chemical substances that form the compounds used in agriculture.

A further example of the strength of land-sea interaction is the influence of flash floods (whose intensity depends on the degree of desertification) on coastal water quality, and subsequent effects on benthic assemblages, such as *Posidonia oceanica* meadows, this process being exacerbated by the presence of coastal works near the “oued” mouth.

2.3.8 Uncontrolled recreational activities (excluding fishing)

Status

About 200 m. tourists per year visit the Mediterranean region, producing incredible and often uncontrolled development of recreational activities, mainly in coastal areas and shallow water, in particular during the summer.

Problems

Over-frequentation by tourists of natural, well-conserved sites constitutes a real problem in some localities, by their action of trampling, noise, lights at night, etc., or more specific issues, such as disturbing turtle nests due to beach use or driving of 4x4 vehicles on coastal plains. In

the marine environment, the main problems are the trampling of midlittoral and shallow infralittoral bottoms, and over-frequentation by divers, causing erosion of sensitive ecosystems, such as the coralligenous, or the modification of fish behaviour due to feeding practices. In recent years, the ever-growing success of sea-watching activities is becoming a potential source of impact for whale and other cetacean populations[15].

2.3.9 Scarcity of fresh water

Status

Population growth results in an increasing demand for fresh water. This is exacerbated by tourist consumption, which is usually much higher than the corresponding levels for local inhabitants.

Problems

Fresh water is necessary for biodiversity, particularly for wetland-related habitats and species. Wetlands in turn, when their functions are intact, play a major role in the water cycle and their degradation contributes to a water shortage, thus establishing a classic vicious circle. The problem is compounded by the pollution of freshwater sources through wastewater and agricultural run-off. Moreover the scarcity of fresh water will probably increase in some areas due to global change.

2.3.10 Inappropriate aquaculture practices

Status

Aquaculture production in the Mediterranean has undergone a drastic increase in recent years[16]. The impacts of inappropriate aquaculture can come from several sources:

- Waste of food non-consumed by fish (estimated as 10-30% of total, depending on the feeding method)
- Products of fish metabolism (faeces, pseudo-faeces, and excretions)
- Chemical treatments used to avoid the accumulation of fouling organisms on nets
- Chemical products to treat fish diseases and parasites.

Problems

The effects of fish farms in the sea can be multiple:

- Nutrient enrichment of the water column surrounding the aquaculture installation, causing the increase of primary production, and also the attraction of pelagic, shoaling fish species under and near fish farms
- Degradation of the bottom surrounding the farms, and, specially, increase in the proportion of fine fractions of sediments, deeply altering soft bottom and seagrass communities
- Chemical pollution and bio-accumulation of anti-fouling and pharmacological products
- "Genetic pollution" of wild populations with individuals of reared species escaping from the cages (although no studies have been done on this particular subject)
- Visual degradation of coastal landscapes
- In some cases, socio-economic effects derived from lack of management studies
- Invasion of natural zones by alien species (see above).

[15] See the "Guidelines for commercial cetacean-watching activities in the ACCOBAMS area" (available at http://www.accobams.mc/).

[16] The regional aquaculture production increased from 78,180 tonnes in 1984 to 248,460 tonnes in 1996.

Special attention should be paid to the growing tuna fattening activity in the Mediterranean. Besides its effect on the wild population of Tuna (see above), this activity causes degradation of sensitive habitats (*Posidonia* meadows, etc.) and nutrient enrichment of the sea water.

2.4. GAPS REGARDING MEDITERRANEAN COASTAL AND MARINE BIODIVERSITY

In practically all the countries surrounding the Mediterranean there exist scientists, teachers, higher degree courses and publications in the area of biodiversity. Yet the knowledge of biodiversity cannot be considered satisfactory, it being neither complete nor systematic. This is the result of many factors, but especially the lack of consistent policies in relation to biodiversity, with clear objectives and agreed methods, and the allocation of sufficient funds for biodiversity-related research.

Gaps in knowledge of Mediterranean biodiversity can be observed at the individual/population (genetic diversity), species and community/habitat level.

2.4.1 Genetic diversity[17]

Knowledge about the genetic diversity of Mediterranean species is still scarce and fragmented, since very few laboratories undertake genetic studies on a small number of species (regarding marine species, these studies concern mainly algae, seagrasses, sponges, cnidarians, polychetes, molluscs, crustaceans, echinoderms, fishes, and marine mammals). In addition, the technical capabilities (both material and in terms of human skills) for performing such work are concentrated in a few northern countries.

2.4.2 Species diversity

Knowledge about the presence, distribution, abundance, and conservation status of Mediterranean marine and coastal species is unevenly distributed between taxa and regions. In general, all Mediterranean states have species lists, but they are mostly incomplete. In fact, the completeness of species lists is rather an indication of the effort devoted to studying each part of the Mediterranean, since the main problem identified by the National Reports and other documents at this level is the lack (and even the decreasing number) of taxonomy specialists in most of the plant and animal groups (see below).

Gaps exist concerning the taxonomic knowledge of Mediterranean marine and coastal species, from the likely existence of unknown, new species to, especially, the regional inventorying of known species, and the ascertaining of their distribution, habitat requirements, abundance and states of conservation. This is particularly true for coastal zones, while in wetlands the situation has improved in recent years[18]. This is even truer in the case of the less conspicuous organisms (fungi, bacteria, protozoa, planktonic species, etc.).

Another issue needing to be addressed from the taxonomic point of view is the current spread of invasive, alien species.

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[17] The importance of knowing the genetic diversity of marine organisms comes from the fact that populations with higher genetic diversity are more likely to have some individuals that can withstand environmental change and thereby pass on their genes to the next generation. On an evolutionary time scale (over many generations), genetic diversity is higher in species that characterise unstable, stressed environments compared with counterparts from more stable environments. However, on an ecological time scale (few generations), stress reduces genetic diversity. Therefore, information and understanding of the genetic diversity of Mediterranean species is of great importance for achieving a correct management of biodiversity, especially if we consider the rapid, recent faunal and vegetation shifts occurring after climatic changes and invasions.

[18] Mainly through the work of BirdLife International, the MedWet Initiative and Wetlands International.

The real problem is that "purely" taxonomic expertise is rapidly declining in many countries, and, furthermore, that the availability of experts in the taxonomy of most of the groups is strongly concentrated in a few countries (mostly situated in the northern part of the Mediterranean). In addition, most of the work done in this domain has been lost due to its being poorly circulated in the normal scientific circuits.

2.4.2.1 Threatened species

There have been various attempts to establish lists of endangered species in the Mediterranean, which have met with various degrees of criticism. Annex II and III to the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean, adopted in November 1996, provide respectively a list of endangered or threatened species and a list of species whose exploitation should be regulated, which are of general acceptance[19].

It should be noted here that knowledge of the very important freshwater fish in the region is very limited, although they merit much greater attention.

Analogously, the National Reports, as summarized in Chapter 3, jointly give an indication of those marine and coastal Mediterranean species considered as threatened at national level; the list includes 306 species including algae, seagrasses, terrestrial flora, sponges, cnidarians, molluscs, echinoderms, crustaceans, fishes, reptiles, birds, mammals and some terrestrial invertebrates.

2.4.3 Communities and habitats

The Mediterranean Sea is relatively well known with respect to the definition and main characteristics of the different types of habitats. Important coastal habitats are:

- Sand dunes, highly fragile ecosystems, with a considerable degree of floristic endemism
- Coastal wetlands, particularly lagoons and river deltas
- Rocky coasts, both from the floristic point of view, and as nesting sites for marine birds
- Small islands, due to their importance for marine birds and those on migration.

Some of the Mediterranean marine benthic communities are among the most diverse marine habitats in the planet, such as:

- Seagrass meadows (*Posidonia oceanica*, *Cymodocea nodosa*, *Zostera marina)*
- Midlittoral bioconstructions (*Lithophyllum byssoides* rim, vermetid platforms)
- Bioconstructions of *Cladocora caespitose*
- Coralligenous community
- Marine caves
- Maërl and rhodolithes beds
- Deep bottoms ("white corals", seamounts, submarine canyons).

Nevertheless, important gaps still exist in the description of those communities, in terms of:

- Complete checklist of species forming each community, and their ecological features (such as relative abundance, environmental requirements, trophic relationships, etc.),

[19] Complete list is available at http://www.rac-spa.org.tn/

- o Spatial and temporal "normal" variability of abundance, biomass and other assemblage variables, at different scales (from metre to thousands of kilometres, and from days to decades)
- o Description and GIS-based mapping of their geographical distribution
- o Ascertaining of the ecological factors determining their spatial and temporal dynamics on each scale.

This is even truer in the case of under-sampled benthic communities, such as those inhabiting deeper bottoms.

2.4.4 Other problems affecting knowledge of Mediterranean biodiversity

The National Reports frequently cite the following issues as essential for improving current knowledge about Mediterranean biodiversity:

- Need for raising public awareness and participation
- International cooperation
- Gaps in legislation and conflicting laws.

2.4.5 Improving knowledge

An analysis of all the sources available confirms that the knowledge of Mediterranean biodiversity is not sufficient to provide a solid base for a long-term conservation and enhancement action plan. It is clear that efforts to complete it must be included as a priority measure in the SAP BIO. This of course will not be sufficient and parallel funding will be required from other national and international sources.
On the other hand, obtaining the knowledge required is a process that requires considerable human and financial resources, and will consume a lot of time. The degradation, however, of many habitats and species is proceeding at a rapid pace in many sensitive areas, and measures to stop and reverse it cannot wait. The challenge, therefore, of the SAP BIO is to find a balance between both medium- and long-term knowledge building activities, and short- and medium-term conservation actions.

Two main measures are recurrently emphasized by the National Reports, these being essential parts of a regional strategy:

- Enhance research efforts to further improve our knowledge
- Need to constitute regional and national monitoring programmes on biodiversity.

2.5. MANAGEMENT OF MEDITERRANEAN MARINE AND COASTAL BIODIVERSITY

From an analysis at national level, a series of issues emerged concerning the management of Mediterranean coastal and marine biodiversity at international, national, and local level of intervention.

2.5.1 Main premises concerning the management of Mediterranean biodiversity

2.5.1.1 Need for integrated management of the coastal zone[20]

Most of the threats suffered by marine organisms and communities in the Mediterranean Sea come from the effects of human activities taking place on land, such as agriculture, industry, urbanization, tourism or river regulation. As examples of the extent of this inter-dependence, consider the strong relationship between run-off of Mediterranean rivers (e.g. Ebro, Rhône) and fish landings.
This is a central issue if we consider that about 145 million people live in the Mediterranean-border regions (i.e. 34% of the whole population inhabiting bordering countries, estimated at 427 million people in 2000), and that the whole of the Mediterranean countries constitutes the most touristic region in the world, being at present the destination for nearly 200 million international visitors[21]. Moreover, the latest projected demographic figures estimated for the Blue Plan put the population of all Mediterranean countries at 523.5 million by 2025. The effects of economic activities developed on land in the Mediterranean regions constitute a dramatic pressure for the preservation of marine biodiversity. Therefore, any initiative aiming at preserving Mediterranean biodiversity has to consider managing land-based activities as well, given the magnitude, importance and strength of land-sea interaction. This is to say, principles of integrated management are to be applied, especially in the case of littoral areas.

2.5.1.2 The socio-economic aspects of bio-conservation and introduction of supporting economic instruments

There is growing evidence of the need for a much deeper understanding of the socio-economic aspects of bio-conservation, but so far little has been achieved in that respect. Only sporadic attempts are being or have been made in concerning the identification and application of economic instruments to support biodiversity conservation. This might be understandable, due that the wider context of introduction of economic instruments for environment protection and the sustainable development of coastal and marine areas in the region is so far at an initial stage.

2.5.2 Administrative responsibility

[20] - UNEP, 1995. Guidelines for Integrated Management of Coastal and Marine Areas - with Special Reference to the Mediterranean Basin, UNEP Regional Seas Reports and Studies No. 161, Split, Croatia.
- UNEP/MAP, 1999. Formulation and implementation of CAMP projects: Operational Manual, MAP-PAP/RAC, Athens - Split
- UNEP/MAP/PAP-RAC, 1999. Conceptual Framework and Planning Guidelines for Integrated Coastal Area and River basin Management, PAP/RAC, Split

[21] See "The Blue Plan - Environment and Development in the Mediterranean Region" (http://www.planbleu.org/)

Unclear jurisdictions and overlapping responsibilities between public services are often recognised as a serious problem by the National Reports. This seems to be even more clear in the case of the management of marine ecosystems.

In the case of coastal zones and wetlands, responsibility usually lies with the central ministries (usually of the Environment or Agriculture), although ministries of irrigation, planning authorities, ministries of transport, maritime navigation, defence, *Obras Publicas* and civil construction, are often involved. Rarely, special bodies have been established for this task, with various degrees of autonomy[22]. At local level, the government is often represented by the Forestry Services, while in certain cases more specialised conservation and management bodies have been established for favoured sites.

In the case of marine ecosystems, often the main division (and even antagonism) is between environmental and fisheries marine administrations. Moreover, other competencies in sectors directly affecting marine areas (e.g. tourism, agriculture, water, industry, energy, transport and navigation, commerce, town planning and land management, public works, military defence, etc.) are usually widely distributed between different, uncoordinated administrations. In general, this is perceived as a major difficulty for the correct management of marine and coastal biodiversity.

2.5.3 The role of civil society

In all Mediterranean states, the role of non-governmental organisations (NGOs), which represent civil society, is growing. Initially, there was a degree of reluctance from the governments to accept them. Lately, however, it has been demonstrated that their activities are useful both directly in pinpointing and sometimes stopping destructive projects or activities, and indirectly in their ability to mobilise local societies in favour of biodiversity conservation and sustainable use. That is why they are becoming a noticeable and worthy stakeholder in issues of biodiversity and must be taken seriously into account at both the practical and the strategic level.

2.5.4 International level intervention

2.5.4.1 Role and contribution of international agreements

The Mediterranean states have a high degree of participation in international conventions concerned with biodiversity. All of them participate in the Barcelona Convention and the Convention on Wetlands, and many of them in the Convention on Biological Diversity, as well as the Bern and Bonn Conventions, and CITES. However, their degree of substantial involvement in the work of these conventions is not equal; for a few states this participation remains a matter of form and must take a more active turn.

It should be noted here that participation in such agreements implies a number of responsibilities. In some agreements, these responsibilities are legally binding, while in others they have a moral dimension. In both cases, peer pressure among participating countries is a strong motivation for positive action that should not be ignored.

2.5.4.2 Bilateral efforts of collaboration

The more affluent countries of the north of the Mediterranean basin maintain bilateral co-operation agreements with those of the south and east. Such agreements often include both

[22] Such as the *Conservatoire du littoral* in France and the *Agence pour la protection et l'aménagement du littoral (APAL)* in Tunisia.

financial and technical aid for the conservation of biodiversity. They provide very valuable (albeit limited) resources. There is a need, however, to have these resources increased considerably in the coming years, so that they become commensurate with the need and to have them targeted on capacity-building in the developing countries of the region.
It is necessary that recipient countries request funding for biodiversity-related projects and not only for development-oriented ones.

2.5.4.3 Transboundary initiatives

The growing understanding of the advantages of joint management for shared natural resources is a hopeful sign. This is particularly significant in the case of shared water systems, where transboundary collaboration is very much required and can lead to increased efficiency and wider public awareness.

In this context, there are in the Mediterranean many joint initiatives and good examples of bilateral collaboration for the conservation of transboundary zones (rivers, wetlands, sensitive marine areas)

2.5.5 Management of coastal and wetland biodiversity

2.5.5.1 National level intervention

In recent years, a number of Mediterranean states have developed policies for the conservation and wise management of the coastal areas and of wetlands, led by pioneering work in France and Tunisia, while others (such as Greece) have similar policies in preparation. It is clear, however, that significantly more work needs to be done by decision-makers at the policy level. The most difficult part, however, is the harmonisation of positive policies on biodiversity and the conservation and sustainable use of sensitive areas, with other sectorial ones, which –directly or indirectly– lead to the destruction of coastal and wetland habitats and consequently to the decrease of biodiversity.

Following on policies, the corresponding legislation relative to coastal and wetland biodiversity is often weak or out of date, and needs modernisation and alignment. Often, however, the problem is not the lack of appropriate legislation, but its low degree of implementation and enforcement. This is very evident in the increase of illegal construction along the Mediterranean coasts, in spite of legislation that strictly forbids it. Thus, implementation of existing laws and regulations is a key issue for the maintenance of biodiversity in the region.

2.5.5.2 Local level intervention

- *Designation of protected sites*

As the knowledge of biodiversity in the Mediterranean basin is far from complete[23], few sites as yet have been designated for legal protection. In the case of wetlands, for example, although there are approximately 150 Ramsar Sites in the region, this number could be easily doubled applying the Convention on Wetlands criteria. The situation will be greatly improved by the implementation of the European Union Habitat Directive and of the Natura 2000 network. Already applied in EC member states and those that are candidates for accession, it should be extended to all the Mediterranean, with EC assistance. In this context, the SPAMI List (Specially Protected Areas of Mediterranean Importance) of the SPA Protocol has particular weight.

[23] Few Mediterranean states for example have a national wetlands inventory and it is expected that through the MedWet Initiative a regional wetlands inventory can be established by 2010.

- *Management of sensitive sites*

The many pressures on and often conflicting uses of the coastal areas and wetlands require organised intervention for the allocation of resources and the conservation of the natural and cultural heritage. In many countries, it is considered through experience that this is best done through integrated coastal management (ICAM) plans, prepared by multi-disciplinary teams in close contact with local realities and conditions. Already appropriate methodology has been developed and considerable experience gained in the preparation of such management plans[24]. An international collaboration effort to review management planning of sensitive coastal areas in the Mediterranean in a view to streamlining their implementation would be most useful. Additional work must be done on adapting the more general coastal plans to specific sites.

As in the case of legislation, the key issue remains the implementation of management plans. For especially significant areas this is best done through dedicated multi-disciplinary bodies, located in or very near the area to be managed. Such bodies can play a key role in mediating disputes in the use of scarce resources, avoiding conflicts of activity, identifying and conserving the natural and cultural wealth of each area, and thus contributing effectively to the maintenance of biodiversity. To do this well they must develop close links with the local populations and the organisations that represent them. Unfortunately, very few protected areas in the region have the benefit of such structures.

- *Local participation*

Time and again, it has been demonstrated that the conservation of biodiversity cannot be maintained without the support of the people living in or around sensitive areas. Yet their traditional relationship with nature has been often broken by modern developments and their participation in conservation efforts is far from common. To gain social support it is necessary to convince people of the value of coastal zones and wetlands to them and of the need to use their resources in a sustainable manner. This is best done through the management bodies, the local government organisations (municipalities and communities) and the NGOs. All three have a role to play in increasing public awareness and in creating a sense of pride for the natural and cultural heritage of each particular area. Therefore, raising of public awareness at local level might be considered as a regional priority, and concerted activities to be implemented by MAP/RAC-SPA to be recommended.

2.5.6 The management of Mediterranean commercial fishing

In most of the countries, sea fisheries have not been sustainably developed; disturbing results have been noted in several areas. That being so, fairly recently a general recognition has been noticed of the need to lighten fishing pressure on resources by reducing the effort and making a qualitative improvement in gear and its use as regards time and place, as well as fishing practices, by developing fishing as rationally as is possible.

Generally speaking, the general failure up to now of traditional management measures (quotas, size limitation, control of effort, temporal closures, etc.) to stop over-exploitation of stocks and habitat degradation has to be acknowledged.

Main problems linked to the management of fishery resources are:

- Multi-specific character of Mediterranean fisheries
- Frequent, seasonal shifts of gear used by fishing units

[24] Mainly through the Coastal Area Management Programme (CAMP) of the Mediterranean Action Plan , managed by PAP/RAC since 1989. For coastal wetlands similar work has been done through the MedWet1 and 2 and MedWetCoast projects since 1992.

- Difficulty of correctly enforcing existing regulations, leading to frequent occurrence of illegal fishing practices (e.g. trawling over seagrass beds, catching undersized individuals, etc.)
- In some cases, lack of adequate legislation to manage fisheries
- Technological problems, linked to the design of currently used fishing gear, in most cases causing their very low selectivity
- The above-mentioned problem of by-catch and discard
- In many countries, difficulty of maintaining adequate statistics on fishing catches, due to the occurrence of multiple, uncontrolled landing points
- Lack of awareness among fishermen about the importance of conserving marine biodiversity
- Lack of prospects of the fishing economic sector undergoing integrated, coordinated management, due principally to the low level of organisation of professional brotherhoods far from the local scale, and, linked to this, the rigid and hierarchical structure of these professional associations.

Other problems are identifiable:

- Rapid disappearance of traditional knowledge by fishermen about the biology of target species, spatial distribution of key habitats, or how to use old, relict fishing gear or systems
- Lack of long term series of landings at a number of Mediterranean sites (this data would allow "normal" variability of exploited populations to be quantified)
- Difficulties faced by scientists to build reliable biological and economic dynamic models, due to (1) the lack of appropriate basic knowledge[25], (2) the uncertainty linked to the nature of forecasting and predictive models themselves, and (3) the intrinsic uncertainty of ecosystem dynamics
- Important shortcomings in the mechanisms for coordinating the different stakeholders[26] within integrated management schemes (considering co-management, but also co-responsibility[27]) within an ecosystem approach[28].

The principles of the FAO's recently adopted Code of Conduct for responsible fishing are accepted by the Mediterranean countries, but enforcing the Code requires both a real political will and practical measures and indicators that are often still to be elaborated and implemented.

2.5.7 Special issue: marine protected areas

There are 152 Marine and Coastal Protected Areas in the Mediterranean under the SPA Protocol, 47 of which cover marine areas. Among the signatories to the Protocol, only Italy has specific legislation for establishing marine protected areas. Most of the other countries have adopted legislative texts permitting the establishment of such areas, without detailed rules concerning regulation and management. The implementation of NATURA 2000 and the Bern Convention in coastal and marine areas will help to strengthen protection and management. In order to develop a spirit of marine and coastal environment protection in the Mediterranean region, the SPA Protocol defined a new concept, that of "Specially Protected Area of

[25] These gaps have to be considered within the framework of the general lack of knowledge about the biology and ecology of most Mediterranean marine species, either commercial or not, as described above.

[26] Including the different, often competing, fishing sectors (artisanal vs. "industrial"), as well as other users of the marine coastal area (tourism, aquaculture, etc.), and NGOs, all of them being informed by scientists.

[27] See http://www.co-management.org/

[28] See http://www.biodiv.org/programmes/cross-cutting/ecosystem/

Mediterranean Importance" (SPAMI), and provided for drawing up a "SPAMI List". The Contracting Parties to the Barcelona Convention, at their last Meeting (Monaco, 14-17 November 2001) approved the inclusion of the first twelve protected areas on the list[29].

Thus, almost all Mediterranean countries intend to use Marine Protected Areas (MPAs) as a tool for conserving and managing marine coastal resources, although the degree of achievement and development is uneven between countries. At present, several countries (Albania, Algeria, Bosnia and Herzegovina, Syria, Malta) have not yet got functioning MPAs, although they have planned or ongoing marine protection projects.

In most cases, management of MPAs in Mediterranean countries is a matter for the state, with no or poor participation by the local and regional administrations. Sub-national and/or local authorities have competency in the management of marine zones in Bosnia and Herzegovina, France, Italy and Spain.

2.5.7.1 Problems affecting the conservation of marine biodiversity through the use of MPAs

A series of problems have been recurrently identified by the National Reports, although, obviously, the importance of magnitude of each problem differs between the countries bordering on the Mediterranean Sea:

- Insufficient legal system, lack of adequate legislation
- Confusion of competency, or fragmentation of responsibility (leading to problems of implementation of the existing laws)
- Lack of coordination between administrations, competencies overlap
- Interference with other human activities occurring in the coastal zone, mainly tourism
- Low or no participation of stakeholders and other agents in the decision-making process
- Poor effort to improve public awareness on marine conservation issues
- Lack of effective enforcement measures in some cases
- Lack of effective scientific monitoring
- Lack of sufficient economic resources to achieve the protection measures, so that a number of MPAs receive only nominal management and protection (“paper MPAs”)
- Problems of mismanagement and deterioration caused by the limited experience of the people administrating the MPAs
- Lack of effective conservation measures to protect particular species (monk seal, sea turtles, cetaceans, etc.) and/or communities (e.g. seagrass meadows)
- Need to set up a network of MPAs, and therefore define of goals, mechanisms and management organization for such a network
- Need for integrated coastal zone planning and management.

Other identifiable general problems that affect the selection, installation, management and evaluation of Mediterranean MPAs are the following:

- Need to clearly establish the specific goals of each MPA
- Lack of scientific basis for the selection (location, habitats included, depth range, etc.) and design (size, shape, number, proportion of total surface protected, etc.) of MPAs
- Need for appropriate monitoring and evaluation of the effectiveness of MPAs, based on sound sampling designs (e.g. BACIP, beyond-BACI…)
- Lack of empirical evidence for potentially complex effects of MPAs, e.g. spillover, indirect effect on ecosystems (“cascade” effects), effects on larval replenishment of

[29] The Isla de Alboran (Spain), the sea bottom of the Levante de Almeria (Spain), Cabo de Gata – Nijar (Spain), Mar Menor and the eastern coast of Murcia (Spain), Cap de Creus (Spain), the Medes Islands (Spain), the Columbretes Islands (Spain), Port-Cros (France), the Kneiss Islands (Tunisia), La Galite (Tunisia), Zembra and Zembretta (Tunisia), the French-Italian-Monacan Sanctuary.

commercially and/or ecologically important species, genetic effects, socio-economic results, etc.

- Need to ascertain the relationship of MPAs with other management tools.

II. PRIORITIES AND ACTIONS

1. INTRODUCTION[1]

The general aim of the SAP BIO is to promote concrete and practical actions, which in turn emerge from general priorities aiming at:

- reducing the causes, modification of conditions (stress reduction), prevention or mitigation of impacts, that are adverse for biodiversity conservation
- promoting bio-conservation-friendly sector policies, procedures and techniques, in particular related to fisheries, tourism, agriculture and forestry
- identifying gaps, uncertainties and trends in scientific knowledge
- strengthening, updating or improving the relevant legal frameworks
- training and improving capacity-building
- integrating SAP BIO actions within the broader regional and national context of decision-making
- establishing and/or strengthening inter-agency and other international cooperation
- implementing comprehensive joint actions of relevant MAP centres and programmes concerning wider aspects of biodiversity conservation
- promoting and implementing participatory actions, programmes and campaigns; information and raising of public awareness concerning biodiversity conservation.

To monitor the actions to be carried out as part of the implementation of SAP BIO, indicators should be developed with a view to assessing the achievements and the efficiency of SAP BIO. The indicators should not only concentrate on biological and ecological aspects but also cover socio-economic factors, resolution of use-conflicts, standard of living, etc.

2. DEFINITION OF PRIORITIES

The identification of priorities has been based to a large extent on assessment at national level). To these have been added certain priorities that became apparent from the regional assessment.

The priority actions presented in this chapter were identified according to the following criteria:

1) They are necessary, relevant, significant and/or pertinent (as identified in previous chapters)
2) They are rationally achievable, being realistic from a financial point of view
3) Equity and sustainability of adopted measures are ensured
4) Legal implications do not conflict with existing international and/or national legislation

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[1] In the present chapter the following procedure has been adopted:

1) To list the priorities emerging from the previous chapters
2) To categorize and arrange the above priorities, so that a series of general issues emerges
3) To translate such priorities into targets and objectives, i.e. achievable measures that can be easily converted into quantitative and/or readily recognisable results (targets and deadline were measured taking into account the objectives of the « World Summit on Sustainable Development (WSSD) », Plan of implementation - Johannesburg, September 2002.)
4) To develop each objective as a series of actions to be undertaken in order to attain the objectives
5) To identify the actors in charge of applying such actions
6) To define the spatial scale at which those targets and subsequent actions have to be applied, distinguishing, in general, the objectives to be achieved at regional level from those to be achieved at national level
7) To define the temporal scale on which those objectives and targets have to be attained, drawing a distinction between short, medium and long-term objectives
8) To decide about the level of applicability, i.e. how easy (in practical terms) it is to implement each target, regardless of the level of urgency.

5) They include a sufficient level of flexibility in their implementation
6) They receive a sufficient level of acceptability at regional and national level
7) Biological and socio-economic consequences of their implementation are reasonably predictable (considering the precautionary principle).

The priorities emerging from the previous chapters can be placed into the following 7 categories:

I. Inventorying, mapping and monitoring Mediterranean coastal and marine biodiversity
II. Conservation of sensitive habitats, species and sites
III. Assessing and mitigating the impact of threats to biodiversity
IV. Developing research to complete knowledge and filling in gaps on biodiversity
V. Capacity-building to ensure coordination and technical support
VI. Information and participation
VII. Awareness raising.

Thus, within each general issue a series of priority actions can be identified, as developed in the following sections.

2.1 Inventorying, mapping and monitoring Mediterranean coastal and marine biodiversity

2.1.1 Undertake a complete and integrated inventory (by sub-region) of sensitive Mediterranean coastal, wetland, and marine habitats

A complete and integrated inventory of Mediterranean habitats would be of great use, since it would identify the most critical sites for biodiversity. Such an inventory should consist in a **mapping of their spatial distribution** (based on the use of innovative information and mapping technology, but treated in a user-friendly manner, so that it is easily accessible to both policy-makers and management staff), as well as compiling a **complete checklist of species associated** with each habitat. In addition, **long-term monitoring** programmes should be established in order to define the temporal variability of abundance, biomass, and other assemblage variables within sensitive habitats.

The following ecosystems merit priority attention. In the case of coastal and wetland ecosystems:

- **Sand dunes**, highly fragile ecosystems, with a considerable degree of floristic endemism
- **Coastal wetlands**, particularly lagoons and river deltas.
- **Rocky coasts**, both from the floristic point of view, and as nesting sites for marine birds
- **Small islands**, due to their importance for marine birds and those on migration.

Regarding marine ecosystems, previous chapters have identified the following as deserving special attention:

- **Seagrass meadows** (*Posidonia oceanica*, *Cymodocea nodosa*, *Zostera marina*[2])
- **Midlittoral bioconstructions** (*Lithophyllum byssoides* rim, vermetid platforms)
- **Bioconstructions of *Cladocora caespitosa***
- **Coralligenous community**

[2] Although identified by the species determining the “facies” (or seascape habitat formers), it is probably more appropriate to consider the protection of these species in the context of the ecosystem they favour.

- **Marine caves**, as shallow enclaves of bathyal communities (even truer in the case of descending caves, where cold water is permanently trapped)
- **Maërl and rhodolithes beds**
- **Deep bottoms** ("white corals", seamounts, submarine canyons).

2.1.2 Establish systems to monitor the trends of the main threats to Mediterranean biodiversity and the ecological and socio-economic impacts of changes in biodiversity

Continuous monitoring of the main known threats hanging over the Mediterranean biodiversity is necessary to assess the efficiency of the conservation measures and for the timely adaptation of relevant policies. Considering that preserving biodiversity has as its ultimate goal to attain the sustainable development of Mediterranean populations, it is crucial to adequately follow up the consequences (negative and/or positive) of changes in biodiversity for the people directly affected by them, given the interaction between economic development, society and the environment.

It is generally agreed that the suitable monitoring of protected areas is an essential step in the adaptive management procedure, in which specific managing measures results from a participatory, community-based process. After the crucial choice of appropriate indicators (see point below), it is important to correctly design field sampling programmes that distinguish between "normal" spatial and temporal variability and the actual effectiveness of protection measures. In addition, management methods and strategies themselves need to be improved.

2.1.3 Identify, develop, and validate adequate biological and socio-economic indicators

The use of adequate indicators constitutes a critical step for monitoring whether proposed measures attain their planned objectives. Considerable work is being done to identify, develop and make adequate such economic, social, institutional and environmental indicators, which have to be incorporated in the framework of SAP BIO.

2.2 Conservation of sensitive habitats, species and sites

2.2.1 Harmonise, update, coordinate and enforce legislation to conserve biodiversity

Main legal problems/priorities at the regional level are: (i) lack of adequate legislation covering some sectors, (ii) differences in environmental legislation between countries; (iii) conflicts of competency between sector administrations; and (iv) lack of adequate enforcement of the existing legislation.

2.2.2 Develop actions to conserve threatened and endangered (coastal and marine) Mediterranean species

Many marine and coastal species need particular action for their conservation at regional level, although these actions sometimes differ between countries.

For all these species, giving priority to these included in Annex II and III of the SPA Protocol, the following general actions would be necessary:

- Preparation of National Action Plans for the conservation and/or management of specific species or groups of species
- Increasing of knowledge, establishing a monitoring system
- Completion, enforcement and implementation of appropriate legislation
- Protection of the habitats on which the species depend

- Launching of public awareness campaigns.

2.2.3 Protect marine and coastal sites of particular interest

Some National Reports specifically cited particular coastal and marine sites as particularly interesting for intended conservation action on a local scale because they have threatened and/or important marine biological features (biodiversity hot spots). The list of these important priority areas is reported, country by country, in Annex III.

2.2.4 Declaration and development of new coastal and marine protected areas particularly in the south and eastern Mediterranean and offshore, including the high sea

Protected areas, if properly managed and enforced, are very important for the conservation of biodiversity. At present, scientists generally agree on the usefulness and effectiveness of establishing protected areas for the protection of pristine ecosystems, the conservation of sensitive, highly endangered species, and/or to manage fishery stocks in a sustainable way. It must be stressed that at Mediterranean level a very small proportion of the total coast receives protection. In this way, single reserves need to be large (or, alternatively, they have to be numerous) to accommodate bio-physical patterns of larval dispersal and recruitment. Some authors have suggested that total reserve size needs to be as large as at least 20% of total habitat – maybe 50% or more – to hedge against the uncertainties of over-exploitation. The current number, size and siting of protected areas falls far short of comprehensive or even adequate conservation objectives. This is even truer in the case of the south and eastern Mediterranean region.

The setting up of protected areas offshore (including the high seas) to protect pelagic ecosystem and sensitive species and important and partially unknown benthic areas such as the “white coral community”, seamounts and submarine canyons should be a priority. The SPAMI List can constitute an important tool to help in the creation of MPAs offshore in international waters.

2.2.5 Strengthening existing Marine and Coastal Protected Areas

Existing Marine and Coastal Protected Areas need to be enhanced, in terms of (i) devoting sufficient resources to funding the management of current Protected Areas; (ii) improving methods of management planning, implementation and monitoring of Marine and Coastal protected areas; and (iii) integrating specific protection measures at particular locations within wider management plans, as well as into large-scale networks of Coastal and Marine Protected Areas (see section below).

2.2.6 Towards the functioning of protected area networks

Further benefits can be obtained from networking existing and future protected areas at regional level. Although on a local scale Marine Protected Areas can be effective conservation tools, on a regional scale MPAs can only be effective if they are substantially representative of all habitats, also taking into account the biological and ecological particularities of protected species and habitats. An additional benefit of such a network is that it acts as a buffer against the vagaries of environmental variability and provides significantly greater protection for marine communities than a single reserve.

2.3 Assessing and mitigating the impact of threats on biodiversity

2.3.1 Assess the potential impact of global warming and rise in sea level on Mediterranean coastal and marine biodiversity

At present, climate change is considered scientifically proven and its effects have started becoming visible at regional level. What remains to be estimated is the degree of change and its rate, so that sea level rise, temperature increase and associated extreme climatic phenomena (such as drought, storms and flooding), as well as changes in the distribution and quality of ecosystems, can be predicted with reasonable accuracy, and corresponding measures taken to alleviate negative impacts on coastal zones and wetlands.

Obviously this cannot be achieved at regional level alone, but would require participation in the global climate change scientific and political forums. In the Mediterranean, an entity -possibly within the UNEP/MAP structure- must be designated to represent the region, co-ordinate efforts and circul information. As a first step, research on the impact of climate change in the region must be encouraged and systematised.

2.3.2 Assess the potential impact of threats to Mediterranean coastal and marine biodiversity

Chapters 3 and 4 have described the major threats to the conservation of marine and coastal biodiversity. These threats include:

- Pollution
- Fisheries and other resource exploitation
- Introduction and spread of invasive species
- Uncontrolled recreation at activities
- Changes in land use
- Effects of water management schemes.

Considerable efforts should be made to assess the potential impacts of these threats on biodiversity, in order to fully understand and forecast their effects, so that sufficient efforts can be made to mitigate them.

2.3.3 Mitigate the direct impact of the international trade in endangered species

Because the trade in wild animals and plants crosses borders between countries, the effort to regulate and mitigate it requires international cooperation to safeguard certain species from over-exploitation. Therefore, as a first step, international agreements have to be supported and receive further attention. Other measures to take involve (i) improving monitoring of international trade, focusing especially on species not included in CITES, (ii) improving research on and control of the impact of introduced alien species (linked to priorities about invasive species below), for instance through supporting the wildlife trade monitoring network[3], or (iii) adopting market and awareness measures targeting all stakeholders (from harvesters to consumers) in the chain of catching and trade in endangered species, in order to prevent trade from both regulatory “supply control” approaches and incentive- and consumer-based “demand-driven” approaches and economics.

2.3.4 Control and mitigate the introduction and spread of non-indigenous species

Within the framework of implementing the Mediterranean Action Plan concerning species introduction and invasive species, priority at regional level should be given to:

[3] http://www.traffic.org/

- coordinating and supporting the compiling and regular updating of Mediterranean-wide lists of non-indigenous species[4], including information on their ecology, biology and habitats. Lists should distinguish between species that are harmful to human health, invasive or both, and provide information on such a classification
- elaborating and adopting at regional level guidelines intended to assist the relevant national authorities
- coordinating the actions taken by neighbouring states to prevent and control the introduction of non-indigenous species
- supporting cooperation at international level.

Considering the lack of data and knowledge necessary for risk assessment and the implementation of preventive and control actions, priority at national level should be given to:

- encouraging all necessary actions (e.g. research work, data collection, monitoring, etc.) aimed at improving the available knowledge
- coordinating the actions that are necessary for the regular provision of supplementary information for the national and Mediterranean-wide reference lists of non-indigenous species
- supporting the sharing of information and concerted action at regional level
- encouraging the implementation of scientifically-backed regionally-harmonised measures of prevention and control.

2.3.5 Control and mitigate the effects of changes in land use (including coastal urbanization and construction of infrastructure)

Changes in land use have been identified as a major threat to biodiversity. Measures have to be adopted to control these sources of impact within the framework of a proper Integrated Coastal Area Management.

2.3.6 Promote eco- and soft tourism, control and mitigate impact of recreational activities

Well-planned and managed ecotourism[5] has proved to be one of the most effective tools for long-term conservation of biodiversity when the right circumstances (such as market feasibility, management capacity at local level, and clear and monitored links between ecotourism development and conservation) are present[6].

On the other hand, the impact of recreational activities (trampling, noise, lights, eroding, or disturbing animals and plants) has to be mitigated through the adoption of adequate measures (either enforcing, regulating or dissuading people from such practices).

2.3.7 Assessment and elaboration of strategies to prevent the environmental impact of sources of pollution

Prevention and mitigation of land-based sources of pollution are already dealt with within the "Strategic Action Plan to Address Pollution from Land-based Activities (SAP MED)",

[4] The lists of exotic species being compiled within the framework of CIESM and any other recognised publication could be used as reference and a source of information.

[5] According to the Quebec Declaration on Ecotourism, ecotourism "embraces the principles of sustainable tourism... and the following principles which distinguish it from the wider concept of sustainable tourism: (i) contributes actively to the conservation of natural and cultural heritage; (ii) includes local and indigenous communities in its planning, development and operation, contributing to their well-being; (iii) interprets the natural and cultural heritage of the destination to visitors; and (iv) lends itself better to independent travellers, as well as to organized tours for small size groups".

[6] http://www.uneptie.org/pc/tourism/ecotourism/

implemented by UNEP MAP/MEDPOL. Therefore, within the framework of SAP BIO, particular attention should be paid to those sources of pollution not covered by the SAP MED, such as aquaculture, marine transport and navigation, desalination, or the proliferation of floating plastic objects and debris.

2.3.8 Special focus on the control and regulation of inappropriate aquaculture practices

Aquaculture is a strongly emerging activity, which in turn may originate a series of complex adverse effects on the environment (several types of pollution, visual degradation, local socio-economic changes, invasion of alien species, etc.). Within the framework of SAP BIO, adequate measures have to be adopted in order to regulate, mitigate and control such threats.

2.3.9 Assess, control and elaborate strategies to prevent the negative impact of fisheries on biodiversity

Inappropriate fishing activities are likely to erode marine biodiversity all over the Mediterranean basin. Identifiable targets aiming at preventing this impact deal with (i) improving fishing statistics, (ii) improving gear selectivity, (iii) minimising habitat damage, (iv) limiting harmful fishing practices, (v) developing "traditional" control measures, (vi) developing "new" management techniques, (vii) controlling recreational fishing, (viii) prosecuting illegal fishing, and (ix) preserving traditional Mediterranean fishing knowledge.

2.4 Developing research to complete knowledge and fill in gaps on biodiversity

2.4.1 Improve and coordinate biodiversity research

Knowledge of biodiversity is a prerequisite for its conservation. Such knowledge in the region is neither complete nor systematic. It is imperative, therefore, to:

- Make known and available the existing research results, thus creating a first level of synergy
- Identify the most critical 'missing links', or knowledge gaps
- Promote scientific and applied research on the missing issues, and assist in securing the necessary funding
- Ensure that the research results reach those who have responsibility for policy-making on marine, coastal and wetland biodiversity and on management of sensitive areas.

2.4.2 Improve taxonomic expertise in the region, through the constitution of PEET[7]

Particular emphasis should be laid on the development of knowledge about genetic diversity, and the training of experts in marine and coastal biodiversity. A proposed system to improve knowledge and expertise on biodiversity is through the constitution of PEET to face particular research projects[8].

[7] Partnership for Enhancing Expertise on Taxonomy.
[8] A PEET is combines a traditional morphological specialist and a molecular systematist.

2.5 Capacity-building to ensure coordination and technical support

2.5.1 Achieve a 'clearing-house' mechanism to focus on marine and coastal conservation activities

A 'clearing house', or central information centre on all aspects of Mediterranean biodiversity, should be considered, as it could become the focus for marine and coastal conservation activities in the region, and could become a catalyst of joint initiative and exchange. This could be established within the framework of UNEP/MAP, but not necessarily managed by it. It might be a central point, or a looser network, well structured, coordinated and linked to the clearing house mechanism of the CBD.

2.5.2 Coordination and development of common tools for implementing National Action Plans (NAPs)

The National Action Plans (NAPs) on specific biodiversity issues[9] have numerous areas of common interest, whether in terms of geographical area or in terms of species, habitat, or threat to biodiversity. The coordination and development of common tools during the implementation of NAPs should be assured. Countries and regional institutions should make every effort to cooperate in the effective implementation of these NAPs.

2.6 Information and participation

2.6.1 Facilitate access to information for managers and decision-makers, as well as stakeholders and the general public

It is necessary to improve the availability of existing data, information and knowledge on biodiversity as a basis for (i) identifying and filling in the most critical information gaps, notably through the promotion of the relevant scientific and applied research; (ii) ensuring that research results reach those who are responsible for, or whose decisions impact upon, biodiversity; and especially, (iii) facilitating the participation of citizens within an integrated management scheme[10].

2.6.2 Promote public participation, within an integrated management scheme

As another key issue, public participation is crucial if proper environmental management is to be achieved.

2.6.3 Preserve traditional knowledge

The traditional knowledge of stakeholders who use natural resources (e.g. fishermen, shepherds, farmers, etc.) about marine and coastal elements (species and communities) of Mediterranean biodiversity should be preserved, not only because it constitutes an essential part of the cultural heritage for future generations, but because of its usefulness as empirical evidence of often neglected ecological processes important for the conservation of biodiversity. A number of regional and international initiatives deal with this issue throughout the world (promoted by UNEP, IUCN, CBD, WIPO, WRI, etc.).

[9] See: Draft summary of the NAPs elaborated within the SAP BIO Project (UNEP(DEC)/MED WG.227/5).
[10] See http://www.unep.org/unep/access.htm

2.7 Awareness-raising

2.7.1 Develop international collaboration to enhance regional public awareness

The SAP BIO Project and related initiatives are the ideal framework for developing such recognition and promoting specific activities to enhance public awareness. The circulation of information and increased public awareness is dependent on local social cultures and languages. Yet international collaboration can help develop appropriate methods and tools, also making use of social, cultural and political affiliations (such as those connecting EC member states, Maghreb and Mashraq states, francophone countries and countries in the Balkans). Most countries have listed awareness-raising as a priority to accompany one or other of their conservation objectives.

2.7.2 Organise coordinated Mediterranean-level campaigns focusing on specific regional biodiversity issues

One of the mechanisms to promote regional public awareness is the organisation of campaigns aiming at making the general public aware of specific issues such as global warming, eco-tourism, or the trade in endangered species.

3. IDENTIFICATION AND CATEGORIZATION OF TARGETS, OBJECTIVES AND SPECIFIC ACTIONS

3.1 Definition of objective characteristics

In the following section, a Table summarises priority actions, relevant targets, objectives, and specific actions identified within the framework of the SAP BIO. The priority actions are presented in this table without being ranked.

For each category, specific targets were identified, also taking into account the WSSD[11] objectives and deadlines.

For each target relevant concrete objectives are indicated.

For each objective specific actions and the following characteristics are defined:

- Scale level: It refers to the spatial scale on which each target is applicable, distinguishing between
  - regional (R): concerning the whole Mediterranean region
  - sub-regional (S-R): concerning a particular part of the Mediterranean region (e.g. North Africa, south-eastern Mediterranean, western Mediterranean, etc.)
  - national (N): concerning each participating country
  - sub-National (S-N): concerning particular regions within a country (e.g. Sicily, Andalusia, Crete, etc.).

  One objective can be achieved at several scale levels.

- Actors : This refers to the kind of institution and organism capable of undertaking the proposed actions to reach defined targets

- TF (Time frame): Temporal deadline, distinguishing:
  - ST (short term): before 2006
  - MT (medium term): before 2010
  - LT (long term): after 2010

- Imp. (Implementability): Ease (in practical terms) of implementing each objective, regardless of the level of urgency:
  - A (high-level, immediate applicability)
  - B (medium-level)
  - C (low-level, logistic/economic/institutional conditions are not met).

[11] World Summit on Sustainable Development, " Plan of Implementation " - Johannesburg, September 2002.

3.2 Actions, objectives and targets

CATEGORY	TARGET
I. INVENTORYING, MAPPING AND MONITORING OF MEDITERRANEAN COASTAL AND MARINE BIODIVERSITY	General objective "Contribute to achieving the WSSD targets concerning establishing by 2004 a regular process under the United Nations for global reporting and assessment of the state of the marine environment, including socio-economic aspects, both current and foreseeable, building on existing regional assessments[12]" Specific targets ✍GIS-based mapping of sensitive habitats by 2008 (relevant objective/s: 1a) ✍Mediterranean Checklists of species by 2006 (1b,d) ✍Standard monitoring protocols for socio-economic impacts, global trade, endangered species, effectiveness of protected areas by 2004 (2a; 3a; 4a; 5a) ✍SAP BIO indicators by 2006 (6 a,b,c,d,e)

Activity (Priority actions)	Objective	Scale level	Specific action	Actor	TF	Imp.
1) Make a complete and integrated inventory (by sub-region) of Mediterranean coastal, wetland, and marine sensitive habitats	a) Description and GIS-based mapping of the spatial distribution of the sensitive habitats:	R / N	✍ Increase availability of GIS technology ✍ Enhance national capabilities and support national and sub-national programmes to map sensitive habitats ✍ Undertake international Mediterranean campaigns with oceanographic boats of cartography of sensitive habitats ✍ Facilitate exchange of and access to maps by scientists and managers	Regional and multi-lateral institutions; universities and research institutions	MT	B
	b) Complete checklist of species associated with each sensitive habitat	R / N	✍ Form regional workgroups of specialists by taxon and/or habitat ✍ Set up regional programmes to make such checklists by sub-region and/or country (cf. Target d below)	Regional and multi-lateral institutions; universities and research institutions	MT	B

[12] Extract from Paragraph 34b, Plan of Implementation of the World Summit on Sustainable Development – Johannesburg, September 2002.

Activity (Priority actions)	Objectives	Scale level	Specific action	Actors	TF	Imp.
	c) Long-term routine monitoring programmes, in order to define temporal variability of abundance, biomass and other assemblage variables w ithin sensitive habitats	R / N	✍ Convene thematic workshops by types of habitat, to elaborate standardised regional monitoring programmes ✍ Support monitoring programmes at national level, to be implemented by national workgroups in selected sites by types of habitat (at undisturbed sites, e.g. marine and coastal protected areas)	Regional and multi-lateral institutions; universities and research institutions	ST	A
	d) Elaborate national checklists for marine and coastal species for all the Mediterranean countries	N	✍ Form national workgroups of specialists by taxon and/or habitat (assisted by regional workgroups when necessary) ✍ Set up national programmes to undertake national checklists	Universities and national and international research institutions	ST	A
2) Establish of a monitoring system of endangered and threatened species	a) Implement a monitoring system for endangered species at regional level	R / N	✍ Establish standard adequate monitoring techniques and methods, in order to: o determine accurately geographical distribution o estimate population size and structure o estimate population dynamics o determine habitat requirements of endangered and threatened species ✍ Determine sampling protocols (spatial and temporal allocation of sampling, number of samples, etc.) ✍ Implement standard monitoring protocols	Regional and sub-regional organisations; national research institutions	ST	A
	b) Establish and update the health and risk status of endangered populations	R	✍ List specific threats affecting each endangered species ✍ Model population dynamics in order to forecast different scenarios concerning each species ✍ Revise periodically the conservation status of each species	Regional and sub-regional organisations; national research institutions	MT	B
3) Promote the adequate monitoring and survey of the effectiveness of marine and coastal protected areas	a) Implement sound scientifically-based monitoring programmes on the effectiveness of marine and coastal protected areas	R / N	✍ Define planned objectives of existing protected areas to be monitored taking into account the methodology of the Afrodite[13] project, already ongoing on several MPAs ✍ Elaborate a regional monitoring booklet defining sampling and experimental principles, as well as standardised sampling protocols established to acquire useful, comparable data ✍ Implement standardised sampling programmes in selected protected areas spanning a representative set at regional level (taking into account the methodology of the Afrodite project) ✍ Undertake a comparative analysis of protected areas results at regional level		ST	A

[13] Project for monitoring Marine Protected Areas in several European countries

Activity (Priority actions)	Objectives	Scale level	Specific action	Actors	TF	Imp.
	b) Improve methods of management planning, implementation and monitoring	R	✍ Evaluate, at regional level, effectiveness of management measures in relation to planned objectives ✍ Analysis of the applicability of new management measures ✍ Refine management measures	Regional and sub-regional organisations; competent national authorities and managers of M&CPA	ST	A
4) Identify, develop, and validate adequate biological and socio-economic indicators to assess the ecological health of sensitive habitats and species, and to evaluate the effectiveness of management measures	a) Elaborate a regional strategy on SAP BIO indicators	R	✍ Convene a regional workshop on SAP BIO indicators ✍ Form a working group in charge of elaborating and validating a set of SAP BIO indicators	Regional organisations	ST	A
	b) Elaborate a list of useful SAP BIO indicators	R	✍ Define objectives of the set of indicators to be used ✍ Elaborate a catalogue of indicators (taking into account the indicators proposed by other international institutions) ✍ Specify the methodological constraints linked to each indicator ✍ Select useful indicators	Regional organisations	ST	A
	c) Existing and new data collected to construct selected SAP BIO indicators	R / N	✍ Evaluate the availability of existing data ✍ Elaborate standardised protocols to collect new data ✍ Decide periodicity and implementation calendar of selected indicators ✍ Undertake sampling programmes to collect new data where necessary	Regional and sub-regional organisations; competent national authorities and research institutions	ST	B
	d) Construct SAP BIO indicator set starting from the collected data	R	✍ Gather regional data ✍ Construct indicators ✍ Publish the results at regional level	Regional organisations	MT	B
	e) Validate selected SAP BIO indicators	R	✍ Establish the states of SAP BIO implementation ✍ Evaluate the usefulness, accuracy and precision of selected indicators ✍ Possibly, refine list of SAP BIO indicators	Regional organisations	MT	B

ISSUE	TARGET
II. CONSERVATION OF SENSITIVE HABITATS, SPECIES AND SITES	General objective Contribute to achieving the WSSD targets concerning the establishing of Marine Protected Areas consistent with international law and based on scientific information, representative networks, by 2012, and time/area closures for the protection of nursery grounds and periods, proper coastal land use[14] Specific targets ✍Effective protection of endangered species by 2012 (relevant objectives 7a, b; 8d) ✍Increase (50%) by 2012 the surface area covered by MPAs (10 a, b, c, f) ✍Attain the protection of 20 % of the coast as marine fishery reserves by 2012 (10 e) ✍Set up a representative Mediterranean network of marine and coastal protected areas by 2012 (11 a, b)

Activity (Priority actions)	Objective	Scale level	Specific action	Actor	TF	Imp.
5) Update, coordinate and enforce legislation to conserve biodiversity	a) Fill in existing gaps in national legislation about the protection of such habitats, species and areas	R / N	✍ Ensure that measures adopted within the framework of regional conventions, arrangements or organizations to which countries are party are incorporated in national legislations ✍ Clarify at national level competencies regarding the management of littoral areas	Regional competent organisations (as coordinator/s) national competent authorities and bodies	MT	A
	b) Ensure the completion, enforcement and implementation of existing and updated legislation	R / N	✍ Assess the general level of compliance with current legislation in the region ✍ Develop guidelines on root cause analysis of non-compliance that would help to identify the real problems in various non-compliance scenarios ✍ Set up of a specific national police body, for the protection of biodiversity in coastal areas (any other police task being excluded)	Regional competent organisations (as coordinator/s) national competent authorities and bodies	LT	C
6) Develop actions to conserve threatened and endangered (coastal and marine) Mediterranean species	a) Coordinate the implementation of National Action Plans (NAPs) for threatened and endangered s pecies elaborated within the SAP BIO Project	R / SR / N	✍ Organize subregional workshops ✍ Prepare common guidelines, documents to assist countries in the implementation of the NAPs ✍ During the implemantation phase assure the flow of information among the NAPs ✍ Refine NAPs to protect threatened and endangered species ✍	Regional competent organisations; national authorities involved in the implementation of NAPs	ST	A
	b) Increase knowledge on these species	R / N	(cf. priority #4.a,4.b)			
	c) Establish a monitoring system for these species	R / N	(cf. priority #4)			
	d) Harmonise, update, implement and enforce adequate legislation	R / N	(cf. priority #7)			

[14] Extract from Paragraph 31c Plan of Implementation" of the World Summit on Sustainable Development - 4 September 2002, Johannesburg.

Activity (Priority actions)	Objectives	Scale level	Specific action	Actor	TF	Imp.
	e) Habitats on which selected species depend protected	R / N	(cf. priority #10, target d)			
7) Protect marine and coastal sites of particular interest (see Annex 3)	a) Develop and coordinate protection actions for priority sites and areas identified by National Reports	R / N	✍ Campaign of collection of data using the Standard Entry Data Form in identified site ✍ Prepare detailed Action Plans to protect identified sites ✍ Coordinate protection actions at regional level (cf. Priority #11, Target b below)	Regional organisations; national competent authorities		
8) Declare and develop new coastal and marine protected areas including in the high seas	a) Identify of new areas deserving protection measures in the south and eastern Mediterranean	S-R / N	✍ Identify key sites important for harbouring representative, well-conserved marine and coastal habitats (links with cf. priority # 1) further to their identification as priority sites by National Reports (cf. priority # 9) ✍ Fill in the SDF for each identified area	National authorities; national research institutes	ST	A
	b) Set up of new protected marine and coastal areas in the south and eastern Mediterranean	S-R / N	✍ Countries declare new M&CPA ✍ Provide the new M&CPA with all the necessary tools to assure their functioning ✍ Establish of a sub-regional network of south and eastern Mediterranean representative habitats (cf. Target 11.b below)	National authorities; support by regional organisations; involve the local population	MT	C
	c) Increase the number of C&MPAs or reserves to conserve sensitive, highly endangered species	R / N	✍ Define habitat features of selected endangered species ✍ Define the minimum area needed to fully protect highly endangered species ✍ Select areas to protect these species ✍ Prepare detailed Action Plans for these areas (declaration of MPA or implementation of other measures of protection) ✍	Regional organisations; national authorities and research institutes; local population	LT	C
	d) Identify and protect of new areas offshore (including the high seas) deserving protection measures	R / N	✍ Identify key sites important for harbouring representative, deep marine habitats and or important pelagic ecosystem (links with cf. priority # 1) ✍ The involved countries declare and set up offshore protected areas	Regional organisations; research institutes and universities; national authorities	MT	C
9) Develop existing Marine and Coastal Protected Areas	a) Enhance the management of existing Protected Areas	R / N	✍ Dedicate resources to funding the management of existing Protected Areas ✍ Convene workshops of C&MPA managers to harmonise and improve management issues Integrate specific protection measures into large-scale networks (cf. Target b below)	Regional organisations; national authorities; C&MPA managers	MT	B

Activity (Priority actions)	Objectives	Scale level	Specific action	Actor	TF	Imp.
	b) Establish and support protected area networks	R / N	✍ Integrate specific protection measures at particular locations into wider management plans, as well as into large-scale networks of Coastal and Marine Protected Areas ✍ Coordination and harmonisation between management plans and structures of particular existing Protected Areas ✍ Undertake specific research, monitoring and assessment under a networking scheme (cf. priority #5)	Regional organisations; national authorities; C&MPA managers	MT	B

CATEGORY	TARGET
III. ASSESSING AND MITIGATING THE IMPACT OF THREATS ON BIODIVERSITY	General objective Contribute to achieving the WSSD targets concerning significant reduction by 2010in the current rate of loss of biological diversity[15]; Specific targets ✍✍ Updated assessment of the potential impact of threats on Mediterranean marine and coastal biodiversity by 2008 (12a, b; 13a) ✍✍ Maintain or restore fishery stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015[20] (21 a, b, c, d, e, f ,g, h, i) ✍✍ Urgently develop and implement national and plans of action, to put into effect the FAO international plans of action, in particular the international plan of action for the management of fishing capacity by 2005 and the international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing by 2004 (relevant objective/s: 21f). Establish effective monitoring, reporting and enforcement, and control of fishing vessels, including by flag states, to further the international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing[20] (21a, c, e, f, h, i) ✍✍ Control and regulate the urban development of coastal area, land use planning and aquaculture practices within a wider management plan by 2010 (16a; 17a; 20a, b, c) ✍✍ Legal regulation of recreational activities by 2008 (18 b) ✍✍ Reinforce control and mitigation of the introduction and spread of alien species by 2006 (15 a, b, c)

Activity (Priority actions)	Objective	Scale level	Specific action	Actor	TF	Imp.
10) Monitor of global trade and economic policies and trends from a Mediterranean perspective, to analyse their scope and probable effects on biodiversity	a) Implement monitoring systems for consequences of global trade and economic policies	R / S-R	✍✍ Establish monitoring protocols and standards, in order to evaluate the effects of international trade on Mediterranean biodiversity ✍✍ Implement standard monitoring protocols ✍✍ Propose recommendations at regional level to undertake specific actions to counter trade effects on biodiversity and sustainable development ✍✍ Coordinate monitoring and action plans at regional and international level (e.g. UNCTAD/UNDP, ICTSD, etc.)	International, regional and sub-regional organisations	ST	A
11) Establish a regional monitoring programme following up the socio-economic impact of changes in biodiversity	a) Implement monitoring systems for socio-economic impacts of changes in biodiversity	R / N	✍✍ Establish monitoring protocols and standards, in order to evaluate the socio-economic effects of changes in biodiversity ✍✍ Implement standard monitoring protocols	Relevant International, regional and sub-regional organisations	ST	A
12) Assess the potential impact of climate change and rise in sea level on Mediterranean coastal and marine biodiversity	a) Inventory and monitor of biodiversity elements and/or areas likely to be impacted by climate change	R	✍✍ Geographical identification of priority areas likely to be threatened by climate change and rise in sea level ✍✍ Establish a monitoring network to describe long-term change	Regional organisations; research institutes	ST	A

[15] Extract from Paragraph 42 Plan of Implementation of the World Summit on Sustainable Development - 4 September 2003 – Johannesburg.

Activity (Priority actions)	Objective	Scale level	Specific action	Actor	TF	Imp.
	b) Acquire the necessary knowledge to model and forecast likely effects of climate change	R	✍ Ascertain the relationship between the Mediterranean Sea and the global oceanatmosphere and its response to local forcing ✍ Monitoring long-term variability of the thermo-haline circulation, biogeochemical content and transport in the whole Mediterranean Sea ✍ Quantify and accurately model regional hydrological cycles (evaporation, precipitation, river run-off, groundwater) ✍ Fill in geographical gaps on key processes in the Mediterranean Sea	Research institutes	MT	B
13) Assess the potential impact of threats on Mediterranean coastal and marine biodiversity	a) Inventory of biodiversity elements and/or areas likely to be impacted by each of the following threats on biodiversity: o Pollution o Fisheries and other resource exploitation o Introduction and spread of non-indigenous species o Uncontrolled recreation at activities o Changes in land use o Effects of water management schemes	R	✍ Geographical identification of priority areas likely to be affected by threats on biodiversity ✍ Establish a monitoring network to describe long-term change	Regional organisations; research institutes	MT	B
14) Mitigate the direct impact of international trade in endangered species	a) Improve research and control on the impact of harvesting wild species	R / N	✍ Improve monitoring of international trade, focusing especially on species not included in CITES ✍ Update CITES lists with Mediterranean threatened and endangered species not yet included ✍ Set up a specific national police body, for the protection of biodiversity (cf. priority # 7b)	Regional organisations; national authorities	ST [1]LT	A [1] C
	b) Adopt market and awareness measures targeting stakeholders in the chain of catching and trade in alien species (from harvesters to consumers)	R / N	✍ Create an eco-label to certify that wildlife products have been legally harvested and exported ✍ Make consumers and potential purchasers sensitive to international wildlife-trade issues, through adequate awareness measures	Regional organisations; national authorities	ST	B
15) Control and mitigate the introduction and spread of alien and invasive species	a) Develop appropriate institutional measures to fight against particular sources of alien species	R	✍ Regional project to reduce transfer of aliens via aquaculture and aquaria practices (cf. Priority #20) ✍ Regional project to reduce transfer of alien species via ships' ballast water and sediments and hull fouling ✍ Regional project to reduce transfer of alien species via plastic debris ✍ Regional project to reduce transfer of alien species via fishing practices	Regional organisations	ST	B

Activity (Priority actions)	Objective	Scale level	Specific action	Actor	TF	Imp.
	b) Implement a regional coordination network to mitigate introduction and spread of alien species	R / N	✍ Elaborate and adopt at regional level guidelines intended to assist the relevant national authorities ✍ Coordinate the actions taken by neighbouring states to prevent and control the introduction of non-indigenous species ✍ Support cooperation at international level	Regional organisations	ST	B
	c) Fill in existing gaps in knowledge about alien species	R / N	✍ Carry out research work, data collection, monitoring, etc. aimed at improving the available knowledge ✍ Coordinate the actions that are necessary for the regular provision of supplementary information for the national and Mediterranean-wide reference lists of non-indigenous species ✍ Support information exchange and concerted action at regional level ✍ Encourage the implementation of scientifically-backed regionally-harmonised measures of prevention and control	Regional organisations (coordinating and supporting); research institutes	ST	B
16) Control and mitigate coastal urbanization and construction of coastal infrastructure	a) Insert urban development of coastal areas into wider integrated management plans	S-N / N / R	✍ Carry out evaluations of destination sites' carrying capacity and take the necessary steps to ensure that the offer is limited to the carrying capacities thus defined ✍ Strengthen or establish legislative tools, regulations and property management to control tourist urbanisation and protect sensitive species, habitats and sites ✍ In particular, control the proliferation of marinas and sport harbours ✍ Prohibit the construction of artificial beaches ✍ 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	National and local authorities; regional organisations (coordination)	MT	C

Activity (Priority actions)	Objective	Scale level	Specific action	Actor	TF	Imp.
17) Control and mitigate the effect of changes in land use	a) Promote the integration of land used planning into wider integrated management plans.	R / N	✍ Carry out evaluations of carrying capacity of the littoral zone concerning land use, and take the necessary steps that the offer is limited to the carrying capacities thus defined ✍ Define (at national and sub-regional level) interference, incompatibility and synergy between different land uses in the littoral zone ✍ Undertake the zoning of littoral areas at sub-national level ✍ Define and promote adequate, environmentally-friendly agri-cultural practices ✍ Define and promote adequate, environmentally-friendly water management practices ✍ Define and promote adequate, environmentally-friendly reforestation practices ✍ Regulate and control mining activities under an integrated management scheme	National and local authorities; regional organisations (coordination)	MT	C
18) Promote eco- and soft tourism, control and mitigate impact of recreational activities	a) Increase sustainable tourism, including non-consumptive and eco-tourism taking into account the spirit of the International Year of Eco-tourism 2002, the United Nations Year for Cultural Heritage in 2002, the World Eco-tourism Summit 2002 and its Quebec Declaration, and the Global Code of Ethics for Tourism as adopted by the World Tourism Organization[16]	R / N	✍ Promote eco-labelling and other quality environmental procedures (e.g. certification, charters, etc.) at regional level ✍ Support private eco-tourism initiatives ✍ Awareness programmes among tour operators, tourist businesses (travels, hotels, sport facilities, etc.) and public sector administrations on the benefits of environmentally-friendly tourist practices ✍ Avoid ghetto-like, high-standing tourist facilities unconnected with local conditions ✍ Promote respect for local architecture and the historical heritage ✍ Facilitate the exchange of tourists and local populations and cultures ✍ Minimize waste production, and energy and water consumption by tourist facilities ✍ Promote the use of public transport ✍ Develop all means that may lead to spreading the tourist season over the entire year ✍ Develop international, regional cooperation	National authorities; competent national bodies and organisations; regional organisations (support and coordination)	LT	B

[16] From Paragraph 41 Plan of Implementation of the World Summit on Sustainable Development - 4 September 2002 – Johannesburg.

Activity (Priority actions)	Objective	Scale level	Specific action	Actor	TF	Imp.
	b) Control and mitigate the impact of recreational activities on coastal and marine Mediterranean biodiversity	R / N	✍ Make an analysis and collect information on the most significant environmental impacts of recreational activities and tourism ✍ Geographical identification of priority areas likely to be affected by recreational activities ✍ Regulation and enforcement of recreational practices, in particular of high-impacting activities (e.g. 4x4, diving, motor navigation, hunting, recreational fishing, sea-watching, etc.) ✍ Management and regulation of access and use of beaches by the public as well as their use by professionals, in accordance with environmental factors ✍ Study and promote the use of eco-taxes for the general public visiting protected areas, as well as other economic and financial tools to protect biodiversity ✍ Develop the alternative use of coastal and marine areas, based on the utilization of natural landscapes	National authorities; competent national bodies and organisations; regional organisations (support and coordination)	MT	C
19) Assess and elaborate of strategies to prevent the environmental impact of sources of pollution	a) Assess and prevent the impact of desalination techniques	R / N	✍ Establish a regional programme to quantify and characterize the environmental impact of coastal desalination plants ✍ Define and evaluate technical measures to minimize the impact of the desalination process (e.g. construction of pipelines for disposal of reject flow, ameliorate desalination technology, etc.) ✍ Promote clean-energy desalination plants (e.g. solar); avoid desalination projects to mask environmentally-unfriendly energy projects (e.g. power plants, incinerators of toxic waste, etc.) ✍ Insert the planning of new desalination plants into wider integrated water and coastal management plans	Regional organisations; national authorities; research institutes	MT	C

	b) Control the proliferation of floating plastic objects and debris	R / N	✍ Establish a regional programme to quantify plastic proliferation in the Mediterranean ✍ Geographical identification of priority areas likely to be affected by the proliferation of plastic debris in the sea ✍ Support international agreements about the dumping of plastics in the sea ✍ Enhance recuperation and recycling of plastics ✍ Promote the research and application of technology to produce photo- and bio-degradable plastics ✍ Promote and support beach-cleaning initiatives ✍ Establish awareness campaigns (oriented to users and the general public) about the use and waste of plastic debris in the sea	Regional organisations; national authorities; research institutes	LT	C
	c) Achieve non-pollutant marine transport and navigation techniques; pay special attention to noise and hydrocarbon pollution	R	✍ Enhance and support activities under international agreements on environmental impacts of maritime casualty, concerning pollution from ships: o oil pollution o chemical pollution o harmful substances carried by sea in packaged form o garbage o sewage o air pollution o dumping of waste ✍ Enhance and support activities and regulations under international agreements on the environmental impacts of oil spills ✍ Undertake a Regional Programme to minimize the impact of noise from ships and military engines, as well as other sources of noise pollution (mineral production, pingers, ringers, etc.) ✍ Regulations for ballast water management to prevent the transfer of harmful aquatic organisms ✍ Support the International Maritime Organization (IMO) convention prohibiting the use of harmful organisms anti-fouling paints used on ships; establish a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems ✍ Support the declaration of PSSA –Particularly Sensitive Sea Areas (as defined by the IMO)	Regional organisations; international organisations; national authorities;	LT	C

20)	a) Integrate of aquaculture practices into wider integrated management plans	R / N / S-N	✍ Carry out evaluations of carrying capacity of the littoral zone concerning aquaculture, and take the necessary steps to ensure that the offer is limited to the carrying capacities thus defined ✍ Define (by country, and at sub-national level) interference, incompatibility and synergy between aquaculture projects and plans, and other uses of the littoral zone ✍ Undertake the zoning of littoral areas at sub-national level ✍ Identify zones suitable for aquaculture ✍ Adapt aquaculture technology to be used in a case-by-case approach, taking into account zoning	National and local authorities; regional organisations (coordination)	LT	B
	b) Develop research and measures to minimise the impacts of aquaculture practices on the marine and coastal environment	R / N	✍ Standard environmental impact assessment procedures convened [2] ✍ Regulate of the use of pingers [2] ✍ Regional programme to reduce the invasion of alien species from aquaculture ✍ Regional programme to minimise pollution caused by organic matter and nutrient enrichment from aquaculture farms ✍ Regional programme to minimise the impact of wild seed to stock fish farms (e.g. red tuna) ✍ Regional programme to minimise genetic pollution ✍ Regional programme to minimise chemical pollution –disinfectants, anti-foulants, flesh colorants and medicines (including vaccines)	Regional organisations [2] National authorities	ST	B
	c) Adopt measures to avoid the impacts of aquariology on the marine and coastal environment	R	✍ Prohibit in all the Mediterranean countries the use of potentially invasive species (e.g. caulerpas) in open or semi-open aquarium systems	regional organisations; national authorities	ST	A
21)	a) Improve fishing statistics	R / N	✍ Identify the main problems and gaps in getting accurate fishing statistics ✍ Propose mechanisms to improve fishing statistics at regional level ✍ In particular, design, implement and evaluate data collecting systems at national level ✍ Establish a network of institutions responsible for acquiring statistics at national level	regional competent organisations; national authorities and research institutes	ST	C

	b) Mediterranean strategy for the conservation and sustainable management of vulnerable fish and invertebrates, including sustainable related fisheries	R	✍ Assess the status of vulnerable fish and invertebrate populations subject to commercial fisheries ✍ Determine adaptive and precautionary management schemes for the preservation of vulnerable populations ✍ Assess the suitability of a complete ban on the exploitation of certain particularly vulnerable species at regional level ✍ Assess (and eventually implement) the inclusion of species listed in the annexes of the SPA Protocol in the appropriate CITES lists ✍ Develope selected case studies for different vulnerable species/groups carried out in different parts of the Mediterranean in order to draw up guidelines on vulnerable species management and conservation valid for the region	regional competent organisations; national research institutes	ST	A
	c) Improve inter- and intra-specific selectivity of gear and fishing practices, addressing particularly the problems of by-catch, discard, and ghost-fishing	R	✍ Carry out research on effects of by-catch, discard and ghost-fishing on threatened and endangered species ✍ Enhance research on fishing technology, fishing strategies and possible gear modifications to avoid by-catch, discards and ghost-fishing ✍ Favour new consumption habits and technology to process unavoidably by-catched, under-consumed species	national authorities and research institutes; regional competent organisations (coordination)	MT	A
	d) Mediterranean strategy to reduce fishing-related mortality of marine mammals, turtles and sea birds	R	✍ Geographical identification of priority areas with significant impacts on cetaceans, monk seals, sea turtles and sea birds ✍ Detailed analysis of the threat, and its significance with respect to the viability of impacted populations, based on the above and other complementary information obtained at the national level ✍ Develop Mediterranean-specific approaches to counter the negative effects of fishing on vulnerable groups ✍ Assess the potential relevance of existing technical improvements ✍ Assess the applicability of spatial and temporal restrictions on impacting gear ✍ Assess the possible implementation of no-take zones or areas with severe fishing restrictions ✍ Assess the reliance of sea birds on discard from fishing fleets in the region ✍ Establish an adaptive methodology based on pilot studies affecting different groups/species and implemented in selected sites around the Mediterranean	regional competent organisations; national research institutes; fishermen's associations	ST	A

	e) Mediterranean strategy to reduce the impact of trawling and other towed gear on critical habitats	R	✍ Geographical identification of priority areas with a verified high impact of towed gear ✍ Identify shortcomings in legislation, and develop drafts for suitable improvement ✍ Ascertain the real level of threat posed by current deep-water fishing practices, including likely short-term developments, on deep sea ecosystems in the region ✍ Assess the effectiveness of artificial reefs to prevent illegal trawling ✍ Assess the effectiveness of new prevention measures (cf. target h below)	Regional competent organisations; national research institutes; fishermen's associations	ST	A
	f) Mediterranean strategy to eliminate particularly harmful fishing practices	R	✍ Geographical identification of priority areas with a significant occurrence of: o dynamite fishing o poison fishing o sea date extraction o coral fishing using the Saint Andrew Cross ✍ Identify of problems associated with the eradication of these practices ✍ Geographical identification of priority areas with high levels of drift-net fishing ✍ Ascertain the real level of damage inflicted on vulnerable species caught as by-catch in legal drift-nets ✍ Identify problems associated with the eradication of legal drift-nets ✍ Adopting measures leading either to the total banning of legal driftnets, depending on their effects on vulnerable species, or to possible remedies ✍ Promote regional policy initiatives at GFCM level, including binding decisions regarding harmful fishing practices	Regional competent organisations; national research institutes; fishermen's associations	ST	A
	g) Develop and refine "traditional" control measures	R	✍ Organize working groups (coordinated with FAO and other regional institutions) to develop and refine measures acting on 'inputs' (e.g. closed areas, closed seasons, limits on fishing time, number of vessels authorized in the fishery, characteristics of the fishing gear and equipment used, etc.) ✍ Organize working groups (coordinated with FAO and other regional institutions) to develop and refine measures acting on 'outputs' (e.g. weight of catch or quota, minimum size of fish–mesh size, species, sex or sexual maturity of fish that may be legally harvested, etc.) ✍ Support the implementation of refined management measures	Regional competent organisations; national research institutes; fishermen's associations	ST	A

	h) Develop new management techniques	R	✍ Organize working groups (coordinated with FAO and other regional institutions) to develop and refine new management techniques (e.g. marine protected areas, artificial reefs, temporal closures –by season, area, etc., market tools, remote location and positioning of fishing ships, etc.) ✍ Support the implementation of refined management measures	Regional competent organisations; national research institutes; fishermen's associations	ST	A
	i) Increase the number of marine fishery reserves to manage fishery stocks to attain the protection of 20% of the coast	R / N	✍ Calculate total surface per country to be protected to reach the 20% threshold ✍ Decide location, habitats included, size and number of marine fishery reserves based on participative schemes, taking stakeholders' needs and experience into account ✍ Involve stakeholders in planning, managing, monitoring and exploitation issues; support their participation in the whole protection process ✍ Undertake socio-economic and biological planning and monitoring of adopted measures ✍ Define adaptive / flexible mechanisms to manage such areas ✍ Coordinate management issues at regional level (cf. Target 11.b below)	Regional competent organisations; national and local authorities; stakeholders and users; local population	LT	C
	j) Control recreational fishing activities	R / N	✍ Identify the main problems and gaps in getting accurate recreational fishing statistics ✍ Propose mechanisms to improve recreational fishing statistics at regional level ✍ In particular, design, implement and evaluate data collecting systems at national level ✍ Establish a network of institutions responsible for acquiring statistics at national level ✍ Regulate and enforce recreational fishing	Regional competent organisations; national authorities	MT	B

CATEGORY	TARGET
IV. DEVELOPING RESEARCH TO COMPLETE KNOWLEDGE AND FILL IN GAPS ON BIODIVERSITY	General objective Improve the scientific understanding and assessment of marine and coastal ecosystems [17] Specific targets ✍✍ Launch research programmes before 2006 in order to fill in identified gaps (22a, b) ✍✍ Increase more than 50 the number of PhD taxonomists in the Mediterranean region by 2010 (23 a, b, c)

Activity (Priority actions)	Objective	Scale level	Specific action	Actors	TF	Imp.
22) Improve and coordinate research on biodiversity	a) Convene a workshop (under UNEP MAP coordination) to identify gaps in knowledge of Mediterranean coastal and marine biodiversity (at genetic, species and community/ecosystem level)	R	✍ Identify potential organisers ✍ Identify potential participants ✍ Agree about objectives of the workshop ✍ Organise of a workshop to identify gaps in knowledge of Mediterranean coastal and marine biodiversity	Regional organisations	ST	A
	b) Create and fund research programmes at regional level, aiming at filling in gaps and completing knowledge of coastal and marine biodiversity, as well as transfering knowledge between countries	R / N	✍ Set up a network of excellence of national institutes of research on the issues identified through a workshop (cf. priority # 22 a) ✍ Elaborate a research programme on the issues identified through a workshop (cf. priority # 22 a) ✍ ✍	Regional organisations; national research institutes	ST	B
23) Improve taxonomic expertise in the region	a) Implement training programmes for modern taxonomists covering all groups, in order to increase the number of specialists	R / N / S-N	✍ Promote and coordinate MSc and PhD programmes ✍ Encourage the establishment of bilateral and/or multinational grants programmes ✍ Organise the exchange of students and specialists	Universities and research institutions (laboratories with expertise in selected groups)	MT	B
	b) Gather and circulate taxonomic bibliographic information	R	✍ Systematise exhaustive and well classified bibliographic information ✍ Organise Internet-based information-exchange platforms	Regional and multi-lateral institutions; universities and research institutions	ST	A
	c) Creation of sub-regional biodiversity centres to store representative collections of Mediterranean biodiversity, coupling published work, Internet-available descriptions and pictures of both preserved and live specimens, publication of genetic sequences identifying the species, etc.	R / S-R	✍ Set up sub-regional biodiversity centres ✍ Recruit permanent staff for these centres	Regional and multi-lateral institutions; universities and research institutions	ST	C

[17] From paragraph 34 of " Plan of Implementation " of the World Summit on Sustainable development – Johannesburg, September 2002

CATEGORY	TARGET					
V. CAPACITY BUILDING – COORDINATION AND TECHNICAL SUPPORT	Strengthen cooperation and coordination among global observing systems and research programmes for integrated global observation, taking into account the need for building capacity and sharing of data from ground-based observations, satellite remote sensing and other sources between all countries[18](23a, b; 24 a, b)					
Activity (Priority actions)	**Objective**	**Scale level**	**Specific action**	**Actor**	**TF**	**Imp.**
24) Achieve 'clearing-house' mechanism to focus on marine and coastal conservation activities	a) The available clearing-house mechanisms (national, CBD, RAC/SPA, etc.) reinforced and developed within the framework of UNEP MAP	R	✍ Organize the organisms and institutions involved (determining roles and responsibilities) ✍ Establish networking systems and exchange protocols: o Internet-based o printed publications o organisation of workshops ✍ Recruit permanent staff covering diverse skills and knowledge, to ensure completion of the clearing-house mechanism ✍ Devote funds to organizing the needed infrastructure ✍ Coordinate the different conventions and related initiatives (e.g. CBD, GPA) ✍ Provide start-up assistance to countries to develop participation in clearing-house mechanism	National agencies responsible for biodiversity issues; national focal points for CHM; regional institutions; multi-lateral institutions; local governments; universities and research institutions; NGOs	ST	A
	b) Ensure permanent updating of the Mediterranean clearing-house mechanism	R	✍ Promote the use of clearing-house mechanism at regional level ✍ Establish funding strategies in the medium- and long-term ✍ Establish a quality-control evaluation system: o define objectives to be evaluated o define evaluation criteria o establish monitoring mechanisms o build capacity to respond to identified problems and gaps		MT	A
25) Coordinate and develope of common tools to implement National Action Plans (NAPs)	a) Coordinate the implementation of NAPs elaborated within the SAP BIO Project (regarding the NAPs on threatened and endangered spcies cf. priority # 8)	R	✍ Organize subregional workshops on NAPs dealing with common issues ✍ During the implementation phase assure the flow of information among the NAPs ✍ When and if necessary refine NAPs ✍ Establish procedures in the framework of the clearing-house mechanism to coordinate the implementation of NAPs (cf. Priority #24, Target a above)	Regional organisations; national authorities involved in the implementation of NAPs	ST	A

[18] From Paragraph 119a Plan of Implementation of the World Summit on Sustainable Development - 4 September 2002, Johannesburg.

Activity (Priority actions)	Objective	Scale level	Specific action	Actor	TF	Imp.
	b) Common tools for implementing NAPs developed	R	✍ Prepare common guidelines, documents, standardised methods of planning, management, monitoring to assist countries in implementing the NAPs	Regional organisations	ST	A
Concerning this issue see also the following Priorities and objectives: 1a; 22 b; 23 a, c - directly dealing with capacity building 8a; 11b; 15b; 23b; 28a - directly dealing with coordination and technical support						

CATEGORY	TARGET
VI. INFORMATION AND PARTICIPATION	Increased public participation in conservation initiatives

Activity (Priority actions)	Objective	Scale level	Specific action	Actor	TF	Imp.
26) Facilitate the access to information for managers and decision-makers, as well as stakeholders and the general public	a) Enhance capacity building to ensure free access to Mediterranean environmental information	R	✍Provide the clearing house mechanism (cf. Priority # 24) with capability to ensure access to information ✍Coordinate national, regional and international agencies aiming at providing and promoting the free access to environmental information[19]	Regional organisations; national authorities and agencies	ST	B
	b) Update and encourage right of access to environmental information	R / N	✍Harmonise national legislations on access to environmental information ✍Encourage public authorities of countries to provide public access to the environmental information	Regional organisations; national authorities	ST	B
27) Promote public participation, within an integrated management scheme	a) Promote public participation	R / N	✍Encourage countries public authorities of countries to facilitate public participation in environmental decision-making processes with significant environmental implications ✍Build up adequate mechanisms to facilitate participation by NGOs and the general public in environmental decision-making processes ✍Implement effective training programmes of public officials to improve their understanding of their responsibilities in granting the public access to information and facilitating public participation in environmental decision-making ✍Update and harmonise national legislation concerning public participation in environmental decision-making ✍Coordinate regional initiatives regarding public participation with other comparable national, regional and international initiatives and Conventions[20]	Regional organisations; national authorities	MT	C

[19] e.g. INFOTERRA
[20] e.g. PPC, REC, Åarhus Convention

28) Preserve the traditional knowledge of stakeholders	a) Preserve, as heritage, traditional knowledge about marine and coastal elements	R / N	✍ Form a working group specifically addressing this issue at regional level, trying to recuperate, compile and publish traditional knowledge ✍ Promote national and regional legislation to preserve traditional knowledge ✍ Involve local communities in management actions for the conservation of Mediterranean biodiversity ✍ Coordinate regional actions with other regional and international, related initiatives (e.g. UNEP, CBD, WIPO, WRI, etc.)	Regional organisations; international organisations; national and local authorities; local communities	MT	B

ISSUE	**TARGET**
VII. AWARENESS RAISING	Increase awareness raising on marine and coastal biodiversity conservation

Activity (Priority actions)	**Objective**	**Scale level**	**Specific action**	**Actor**	**TF**	**Imp.**
29) Develop international collaboration in order to enhance regional public awareness	a) International cooperation and coordination on educational and awareness programmes	R	✍ Coordinate regional action with other subregional, regional, and international, related activities ✍ Coordinate awareness actions at regional level (e.g. through the UNEP MAP clearing-house mechanism) (cf. Priority # 24)	Regional, subregional and international organisations	ST	C
30) Organise coordinated Mediterranean-level campaigns focusing on specific regional biodiversity issues (addressed both to specific stakeholders and to the general public)	a) Raise awareness on key themes	R / S-R / N / S-N	✍ Undertake studies to identify needs and gaps in public knowledge concerning threats to biodiversity, in particular: responsible tourism; trade in rare species; illegal or irresponsible fishing ✍ Produce material (leaflets, brochures, posters, CDs, TV documentaries, etc.) for circulation ✍ Produce educational material to be used in the framework of formal education ✍ Organize and/or encourage regional and sub-regional international, more-or-less specialized, youth work-camps dealing with environmental issues (e.g. restoring disturbed habitats, mapping sensitive habitats, collecting socio-economic information, compiling traditional knowledge, extracting invasive species, measuring pollution, informing tourists, etc.) ✍ Encourage national and sub-national governments about the importance of education issues to conserve biodiversity and support national NGOs in this field ✍ Involve scientific institutions and researchers in awareness actions and initiatives ✍ Organise general public, itinerant exhibitions, conferences and dissemination seminars	Regional, subregional, national competent organisations; mass media; scientific institutions; experts in communications	MT	B

	b) Main issues discussed in SAP/BIO brought to the attention of a wide public, including decision-makers, NGOs, scientists and researchers, tourist operators, fishing industry	R	✍ Produce brochures and posters in relevant languages on SAP/BIO themes including threats; species and sites; international cooperation ✍ Produce a regional electronic newsletter about SAP BIO and biodiversity conservation issues ✍ Convene a regional workshop to educate managers and other stakeholders, to promote critical, adaptive and flexible management approaches	Regional organisations	ST	A

4. IMPROVING GOVERNANCE OF THE SUSTAINABLE USE AND CONSERVATION OF BIODIVERSITY

The development of adequate conservation policies at regional level has to be promoted within a general framework, considering the following issues:

4.1 Promoting governmental and political practices compatible with the protection of biodiversity

Protecting biodiversity cannot be separated from promoting policies and governance practices that can achieve the purposes of sustainable development. Important issues concerning governance and solidarity at regional level that have an important influence on the environment are[21]:

- Respect for human rights, the rule of law, democracy, combating corruption
- Promote sustainable and integrated management, and ensure adequate financing of sustainable development activities
- Eradicate poverty and the widening income gap between the countries of the north and south of the region, and eventually between rich and poor sectors of the society within each country (including issues emerging from immigration trends and "new" poverty)
- Address any adverse impact of trade liberalization and globalisation in the Mediterranean region and transform it into a region that shares mutual benefits
- Attain food and water security
- Enhance human health
- Peace as a fundamental value: eradicate conflicts, social exclusion and the violation of human rights and of fundamental freedoms, by removing the root causes of these problems
- Invest in education, science and technology; promote access of all people to general education; enhance sharing of scientific knowledge and promote the efficient transfer of traditional and new cleaner and appropriate technology
- Encourage public participation, access to environmental and other information relevant to sustainable development; especially, emphasise the role of women as essential actors for sustainable development
- Protect the cultural heritage

4.2 Developing integrated management strategies, being aware of the importance of land/sea interactions, and of adequate management of territory

The complexity of the ecological and economic processes occurring in the coastal zone requires the implementation of Integrated Coastal Area Management (ICAM) schemes. ICAM is defined as "a process of achieving goals and objectives of sustainable development in coastal areas, within the constraints of physical, social and economic conditions, and within the constraints of legal, financial and administrative systems and institutions"[22]. This strategy aims

[21] See the outcome of the Mediterranean Multi-Stakeholder Consultation Meeting "Contribution to a Mediterranean Strategy for the Johannesburg World Summit for Sustainable Development", held at Monaco on November 13th 2001, organised by MIO/ECSDE, with the support of the Principality of Monaco, MAP/UNEP and the Commission of the EU, and used as input to the 12th Ordinary Meeting of the Contracting Parties for the Protection of the Mediterranean against Pollution (http://www.mio-ecsde.org/Monaco_01/outcome-PrepCom2.pdf).

[22] See further information about ICAM on the website of PAP/RAC (http://www.pap-thecoastcentre.org/about.html)

to promote a collaborative approach to planning and management of the coastal zone, within a philosophy of governance by partnership with civil society[23].

4.3 Introducing the environment into the socio-economic issues for management strategies

Environmental management has as its main purpose conserving biodiversity whilst allowing the sustainability of economic activity. Economic strategies (further to using market-based instruments) aim at internalising environmental costs within wider management schemes, in order to balance the costs and benefits of human activities to attain the objectives of sustainable development, by including indirect, ecological benefits and services of biodiversity in economic analyses and modelling, under environmental economics schemes[24].

4.4 Promoting transboundary initiatives

The joint management of shared natural resources between Mediterranean countries is a crucial concern, given that most of the management landscape units (e.g. river basins, offshore zones, etc.) are trans-national. Moreover, a number of issues transcend the regional framework and must be dealt with at trans-regional or international level. Such issues are, for example, key resource exploitation, possible nuclear accidents, especially from ageing reactors, and trans-regional atmospheric and marine pollution.

4.5 Promoting solidarity

Active representation of the Mediterranean region in the ongoing debate about a global governance system for the environment is of great importance along with greater coordination and synergy between relevant organisations. If such an effective system is established in the years to come, it will be mainly through it that biodiversity conservation will be promoted at the level of trade and economic policy.

4.6 Improving and supporting activities and programmes of international conventions and initiatives

As underlined in Chapter 4 of the present document, the Mediterranean states have a high degree of participation in international conventions concerned with biodiversity, but their degree of substantial involvement in the work of these conventions is not equal; for a few states this participation remains a matter of form and must take a more active turn. It should be noted here that participation in such agreements brings a number of responsibilities. In some agreements, these responsibilities are legally binding, while in others they have a moral dimension. In both cases, peer pressure among participating countries is a strong motivation for positive action that should not be ignored.

[23] See also: http://europa.eu.int/comm/environment/iczm/
[24] See, for instance, the following websites:
http://europa.eu.int/comm/environment/enveco/
http://www.unep.org/unep/products/eeu/eeupub.htm
http://www.worldbank.org/environmentaleconomics
http://www.iied.org/enveco/

III. COORDINATION AND SYNERGY BETWEEN RELEVANT ORGANISATIONS

1. INTRODUCTION

In the Mediterranean, a vast number of organisations exist that have a degree of involvement in biodiversity. These include government services, intergovernmental organisations, local, national and international NGOs, academic institutions and research centres and many others. Their contribution to the further refinement and implementation of the Strategic Action Plan for Biodiversity may by:

- ✍✍ contributing to producing the knowledge essential for biodiversity comprehension, including applied research, inventories, mapping of habitats and species distribution, long-term population studies, etc.
- ✍✍ contributing to actually carrying out biodiversity conservation activities both at policy level and in the field.

2. SYNERGY AND COOPERATION

Cooperation and coordination between the organisations concerned by the SAP BIO should be assured at three levels:

- Coordination at national level
- Collaboration and coordination of the initiatives of intergovernmental organisations
- Coordination among NGOs whose activities cover the whole Mediterranean basin, or at least a large part of it.

Three different categories of organisation can be identified:

- Organisations/project members of the Advisory Committee already involved in the SAP BIO Project. The main areas to which these organisations/projects might be able to contribute significantly appear in Annex IV (Table 1).

- Other potential partners . Organisations and projects identified as other potential partners in the implementation of SAP BIO are listed Annex IV (Table 2)[1].

- Other MAP components . So far, RAC/SPA's cooperation with other MAP components, within the wider context of the RAC/SPA mandate, relates to a number of issues, interlinked or requiring integration. There are evident opportunities and needs for further strengthening cooperation, such as Synergy between RAC/SPA and other RACs and MAP Projects[2]

Organising a Mediterranean Conference to launch the implementation of the SAP BIO, with the participation all the potential partner organisations, should be the first step in cooperation and promoting synergy between international organisations for implementing the SAP BIO. The preparation and signing of Memoranda of Collaboration between the partner organisations should be the main output of this Conference.

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[1] The list should not be considered as definitive, but as an open call to partnership, to which some organisations might respond and others not, and which could be added to in the future

[2] Following the basic SAP/BIO strategies, this is related in particular to:
MED POL: further cooperation on pollution monitoring and abatement, the harmonised implementation of SAP MED and SAP/BIO and exchange of respective experience, trends, global change
PAP/RAC: integration of SAP/BIO actions and/or joint activities within ICAM, IWRM and IRBM, selected actions within CAMP projects, socio-economic aspects of SAP/BIO
BP: systemic prospective sustainability analysis, trends analysis, sustainability indicators for bioconservation.
ERS/RAC: use remote sensing to assess the monitoring of Mediterranean marine and coastal biodiversity
REMPEC**:** Mitigation of shipping-related impacts on marine biodiversity

IV. INVESTMENT PORTFOLIO

1. INTRODUCTION

This chapter presents:
- summary information and assessment of all actions needing investments, per three basic categories and per countries
- the investment strategy
- approaches to funding strategies at regional and national levels.

For the purpose, all priority actions are grouped in three categories:
a) National Action Plans for specific priority issues (NAPs), as prepared by national teams
b) National Priority Actions, other than those included in NAPs (ONPAs), identified by the National Reports,
c) Regional Actions (RAs), as identified by the regional process of SAP/BIO elaboration.

Information presented in this chapter is a synthesis of the respective more extensive documents:
- "Extensive SAP/BIO Investment Portfolio", presenting all individual investments per category and country in tabular form,
- "Summary of National Action Plans", and
- "Breakdown of costings for Regional Actions".

2. ASSESSMENT OF INPUTS

For a correct use of the investment related data, some differences in the level of elaboration of inputs have to be taken into account.

National Action Plans: almost all are well elaborated, with defined programmes, time scale and funding strategy, and with costings justified by breakdowns. A quality check of all NAPs was made.

Regional Actions: the respective Investment Portfolio was prepared by RAC-SPA assisted by international experts, on the basis of: previous experience of RAC/SPA; inputs from National Reports; and Regional Assessment and Identification of Priorities, taking also into account the relevant international obligations. Costings are justified by breakdown calculations.

Other National Priority Actions: for national priority actions other than those included in NAPs, in most cases no programme and timing elements were defined, and the costings in most cases is a rough estimate. Therefore, the respective totals should be used as indicative only. For these actions, prior implementation, further refining of National Investment Portfolios is needed.

3. RESULTS OBTAINED

The analysis included 19 SAP BIO National Reports, 55 NAPs and the set of Regional Actions.

The summary data obtained appears below in the Tables:

Table 1: Number of actions and total of investments needed, per category

Table 2: Regional Actions, estimated investment, issue category and rank of priority, with breakdown of investment per rank of priority for each action
Table 2a: Regional actions: structure of needed investment per priority ranking
Table 2b: Regional activities to support national actions in the preparatory phase
Table 3: National Action Plans, total per country,
Table 3a: National Action Plans per country - title and costing
Table 4: Other National Priority Actions (other than those included in NAPs), per country

The priority ranking of regional actions shown in Tables 2 and 2a was made by applying criteria defined in chapter 5.

Table 1 Number of actions and total of investment needed, per category

Category	No. of actions	Investments estimated, US $
1. National Action Plans	**57**	**38,795,000**
2. Other National Priority Actions	**168**	**57,848,000**
3. Regional Priority Actions	**30**	**40,055,000**
Grand Total	**255**	**136,698,000**

Table 2 Regional Actions, estimated investment, issue category and rank of priority, with breakdown for each action per rank of priority (*)

Regional Priority Action	Estimated Investment (US$)	Issue category (**)
1) Make a complete and integrated inventory (by sub-regions) of Mediterranean coastal, wetland, and marine sensitive habitats	1,150,000 H	I
2) Establish a monitoring system of endangered and threatened species	(180, 000) 30,000 H, 150,000 M	I
3) Promote the adequate monitoring and survey of the effectiveness of marine and coastal protected areas	50,000 40,000H 10,000 M	I
4) Identify, develop, and validate adequate biological and socio-economic indicators to assess the ecological health of sensitive habitats and species, and to evaluate the effectiveness of management measures	115,000 M	I
5) Update, coordinate and enforce legislation to conserve biodiversity	20,000 H	I
6) Develop actions to conserve threatened and endangered (coastal and marine) Mediterranean species, as identified by National Reports	110,000 H	I
7) Assist countries to protect marine and coastal sites of particular interest (see Annex 3)	1,000,000 H	II
8) Declare and develop of new Coastal and Marine Protected Areas including in the high seas	(16,300,000) 15,000,000 H 1,300,000 M	II

Regional Priority Action	Estimated Investment (US$)	Issue category (**)
9) Assist countries in the development of existing marine and coastal protected areas	(5,500,000) 5,000,000 H 500,000 L	II
10) Monitor global trade and economic policies and trends from a Mediterranean perspective, to analyse their scope and probable effects on biodiversity	35,000 M	II
11) Establish a monitoring regional programme following up the socio-economic impact of changes in biodiversity	10,000 M	II
12) Assess the potential impact of climate change and rise in sea level on Mediterranean coastal and marine biodiversity	40,000 L	III
13) Assess the potential impact of threats on Mediterranean coastal and marine biodiversity	115,000 L	III
14) Mitigate the direct impact of international trade in endangered species	510,000 M	III
15) Control and mitigate the introduction and spread of alien and invasive species	6,000,000 H	III
16) Control and mitigate coastal urbanization and construction of coastal infrastructure	50,000 L	III
17) Control and mitigate the effect of changes in land use	100,000 L	III
18) Promote eco- and soft tourism, control and mitigate impact of recreational activities	3,100,000 M	III
19) Assess and elaborate of strategies to prevent the environmental impact of sources of pollution	(125,000[1]) 75,000 M 50,000 L	III
20) Control and regulation of aquaculture practices	75,000[2] M	III
21) Assessment, control and elaboration of strategies to prevent impact of fisheries on biodiversity	(1,370,000[3]) 370.000 H 1,000,000 L	III
22) Improve and coordinate biodiversity research	100,000 H	IV
23) Improve taxonomic expertise in the region	1,280,000 H	V
24) Achieve 'clearing-house' mechanism to focus on marine and coastal conservation activities	400,000 H	VI
25) Coordinate and develop common tools to implement National Action Plans (NAPs)	50,000 H	VI
26) Facilitate access to information for managers and decision-makers, as well as stakeholders and the general public	20,000 H	VI
27) Promote public participation, within an integrated management scheme	700,000 H	VI
28) Preserve traditional knowledge of stakeholders	100,000 H	VI
29) Develop international collaboration in order to enhance regional public awareness	100,000 H	VI
30) Organise coordinated Mediterranean-level campaigns focusing on specific regional biodiversity issues (addressed both to specific stakeholders and to the general public)	(1,250,000) 250,000 H 1,000,000 L	VI
Total	**40,055,000**	

(*) H = high, first priority rank; M = medium, second priority rank; L = low, third priority rank
(**) Issue categories as defined in Chapter 5:

I. Inventorying, mapping and monitoring Mediterranean coastal and marine biodiversity
II. Conservation of sensitive habitats, species and sites
III. Assessing and mitigating the impact of threats to biodiversity
IV. Developing research to complete knowledge and fill gaps in biodiversity
V. Capacity-building to ensure coordination and technical support
VI. Information and participation
VII. Awareness raising.

[1] Support for other programmes.
[2] Support for other programmes.
[3] Support for other programmes.

Table 2a: Regional Priority Actions: structure of investment needed per priority ranking

Priority rank	Respective totals, US$	% of Grand Total
High priority	31,720,000	79,3
Medium priority	5,980,000	14,9
Low priority	2,355,000	5,8
Total	**40,055,000**	**100,0**

Table 2b: Regional activities to support national and other actions in the preparatory phase

Activity	Costing estimate, US$
1. Assistance to countries for further refining of costings	60,000
2. Preparation of the operational strategy for funding and implementation of SAP/BIO at national and regional levels (strategy, preparation of funding requests, contacts with donors and partners, etc.)	75,000
3. Information, co-ordination, capacity building workshops	60,000
4. Launching Conference (preparatory activities, preparation of national and regional reference documents, resource persons, participants expenses)	75,000
5. Co-ordination costs	25,000
Total:	**295,000**

Table 3: National Action Plans, totals per countries

Country	No. of NAPs	Estimated investment, US $
1. Albania	4	4,184,000
2. Algeria	4	1,553,000
3. Bosnia and Herzegovina	2	435,000
4. Croatia	4	1,845,000
5. Egypt	3	7,309,000
6. Israel	2	547,000
7. Lebanon	6	5,332,000
8. Libya	3	873,000
9. Malta	4	2,044,000
10. Morocco	5	860,000
11. Slovenia	5	345,000
12. Syria	4	7,000,000
13. Tunisia	7	2,815,000
14. Turkey	4	3,653,000
Grand Total	**57**	**38,795,000**

Table 3a National Action Plans per country: title and costing

Albania	
1. Action Plan for the proclamation of the Marine National Park of Karaburuni area	638, 000
2. Action Plan for the rehabilitation of the Kune-Vain lagoon system	745,000
3. Action Plan for the Dalmatian pelican in Albania	893,000
4. Action Plan for building and exploitation of artificial reefs for the fisheries along the Albanian coast.	1,908,000
Algeria	
1. Action Plan for setting up a network for monitoring of *Posidonia oceanica* meadows	49,000
2. Action Plan for setting up a programme to the collect of data on the Monk seal ;	69,000
3. Action Plan for reducing fishing activity pressure on coastal area biodiversity hot spots	181,000
4. Action Plan for inventorying and setting up marine and coastal protected areas in Algeria	1,254,000
Bosnia and Herzegovina	
1. Action Plan for the identification and preservation of endangered marine, freshwater and terrestrial habitats and plant communities in the Mediterranean zone of Bosnia and Herzegovina	275,000
2. Action Plan for the sustainable development of the marine and adjacent waters of Bosnia and Herzegovina: cross border co-operation issue.	160,000
Croatia	
1. Action Plan for a network of Mediterranean wetlands in Croatia – management and restoration;	400,000
2. Action Plan to combat negative Impact of hunting, poaching and commercial collecting on coastal zone biodiversity, including introduction of new game species on islands;	300,000
3. Action Plan for mapping, assessment and protection of submerged karstic phenomena;	120,000
4. Action Plan on biodiversity conservation as a part of integral coastal zone management planning.	1,025,000
Egypt	
1. Bio-resources assessment of Mediterranean coastal waters of Egypt, development of Mediterranean Bio-Diversity Database, and public awareness for bio-conservation	2,753.000
2. Development and maintenance of the Matruh Nature Conservation Sector (MNCZ)	1,701,000
3. Bedouin operated bio-diversity conservation and restoration programme	2,855.000
Israel	
1. Action Plan for the conservation of marine and coastal birds in Israel	127,000
2. Action Plan for the conservation of fish along the Israeli coast of Mediterranean	420.000
Lebanon	
1. Action Plan for organising awareness campaigns for the Lebanese coastal communities and the public sector;	534.000
2. Action Plan for updating of legislation and development of guidelines for marine and coastal conservation;	180,000
3. Action Plan for determining the physical parameters of the Lebanese marine environment;	2,750,000
4. Action Plan for establishing conservation strategies for coastal habitats	1,040,000
5. Action Plan for developing monitoring strategies for coastal and marine biodiversity;	416,000
6. Action Plan for Palm Islands & Tyre Coast Nature Reserves.	412,000

Libya	
1. Action Plan for the conservation of marine and coastal birds in Libya	420,000
2. Action Plan on proposed new marine and coastal protected areas and national parks	320,000
3. Action Plan for the conservation of marine turtles and their habitats in Libya	133.000
Malta	
1. Action Plans for the conservation of cetaceans in Maltese waters	901,000
2. Action Plan for estimating the sustainability of grouper fishing in Malta	797,000
3. Action Plan for the conservation of sharks, rays and skate in the Maltese Islands	260.000
4. Action Plan for the micro-cartography, mapping and surveillance of the *Posidonia oceanica* meadows in the Maltese Islands.	86,000
Morocco	
1. Action plan for mapping Morocco's Mediterranean coast	103,000
2. Action Plan for a research programme on Morocco's Mediterranean biodiversity	225,000
3. Action Plan for elaborating programmes and projects on education and awareness, and elaborating a guide to Morocco's endangered species and ecosystems	510,000
4. Action Plan for improving the national legislation	12,000
5. Action Plan for making best use of the Mediterranean marine biodiversity	10,000
Slovenia	
1. Action Plan on Habitat cartography supported by the Geographic Information System with special emphasis on seagrass meadows	155,000
2. Action Plan for biological invasions and possible effects on biodiversity	30,000
3. Action Plan on the impact of alien populations used in mariculture on genome of wild populations of same species	33,000
4. Action Plan on Slovene commercial fishery by-catch	48,000
5. Action Plan for Sensitive ecosystems – *Posidonia oceanica* meadow (ecological conditions, cartography and monitoring based on the *GIS Posidonie* methodology)	79,000
Syria:	
1. Action Plan for the conservation of sea turtles along the Syrian coast	1,550,000
2. Action Plan for marine and coastal protected areas	2,575,000
3. Action Plan on invasive species and their impacts on marine biodiversity	1,125,000
4. Action Plan for determination of physical parameters of national marine waters	1,750,000
Tunisia	
1. Action Plan for the impact of fishing activity on littoral biodiversity	615,000
2. Action Plan for a pilot monitoring of *Posidonia* meadows;	440,000
3. Action Plan for Protecting coralligenous communities;	450,000
4. Action Plan for the co-ordination and training on legal and institutional aspects	280,000
5. Action Plan for studying invasive species	200,000
6. Action Plan on awareness raising and education on biodiversity	430,000
7. Action Plan for establishing Centre for the protection of sea turtles	400,000
Turkey	
1. Conservation of marine turtles in Turkey	2,450,000
2. Creation of marine protected areas along the Turkish coasts	375,000
3. Reducing the negative impacts of detrimental fishing practices (trawl, purse seine, spear fishing, use of explosives) on sensitive ecosystems and on vulnerable species;	183,000
4. Conservation of cetacean species in the Turkish water of the Aegean and Mediterranean Sea	645,000

Table 4 Other National Priority Actions, per country

Country	No. of ONPAs:	Estimated Investment/country, US $ Totals
1. Albania	22	7,290,000
2. Algeria	6	748,000
3. Bosnia and Herzegovina	11	4,520,000
4. Croatia	29	7,590,000
5. Cyprus	9	3,100,000
6. Egypt	1	2,500,000
7. Greece	27	20,505,000
8. Israel	3	460,000
9. Italy (5)		-------
10. Libya	5	1,200,000
11. Malta	17	4,540,000
12. Slovenia	13	375,000
13. Spain (12)		-------
14. Syria (13)		-------
15. Turkey	25	3,705,000
Grand Total	**168**	**57,848,000**

4. INVESTMENT AND IMPLEMENTATION STRATEGY

In order to define a realistic and fact-based investment strategy, the summary of investment data presented in the previous sub-chapter should be considered from various points of view, in particular concerning: a) the present level of actions programmes elaboration, b) readiness for implementation, excluding funding aspects, and c) the rank of priority as defined in Ch. II.

An interpretation of the above facts for three categories and actions to support the preparatory phase of action is presented in Table 5.

Table 5 Facts relevant to the SAP/BIO investment strategy

Category	No. of actions	Total costing, Mil. $	Costing, justified	Programme elaboration	Implementability pending funding	Priority rank (*)
1. NAPs	**57**	**38,8**	**Yes**	**Satisfactory**	**Implementable**	**H**
2. RPAs	**30**	**40.0**	**Yes**	**Satisfactory**		**H/M/L**
(RPAs/H		(31.7)	Yes	Satisfactory	Implementable	H
RPAs/M		(6.0)	Yes	Satisfactory	Not yet implementable	M
RPAs/L		(2.3)	Yes	Satisfactory	Not yet implementable	L)
3. ONPAs	**168**	**57.8**	**Rough estimates**	**Not yet elaborated**	**Most not yet implementable**	**To be defined by countries**

(*) H = high, first priority rank; M = medium, second priority rank; L = low, third priority rank.

Due to funding aspects, capacity for implementation, and from an operational point of view, implementation of SAP/BIO needs to be phased, at regional and national level. After the adoption of SAP/BIO, a short-term preparatory phase is needed, to allow the preparation of inputs for launching and implementing the regional and national SAP/BIO components..

This preparatory phase should consist of:
- immediate contacts and preliminary agreements with partners and donors,
- refining of national investment portfolios,
- defining of funding and implementation strategies,
- provision of assistance to countries to meet the needed prerequisites, and
- harmonisation of all respective activities.

National proposals for the implementation of national actions and an outline for a large SAP/BIO umbrella implementation project should be the major outputs of this phase.

The preparatory phase should be funded by a short-term low-costed project (such as the PDF grants). An estimate of the funds needed is anticipated in point 3 Table 2.b in this chapter. All the outputs of the preparatory phase will be presented to donors, interested partners and national representatives at a SAP/BIO Launching Conference.

It is evident that in principle, priority in implementation should be given to National Action Plans and those Regional Priority Actions ranked in Table 5 as H (first grade priority).

In addition, a number of national priority actions, other than those included in NAPs, might be easily implementable due to the modest funds needed, prospects of quickly achieving tangible results, and the necessary prerequisites being easily attainable. In these cases, national funding and implementation strategies might include such actions also in the first implementation phase, taking into account donors requirements and criteria.

The amounts of funds needed by each country for implementing NAPs and other national priority actions, as presented in Tables 3 and 4 above, indicate that for a number of participating countries, only partial co-funding or a predominantly external funding on a grant basis, eligibility pending, might be a realistic strategy. The same holds good for Regional Priority Actions, where the funds needed cannot be secured from current regional sources.

Therefore, funding strategies have to consider as indispensable the possibility of attracting international funding, as well as national funding by national funds and donors or sponsors. For NAPs and other national priority actions, in addition to external support, a certain level of national funds and counterpart contributions has to be secured.

For synergy and cost-effectiveness, a comprehensive, well structured system of co-operation and/or shared implementation has to be designed, to include competent and authorised international partners and/or donors, and sub-regional, multi, or bi-lateral co-operation between countries, if appropriate.

The refining of National Investment Portfolios should include: a) a more detailed breakdown of the funds needed for each action, b) reduced fragmentation of national actions, c) definition of time scale, and d) analysis of "implementability" of each action.

As one of the guiding principles for formulating national funding strategies, co-funding and cost sharing should be envisaged, except in cases of eligibility for and realistic expectations of grants. National funds should be used primarily to induce catalytic effects, as well as for:
a) Implementing urgent actions that require modest funds, and
b) for preparatory activities related to medium- and long-term action.

In all cases provision of permanent sources for implementation, such as market instruments for SAP/BIO and private sponsorship should be considered.

In principle, the potential national sources to be looked for are: budgets and funds at national and local level, private partnership and/or sponsorship, economic instruments and mechanisms, fund-raising, and other national or issue specific sources, if any. Providing proper approaches are applied, and if classic unattractive, outdated forms and mechanisms are abandoned, large national funds might be secured in almost all countries.

Among potential external sources to be analysed, the following might be mentioned:
a) sub-regional or multi- or bilateral co-operation (N/S or N/E type, not excluding the S/S type),
b) international funding programmes, pending eligibility: GEF, UNDP, WB, METAP, etc.
c) international foundations, private partnerships, sponsorships, grants, etc.
d) various EU sources, pending eligibility
e) other international funds, if appropriate.

As one of the essential elements for definition of funding strategies, the time scale attributed to an action or to a group of actions should be considered. In principle, short-term actions are to be funded from immediately available funds; in practice these are primarily national. Medium- and long-term actions, given eligibility, are usually oriented towards international support. With the exemption of eligibility for grants, national contributions (in cash in most cases, in cash and kind in some cases), has to be envisaged.

The phasing of the implementation programme should respect the implementability assessment made in chapter II : a) a short-term period of 2 years, b) mid-term period of 4 years and c) the long term period afterwards. Pending specific requirements of the implementation project(s), the phasing might be adapted accordingly. At present, taking into account all the relevant facts, an overall 15-years implementation period might seem realistic. By the end of the mid-term phase, implementation programmes will need to be updated.

Previous experience related to the implementing of similar large international programmes indicates as realistic the formulation of an outline for a large SAP/BIO Umbrella Project, where as components are envisaged:
a) regional component including: (i) regional actions to be implemented at regional level,
(ii) regional actions to be implemented in the countries themselves, and (iii) assistance to countries,
b) the countries' related components, composed of the set of national programmes.

The institutional and other aspects of such a concept will have to be elaborated taking into account the results of contacts made with potential funding agencies and institutions, as well as the national proposals for implementation.

Furthermore, thematic criteria considered as priorities by international funds, should be taken into account when designing the Outline for the Umbrella project, such as:
a) management of living resources, b) protection and conservation of marine and coastal biodiversity, c) impacts of pollution on biodiversity, and d) transboundary aspects and cases of biodiversity protection.

Implementation programmes, including their funding and implementation strategies, phasing and operational details should be elaborated at regional level and by each country in the form of Operational SAP/BIO Implementation Programmes, to be finalised on the basis of the results of the Launching Conference.

For timely, successful implementation of the national actions listed above, regional guidance, co-ordination and assistance is essential. Therefore, appropriate specific actions have been

envisaged and appear in the list of Regional Priority Actions, presented in Tables 2. and 2b. above.

V. PROVISIONS FOR FOLLOW-UP

1. STRATEGY FOR FOLLOW-UP

Most of the elements concerning funding and implementation, essential for the follow-up strategy, were elaborated in the preceding chapter. The priorities and ranking of priority level were elaborated in Chapter II.Also, all relevant regional and national aspects, and the MAP's institutional frameworks have to be taken into account.

In this regard, the essential elements of the strategy for follow-up are:
- appropriate institutional arrangements and implementation capacity have to be provided ,
- a short-term preparatory phase is needed,
- a realistic time horizon for implementating SAP/BIO might be estimated at 15 years,
- the implementation process should be structured in phases,
- a number of prerequisites for implementation have to be satisfactorily met during the preparatory phase, in particular:
    - further refining of National Investment Portfolios with a view of implementation needs,
    - establishing of a comprehensive system of co-operation, looking for synergies,
    - provision of external support, both for the regional and national plans, and
    - formulation of national and regional funding and implementation strategies,
- support and assistance to national actions during the preparatory phase has to be defined and implemented,
- Operational SAP/BIO Implementation Programmes have to be prepared at regional level and for each country, as well as an Outline for an Umbrella SAP/BIO Implementation Project, and
- a Launching Conference should be prepared and organised.

The activities implemented and the number of documents prepared so far allow for follow-up actions to start immediately after SAP/BIO and completion of the preparatory phase compilted; some of them may even start earlier.

2. PROVISIONS FOR FOLLOW UP

The nature and complexity of SAP/BIO imply a concerted and harmonised implementation of follow up activities at regional, national and local levels, based on mutual interdependence and interactions. Actions and prerequisites at local level, varying on a case-by-case basis, will be defined within the national programmes.

The major prerequisites for follow-up appear in the respective at the end of this chapter.

2.1. Follow-up activities at national level

Follow-up activities at national level include:
- establishing institutional arrangements,
- implementing actions pertaining to the preparatory phase, and
- national activities at the Launching Conference.

2.1.1. Establishing SAP/BIO national institutional arrangements. The institutional arrangements used to elaborate SAP/BIO have been shown in practice to be efficient, professional and capable of implementing the present phase of the Project. These arrangements include: the National Focal Points for RAC/SPA, National SAP/BIO Correspondents, National SAP/BIO Steering or Advisory Bodies, and national institutions, scientists and professionals as appropriate. The respective mandates and terms of reference were geared to the preparation of SAP/BIO (with the NFPs and the National Correspondents also having a regional role). Probably the same arrangements that were adapted to the implementation phase might be considered. In this regard, in addition, the responsibility for progress monitoring, evaluation and reporting has to be defined. Although it might be assumed that the arrangements will continue in

their present structure, it is understood that each country might apply its own specific approaches. During the preparatory phase, one initial meeting of the Advisory/Steering Committee will be needed.

2.1.2. Implementing the preparatory phase . In accordance with the follow-up strategy, the following actions have to be implemented:

- Refining National Investment Portfolios.

The refining of National Investment Portfolios is an essential prerequisite for further follow-up activities, to be done immediately. Bearing in mind the complexity of this activity, regional cooperation and assistance is essential and has to be envisaged as appropriate. The tasks to be implemented are presented in chapter IV:

- reducing fragmentation by grouping similar actions into larger thematic units,
- defining a time scale for each action and for grouping them together,
- a more precise calculation of the funds needed for each action,
- ranking of actions, according to their significance and the expected benefits
- analysing "implementability" i. e. of prerequisites to be met: necessary preparatory activities, technical design, funding availability.

- Identifying opportunities and needs for cooperation, support, and/or sponsorship.

Here a number of opportunities have to be analysed:

a) various forms of co-operation and support within the national context,

b) co-operation at regional or sub-regional level within MAP and/or within a joint MAP/other bodies and agencies context,

c) direct co-operation with and support from other international agencies, organisations or intergovernmental bodies, and

d) opportunities for bilateral or multilateral co-operation among countries.

Actions to be undertaken according to the analysis made are related to: contacts with potential partners, and/or donors, and/or sponsors (identified by the analysis); upon confirmation, drafting the modalities and terms for co-operation and support.

- Elaborating national funding and implementation strategies, including:

- elaboration of the funding strategy, taking into account identified partners and donors: identifying national and external funding sources, defining the strategy and identifying of actions aiming at provision of funds, and
- elaboration of the implementation strategy: phasing, taking into account the results of all preceding steps, identifying actions to be implemented and prerequisites needed.

One of the basic objectives of the funding strategy should be a gradual increase in the sustainability of the SAP/BIO national programme, by introducing economic instruments where applicable in national conditions, as well as by securing other regular, permanent funding sources.

- Formulating National SAP/BIO Operational Programmes

Once the preceding activities have been implemented, National Operational Programmes should be prepared. Such Programmes should define: actions, phasing, responsibilities, funding, basic prerequisites, deadlines, and provisions for progress monitoring, evaluation and reporting. Finally, provisions for implementation at local, area, or site level have to be identified and included.

2.1.3. Presenting national outputs at the Launching Conference

The national strategies and operational programmes produced during the preparatory phase have to be presented, and discussed with partners and sponsors, in order to create the conditions for agreements and for the implementation phase to start.

The preparation and implementation of national follow-up activities will be guided, harmonised / coordinated and assisted by RAC/SPA-MAP. To this end the Centres capacity should be strengthened, as appropriate.

2.2. Follow-up activities at regional level

Follow-up activities at regional level include:
- those related to the provision of assistance, support, coordination and harmonisation of national follow-up activities, and
- those related to the prerequisites for implementation at regional level.

2.2.1. Establishing regional institutional arrangements.

As at national level, the regional arrangements for preparing the SAP/BIO have been shown in practice to be capable and efficient. Therefore the present arrangements will be adapted to the suit needs of the implementation phase. This is related to:

a) a certain extension of the present mandate of the Advisory Committee and National Correspondents (since the new arrangements have to be established by a step-by-step approach), and the formulating of respective Terms of Reference to meet the requirements of the implementation phase

b) inclusion of partners/donors/sponsors, still to be identified and upon agreements,

c) establishing regional system for progress monitoring, evaluation and reporting, including all respective national systems

d) the inclusion of other MAP components, pending their involvement in SAP/BIO.

2.2.2. Analysis of RAC/SPA's capacity for implementing SAP BIO and measures to strengthen it .

The preparatory phase, and implementation in particular, will require the intensive involvement of RAC/SPA. Additional actions to be implemented concern:

a) coordination, assistance and support for countries
b) actions related to the establishing and functioning of a comprehensive, rational and efficient system of co-operation, partnership and participation
c) the establishing and functioning of the SAP/BIO monitoring, evaluation and reporting system.

Therefore, an analysis should be made of the present capacity of the Centre with regard to new requirements and needs, and appropriate measures identified, proposed and adopted.

2.2.3. Formulating and implementing the preparatory phase.

A short-term, low-cost preparatory phase should be formulated, agreed upon and implemented, its major activities concerning:

- the provision of support for national preparatory activities, including guidance, coordination and harmonisation
- contacts and agreements with partners and potential donors, defining and establishing international cooperation and participation, looking for synergies,
- the Formulation of regional funding and implementation strategies, in particular related to the phasing of implementing of high priority regional activities
- preparing an outline for a large SAP/BIO implementation project
- formulation of the Regional SAP/BIO Operational Programme[1].

[1] Such a Programme, with a long-term horizon, that integrates the relevant elements of the respective National Programmes, should include:

- the regional funding strategy, including identification of potential sources and partners, and measures to increase the sustainability of national programmes
- international co-operation and harmonisation, inter-sectoral actions
- actions to be implemented with the participation of other MAP components
- strategy and actions for implementing the participative approach at regional level
- an operational plan of actions, including phasing, workplan, timetable and budget
- measures and actions related to co-ordination, harmonisation and management, as well as to progress monitoring, evaluation and reporting, and the necessary institutional arrangements.

2.2.4. Organising the Launching Conference.

The objectives of the Conference are to:

- inform on results of SAP/BIO and raise attention and awareness
- present the results of the preparatory phase, to attract partners and donors, establish partnership and sponsorship
- ensure media coverage and high-level national support.

The Conference will be organised after the completion of the preparatory phase to present all the relevant outputs and create the conditions for implementing SAP/BIO. Its main output will be defining and establishing international co-operation and participation, looking for synergies and partnership. Potential partners for implementing SAP/BIO are: (i) scientifically or professionally competent and/or internationally trustworthy agencies, intergovernmental bodies and other international organisations listed in Chapter III, (ii) international funding programmes, in particular GEF and relevant EU programmes, and potential donors, and (iii) stakeholders, including regional NGOs and other interested or concerned representatives of the international, regional or sub-regional community.

3. Responsibility for the Regional SAP/BIO Operational Programme.

MAP is generally responsible for coordinating the implementation of the SAP/BIO. In addition, pending agreement, partial or full responsibility for individual actions might be attributed to partners. This should be considered in particular concerning sectoral issues relevant for biodiversity conservation and protection (such as agriculture, forestry, fisheries and aquaculture, tourism, ICAM and IWRM, global trends and socio-economic issues). Finally, some actions needing attention at regional level might be implemented independently by other partners, within cooperation at international level.

4. Tentative timetable

A tentative framework timetable for implementing milestone follow-up activities, upon adoption of SAP/BIO, appears in Table 1.

Table 1 Provisions for follow-up - Tentative/framework time-table

Milestone activities:	**Tentative deadline**
1. Formulation of the project document for the Preparatory Phase and its adoption	End January 2004
2. Implementation of the Preparatory Phase	February-June 2004
3. Launching Conference	June 2004

The detailed operational timetable will have to be elaborated in the project document for the Preparatory Phase.

Table 2: PROVISIONS FOR FOLLOW-UP: NATIONAL LEVEL

Activity:	Objective	Output
1. Establishing national institutional arrangements	To create the institutional prerequisites for implementation, by adapting current SAP/BIO national arrangements to the requirements of the implementation phase	Established institutional arrangements
2. Implementing national activities within the preparatory phase		
2.1 Refining National Investment Portfolios	To create a basis funding-related activities, by: refining the original National Investment Portfolio, defining time scale and ranking priorities, and identifying the prerequisites to be met for the implementation of each action	Refined Investment Portfolios .
2.2. Identifying opportunities for cooperation, support, and partnership	To prepare the basis for contacts with potential partners for cooperation, financial support and/or sponsorship, by: analysing opportunities; identifying potential partners, donors and/or sponsors; contacting them; and defining roles and modalities for partnership and support.	Co-operation, partnership and support modalities identified
2.3 Elaborating national funding and implementation strategies	To prepare national funding strategies, by defining national funding sources and external support. To define implementation strategies by: analysing the implementability of national actions; their ranking and grouping; and phasing the implementation process.	National funding strategies. National implementation strategies
2.4. Formulating National SAP/BIO Operational Programmes	To establish a planning and operational basis for implementing by preparing comprehensive Operational Programmes (including funding and implementation strategies) to be used as basic instruments for implementation	National SAP/BIO Operational Programmes
3. Presenting of Operational Programmes at the Launching Conference	To provide for an operational and formal basis for final agreements with partners and sponsors, and for inclusion of national within the large umbrella SAP/BIO implementation project, by presenting the Operational Programmes at the Launching Conference.	Results of the Launching Conference. Agreements reached.

Table 3: PROVISIONS FOR FOLLOW-UP: REGIONAL LEVEL

Activity	Objective	Output
1. Establishing regional institutional arrangements	To adapt the present regional SAP/BIO arrangements to the needs of the implementation phase	TORs for Nat. Correspondents, and for the Advisory/Steering Committee. The system functions
2. Analysing/strengthening of RAC/SPA capacity for SAP/BIO implementation	To ensure RAC/SPA's capacity to implement SAP/BIO by an analysis and to implement the of measures needed.	Immediate and subsequent measures approved and provided for
3. Implementing regional activities within the preparatory phase:	To provide a programmatic and institutional framework, including funding of the preparatory phase, and to implement the envisaged activities, as follows:	Project for the preparatory phase. Project approved
3.1 Provision of support for national teams and institutions	To identify, prepare and implement regional assistance and support for national activities envisaged in the preparatory phase	Regional programme of actions to support national activities formulated and implemented
3.2. Establishing international cooperation/participation	To define and agree on modalities of international cooperation, participation and support, after contacting partners and donors.	Documents on co-operation, participation and support
3.3. Formulating the regional funding strategy	To formulate a funding strategy for implementation, on the basis of contacts with partners and donors	The regional SAP/BIO funding strategy
3.4. Preparing the Outline for the SAP/BIO Umbrella Project	To prepare an outline for a large umbrella SAP/BIO implementation project, to include the set of national programmes and the regional component	Outline for the SAP/BIO Umbrella Project
3.5 Formulating the SAP/BIO Operational Programme	To prepare the Operational Programme for implementing of SAP/BIO as the basic operational document for the implementation phase	Operational SAP/ BIO Programme
4. Organising the Launching Conference	To prepare and organise the Launching Conference, to: present SAP/BIO, the regional and national Operational Programmes and the Outline for the SAP/BIO Umbrella Project; discuss implementation and support with donors and partners; agree on co-operation and support; and finalise prerequisites for implementation	Reference documents; Conference outputs; Conference Report

ANNEX I
LIST OF THE MAIN DOCUMENTS/OUTPUTS ELABORATED WITHIN THE SAP BIO PROJECT

National Reports (prepared by countries)

18 National Reports (Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, Greece, Israel, Lebanon, Libya, Malta, Morocco, Slovenia, Syria, Spain, Italy, Tunisia and Turkey) and a Contribution from Monaco.

National Action Plans (identified and elaborated by countries)

[57] National Action Plans

Regional documents

- Effects of fishing practices in the Mediterranean Sea: impact on marine sensitive habitats and species and technical solutions and recommendations
- Legal analysis of the measures envisaged by the states bordering on the Mediterranean to minimize the impact of fishing activities on threatened marine ecosystems and non-target species
- Report on the introduction in the Mediterranean of marine and brackish water species for the purposes of aquaculture
- Regional strategy to reduce the impact of fishing activities on sensitive habitats and species
- State of knowledge about marine and coastal biodiversity in the Mediterranean Sea
- White coral community, canyon and seamount faunas of the deep Mediterranean Sea
- The coralligenous community
- Guidelines for the elaboration of National Action Plans for the control of fishing practices and gear harmful to threatened species and habitats
- General guidelines for elaborating Action Plans for the conservation of marine and coastal birds.
- Impact of tourism on marine and coastal Mediterranean biodiversity, in particular on sensitive species and habitats and on protected areas
- The role of coastal Mediterranean wetlands (coastal lagoons, estuaries) in the conservation of coastal biodiversity[1].

[1] This document was prepared jointly with MEDWET.

Main other Documents

- Preparation of a strategic Action Plan for the conservation of biological diversity in the Mediterranean region
- Detailed outline for preparing the SAP BIO document
- Guidelines for preparing National Reports.
- General guidelines for preparing National Action Plans
- Rapport of the Workshop on development of National Action Plans concerning the impact of fishery on marine biodiversity.

ANNEX II
PEOPLE DIRECTLY INVOLVED IN THE SAP BIO PROJECT

National Correspondents

Country	National Correspondents	National Lead Agency
Albania	Mr Zamir DEDEJ	National Environment Agency – Nature Protection Directorate
Algeria	Ms Nadia CHENOUF	Ministère de l'Aménagement du Territoire et de l'Environnement
Bosnia & Herzegovina	Mr Ivan BUNTIC,	Cantonal Ministry of Civil Engineering, Physical Planning & Environment Protection
Croatia	Ms Sandra TROSELJ Mr Gordana PAVOKOVIC	Ministry of Environment Protection and Physical Planning
Cyprus	Ms Myroula HADJICHROSTOPHOROU,	Miistry of Agriculture, Natural Resources and Environment – Department of Fisheries and Marine Research
Egypt	Mr Mustapha FOUDA	Nature Conservation Sector
European Commission,	Mr Alessandro CURATOLO,	European Commission
France	Mr Xavier GUERIN Mr Tahar OU RABAH	Ministère de l'Aménagement du Territoire et de l'Environnement
Greece	Ms Stavroula SPYROPOULOU,	Ministry of Environment, Physical Planning and Public Work
Israel	Mr Eliezer FRANKENBERG	Israel Nature & Parks Protection Authority
Italy	Ms Carla BARBERA Mr Giulio RELINI	Ministry for the Environment Univ. of Genoa
Lebanon	Ms Lamia CHAMAS Ms Lara SAMAHA	Ministry of Environment
Libya	Mr Taher AMER,	Environmental General Authority
Malta	Mr Alfred BALDACCHINO Mrs Carmen MIFSUD	Environment Protection Department
Morocco	Mr El Hassan DOUMI	Ministère de l'Aménagement du Territoire de l'Urbanisme, de l'Habitat et de l'Environnement
Monaco	Mrs Marie Christine VAN KLAVEREN,	Division du Patrimoine Naturel – C/o Coopération Internationale
Slovenia	Mr Robert TURK	Institute of the Republic of Slovenia for nature Protection
Spain	Mr Javier PANTOJA TRIGUEROS,	Ministry of Environment
Syria	Mr Akram Issa DARWISH Mr Odhaina JUNDI	Ministry of State for Environment
Tunisia	Mr Habib BEN MOUSSA	Agence Nationale pour la Protection de l'Environnement
Turkey	Mrs Ozlem Ebru KAMILOGLOU Mr Hakan BAYKAL	Ministry of Environment

Advisory Committee

Organisation	Members
ADRIAMED	Mr Fabio MASSA Mr Piero MANNINI
ACCOBAMS	Mrs Marie Christine VAN KLAVEREN
ALECSO	Mr Abdallah BA ISSA
Council of Europe	Mrs Françoise BAUER
COPEMED	Mr Rafel ROBLES
European Topic Centre on Nature Protection & Biodiversity	Mr Carlos ROMAO
FAO	Mr Michel LAMBOEUF Mr Pere OLIVER Mr Jordi LLEONART
IUCN	Mr Francis PARAKATIL Mr Andres ALCANTARA Mrs Imène MELIANE
MedWet	Mr Spyros KOUVELIS Mr Thymio PAPAYANNIS
WWF	Mr Paolo GUGLIELMI

UNEP MAP

Mr Ante BARIC - GEF Coordinator

RAC/SPA

Mr Mohamed Adel HENTATI - Director
Mr Chedly RAIS - Scientific Director
Mr Giovanni TORCHIA - Expert Marine Biologist
Ms Lobna BEN NAKHLA - Assistant to the Project
Mrs Néziha BEN MOUSSA - Secretary

International Consultants

Mr Fabio BADALAMENTI
Mr Enrique BALLESTEROS
Mr Mohamed BEL HADJ ALI
Mr Ferdinando BOERO
Mr Charles François BOUDOURESQUE
Mr Abdelhafidh CHALABI
Mr José Antonio Garcia CHARTON
Mr Andreas DEMETROPOULOS
Mr Peter HISLAIRE
Mr Pere OLIVER
Mr Thymio PAPAYANNIS
Mr Arsen PAVASOVIC
Mr Giulio RELINI
Mr Joe SULTANA
Mr John WALMESLEY
Mr Helmut ZIBROWIUS
Ms Narin PANARITI

International Organisations

BRL Ingenierie
FAO
NAUTILUS s.c.a.r.l
SHORELINE s.c.a.r.l

National Consultants and Organisations[1]

ALBANIA

Consultants
- Mr Ferdinand BEGO
- Mr Roland KRISTO
- Mr Zamir DEDEJ
- Mr Taulent BINO
- Mr Spartak SINOJMERI

ALGERIA

Consultants
- Mr. Abdelhafidh CHALABI
- Mr Samir GRIMES
- Mr Rachid SEMROUD
- Mr Ammar BELKACEMI
- Mrs Sélima BOUMAZA
- Mr Zitouni BOUTIBA
- Mr Houcine BOUZID

BOSNIA & HERZEGOVINA

Consultants
- Mr Ivan BUNTIC
- Mr Augustin MASTROVIC
- Mr Branko VUCIJAK
- Mr Nenad JASPRIKA
- Mr Branko GLAMUZINA

CROATIA

Consultants
- Mrs Jasminka RADOVIC
- Mr Donat PETRICIOLI
- Ms Jelena KRALJ
- Mr Stejpan Jukic PELADIC

CYPRUS

Consultants
- Mrs Andreas DEMETROPOULOS

EGYPT

Consultants
- Mr Moustapha SALEH
- Mr Youssef HALIM

[1] Only the National consultants and organisations contracted by RAC/SPA are listed

GREECE

Organisation

EKBY –

ISRAEL

Consultants

Mr Menachem GOREN
Mr Eyal SHY

LEBANON

Consultants

Mr Manal NADER
Mrs Salma TALHOUK
Mr Ghassan MINA
Mr Gaby KHALAF
Mr Sami AOUN
Mr Hani OSTA
Mrs Mary Abboud Abi SAAB
Mrs Mireille Augé ATTALLAH

Organisations

ECODIT

LIBYA

Consultants

Mr Abdelmula HAMZA
Mr Hassan HOWEDGE
Mr Khaled ETAYEB

Organisations

EGA

MALTA

Consultants

Mr Alfred BALDACCHINO
Mrs Carmer MIFSUD
Mr Patrick SCHEMBRI
Mr Titian SCHEMBRI
Mr Edwin LANFRANCO
Mr Joseph BORG
Mr Giuseppe NOTARBARTOLO DI SCIARA[2]
Mr Renauld DUPUEY DE LA GRANDE RIVE[3]
Mr. Selim REVEIL[4]

MOROCCO

Consultants

Mr Mohamed MINEOUI

[2] Consultant from Italy.
[3] Consultant from France.
[4] Consultant from Tunisia.

SLOVENIA

Consultants

Mr Robert TURK
Mr Bojan MARCETA
Mr Tihomir MAKOVIC

Organisation

Marine Biology Station

SPAIN

Ministry of the Environment

SYRIA

Ministry of the Environment of Syria

TUNISIA

Organisations

Institut National Agronomique de Tunisie (INAT)
Institut National des Sciences et Technologies de la Mer

TURKEY

Consultants

Mr Yakup KASKA
Mr Ali Cemal GUCU
Mr Bayrem OZTURK
Mr Nuri BASUSTA
Mr Berin DURAL
Mr Can BIZEL
Mr Can BILGIN

ANNEX III: MARINE AND COASTAL SITES OF PARTICULAR INTEREST IDENTIFIED BY COUNTRY AND RELEVANT ACTIONS

Country	*Sites and type of action*
Albania	✍ Rehabilitation of the Kune-Vaini lagoon system ✍ Proclamation of the Marine National Park of Karaburuni Area
Algeria	✍ Selection of marine sites to be protected: Habibas Islands, Rachgoun island, PNEK marine area, Taza-Cavallo- Kabyles shoal, Gouraya, Chenoua-Tipaza, Plain Island, Collo peninsula, Cape Garde, Aguellis Islands, Tigzirt marine area, ✍ Conservation of the Al Kala wetlands.
Bosnia and Herzegovina	✍ Identification of processes in the Neum karst coastal area ✍ Management of the sensitive area of the Mali-Ston Bay ✍ Biodiversity protection of the lower Neretva with the Hutovo Blato wetland and of the delta of the Neretva River as a unique eco-system
Croatia	✍ Transboundary management plan for the Lower Neretva Valley including Malostonski Bay ✍ Management plans for national parks and nature parks (Kornati-Telašcica Velebit-Paklenica, Biokovo, Krka, Vransko jezero, Brijuni, Mljet) ✍ Management plan and protection of Cres-Lošinj Archipelago with surrounding sea ✍ Protection and management of rivers: Mirna (including Motovun forest); Cetina (including Paško field); Zrmanja ✍ Biodiversity protection in the area of Nature Park Vransko Jezero ✍ Protection of sand and muddy shores in NW part of Ravni Kotari ✍ Protection of Sandy Beaches Saplunara and Blace on the Mljet Island ✍ Protection of Konavle area ✍ Fisheries management at Jabuka Pit (Fossa di Pomo)
Cyprus	✍ Adoption and implementation of the provisions of the EU Habitat and Bird Directives and completion of the NATURA 2000 network (38 proposed sites) and incorporation of proposed sites in town and country planning legislation, local plans and countryside policy.
Egypt	✍ Combating eutrophication in the coastal lakes of the Nile Delta ✍ Development and management of the Matruh Nature Conservation Sector (MNCZ)
Greece	✍ 121 sites of 238, included in the Greek National list of the Natura 2000 network, host marine and coastal habitats and habitats of important species. Efforts are being made to set up and manage the Natura 2000 sites, ensuring the appropriate short, medium and long term funding mechanism ✍ The 7 Ramsar sites on the Montreux list
Lebanon	✍ National Action Plan for the conservation of the Tyre Coast Nature Reserve
Libya	✍ Bays and coastal lagoons: Ain El-Gazalah Bay, Bumbah Bay, Ain Ziana lagoon, Farwa lagoon ✍ Wadis: Wadi Al-Hamsah, Wadi Al-khabtah, Wadi Ka'am, Tawrurgha spring and salt marshes
Malta	✍ Xlendi Bay Munxar- SW Gozo ✍ Dwejra bay and Qawra San Lawrenz - W Gozo; mouth of Wied Ghasri N. Gozo ✍ Reqqa Point N. Gozo; Xwejni N. Gozo ✍ Ramla Bay and San Blas Bay NE Gozo ✍ Mgarr ix-xini SE Gozo ✍ Cominotto;Ras l-Irqieqa SW Comino ✍ Ras Il-Qammieh N-NW Malta ✍ Cirkewwa NW Malta ✍ Ahrax Point NW Malta ✍ Sikka l-Bajda NW Malta ✍ St. Pauls Island and Mistra Bay N Malta ✍ Qawra Point N Malta ✍ Merkanti Reef Northern coast of Malta ✍ Off Lazzarett (Marsamxett Harbour) ✍ Zonqor Reef (off Zonqor Point) East Malta ✍ Sikka tal-Munxar (off St. Thomas Bay) E. Malta ✍ Delimara Peninsula SE Malta ✍ Wied Iz-zurrieq S Malta ✍ Ghar Lapsi; Migra Ferha SW Malta ✍ Ras Il-Wahx SW Malta ✍ Hamrija Bank S Malta ✍ Filfla , an islet in SW Malta
Slovenia	✍ Shared management (with Croatia) of the Dragonja River ✍ Debeli Rtic natural monument (marine and coastal) ✍ - Sv. Nikolaj salt-marsh (coastal salt-marsh) ✍ - Škocjanski Zatok nature reserve (coastal lagoon)

Country	*Sites and type of action*
	✍ - *Posidonia oceanica* meadow (marine) ✍ - Strunjan nature reserve (marine and coastal) ✍ - Stjuža natural monument (coastal lagoon) ✍ - Rt Madona natural monument (marine) ✍ - Secovlje salt-works landscape park (salinas) – Ramsar site from 1993
Tunisia	✍ Remedial measures for the impact of dams on the Ichkeul Ramsar site

ANNEX IV

Table 1 - Partner organisations that are members of the Advisory Committee

Governmental organisations	Areas of potential contribution
Agreement on the Conservation of Cetaceans of the Black Sea, the Mediterranean Sea and the Contiguous Atlantic Area - ACCOBAMS	All issues related to the conservation of all Mediterranean cetaceans.
AdriaMed – FAO Project	- Collaboration between coastal countries in the Adriatic Sea on issues related to fishery management, planning and implementation - Strengthening of technical coordination between the national fishery research institutes and administrations in the coastal countries of the Adriatic
Arab League Educational, Cultural and Scientific Organisation - ALECSO	Enhancement of Arab state cooperation in the Mediterranean on the conservation of biological diversity and the sustainable use of biological resources
Bern Convention	- Development of public awareness - Publication of technical documents on Mediterranean biodiversity - Organisation of workshops and technical assistance - Adoption of resolutions and recommendations
CopeMed – FAO Project	Collaboration between coastal countries in the western part of the Mediterranean on issues related to fishery management planning and implementation
European Environment Agency/European Topic Centre on Nature Protection of Biodiversity	- Providing decision-makers with information regarding sound and effective policies to protect the environment and support sustainable development, including the production of biodiversity relevant indicators. - Contributing to data collection and harmonisation, including on designated areas
FAO	Assessing and reducing the impact of fishing activities on target and non-target species and on sensitive habitats
The MedWet Initiative	- Close collaboration on wetland issues - Classification of wetlands and harmonisation of inventorying activities. - Management planning of sensitive wetland and coastal areas - Training in biodiversity conservation

Non Governmental Organisations	Areas of potential contribution
IUCN **Centre for Mediterranean Cooperation** **West/Central Asia and North Africa (WESCANA)** **Programme**	- Promoting environmental considerations for integrated water resource management - Strategic level guidance and support for Biodiversity conservation, including specific action plans under the Barcelona Convention - Improving the functioning of Protected areas systems - Improving the conservation and sustainable use of the resources in the high seas - Providing technical support and promoting linkages between the implementation of the conventions (CBD, CITES, CMS, …) - Ensuring global best practices are transferred to the Mediterranean region - Providing regional networking through over 150 NGO and State members and promoting North-South links between Mediterranean countries - Promoting the conservation of islands' biodiversity - Providing technical assistance to the Barcelona Convention and the Contracting Parties to assess the conservation status of Mediterranean species at regional level (e.g. Red Lists) - Assessing the effect of global warming on marine biodiversity - Building the capacity of decision-makers and management staff to face conservation challenges - Assessing and updating legislation to support the conservation of Mediterranean biodiversity - Promoting the ecosystem approach for the integrated management of natural resources in the Mediterranean region

Non Governmental Organisations	Areas of potential contribution
WWF MedPO	- Public awareness campaigning - Training of decision-makers and policy/ management staff - Mobilising of national and local NGOs for biodiversity conservation - Identifying of gaps in the present protected areas' network - Monitoring marine and coastal natural features throughout the whole Mediterranean basin - Proposing biodiversity conservation and management actions at national and regional level - Research, conservation, increasing awareness and promoting legislation to protect populations of species or small group of species

Table 2 - Other potential partners within the implementation of SAP BIO

Potential partners for SAP BIO with information on type of organisation and task
UNESCO - World Heritage Centre - International Oceanography Commission - Man and Biosphere Programme
BirdLife International and its Mediterranean Partners network - Network of national NGOs - Conservation of birds, their habitats and global biodiversity
MEDCOAST - Network of various organisations particularly universities. - Aims to contribute to coastal and marine conservation in the Mediterranean and the Black Sea
MEDMARAVIS - Network of marine biologists, ornithologists and conservationists interested in Mediterranean biodiversity - Research and conservation of island and coastal ecosystems in the Mediterranean, particularly marine avifauna
MIO-ECSDE (Mediterranean Information Office for Environment and Sustainable Development) - Federation of Mediterranean NGOs - The protection of the natural environment and of the cultural heritage of the Mediterranean region

Station biologique de la Tour du Valat - French non-profit research and conservation foundation (Fondation Sansouire) - To stop and reverse the loss and degradation of Mediterranean wetlands
Wetlands International - Network with governmental and NGO members - To sustain and restore wetlands, their recourses and biodiversity