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MEDITERRANEAN ACTION PLAN

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Malta, 29-30 May 2008

IMPLEMENTATION OF THE ROAD MAP (STEP 3) FOR THE APPLICATION OF THE ECOSYSTEM APPROACH

UNEP/MAP
Athens, 2008

1. Introduction

The first Government-designated Experts' Meeting on the application of the ecosystem approach (Athens, 20-21 February 2007) decided on a number of recommendations (see Annex I). On the basis of these recommendations the MAP Focal Points Meeting (Madrid, 16-19 October 2007) forwarded to the 15th Ordinary Meeting of the Contracting Parties to the Barcelona Convention (Almeria, Spain, 15-18 January 2008) a relevant decision for adoption. The Contracting Parties in Almeria decided to progressively apply the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment (Decision IG 17/6 in Annex II). At the same time they have agreed on a road map for the gradual application of the approach, which consists of the following broad steps.

i) Definition of an ecological Vision for the Mediterranean.
ii) Setting of common Mediterranean strategic goals.
iii) Identification of important ecosystem properties and assessment of ecological status and pressures*.
iv) Development of a set of ecological objectives corresponding to the Vision and strategic goals.
v) Derivation of operational objectives with indicators and target levels.
vi) Revision of existing monitoring programmes for ongoing assessment and regular updating of targets.
vii) Development and review of relevant action plans and programmes.

During the same meeting, the Contracting Parties agreed on an ecological vision (step 1) and on the common strategic goals (step 2). It is now necessary to proceed with step 3. Step 3, however, carries an asterisk, which points to the fact that from this step onwards it is necessary to consider the appropriate spatial and temporal scale of the application of the approach.

Another issue, which has to be considered, is whether to initiate pilot studies. The consideration of pilot studies was included in the conclusions and recommendations of the First meeting of Government–designated experts on ecosystem approach (February, 2007).

Finally, the present meeting has to decide on how to proceed with the implementation of step 3 of the road map. Certainly a document would have to be prepared to include the most important ecosystem properties as well as an assessment of the ecological status and pressures but a more detailed breakdown of the contents is necessary and what type of assessment is expected. If agreement is reached to identify management areas, such a document would have to be prepared for each area. Alternatively, if it is decided to initiate pilot activities in one or two areas, then assessment documents, for the time being, would have to be prepared for only these areas.

The present document has been prepared with a view to assist the meeting in taking decisions; some ideas are put forward but the Secretariat has no strong position.

2. Considering the spatial and temporal scale of application of the approach

It is well known that a substantial amount of work for the ecosystem approach has been developed within the activities of the Convention on Biological Diversity (CBD). CBD, *inter alia*, developed 12 principles and provided the rationale and guidelines for their

* From this step onwards, it is necessary to consider the appropriate spatial and temporal scale of application of the approach

implementation. Ecosystem approach principle no. 7, states that, the approach should be undertaken at the appropriate spatial and temporal scales. The rationale is that spatial and temporal scales should be set, appropriate to the objectives. The driving forces of ecosystems, including those due to human activities, vary spatially and through time, necessitating management at more than one scale to meet management objectives. Failure to take scale into account may result in mismatches between the spatial and time frames of the management and those of the ecosystem being managed.

Principle no. 2 states that management should be decentralized to the lowest appropriate level. This is because decentralized systems may lead to greater efficiency, effectiveness and equity. Management should involve all stakeholders and balance local interests with the wider public interest. The closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation and use of local knowledge.

In addition, the fourth point of operational guidance proposes management actions at the scale appropriate for the issue being addressed, with decentralization to the lowest level, as appropriate.

Having in mind all the above, it must be decided whether the ecosystem approach can be applied on a Mediterranean-wide scale or whether specific management areas should be identified and which ones. **As far as the temporal scale is concerned it is proposed that this issue is tackled after we have agreed ecological and operational objectives.** From the management point of view it would be very hard (if not impossible) to apply the ecosystem approach in the Mediterranean as a whole. The entire basin is too large and diversified to be managed efficiently at the level demanded by the ecosystem approach. It will be necessary to identify individual management areas for which ecological and operational objectives should be defined.

If no management areas are identified then we should have common targets for the entire basin. Taking the issue of eutrophication as an example, would it be fair and logical (if nutrients are chosen as an indicator) to set the same target levels for the Adriatic and the Levant basin?

It is true that so far for the management of land-based sources no division took place. This was possible since so far our target was to reduce inputs at the national level judging success by the amount of reduction. Now, with the ecosystem approach, progress will be judged in the marine environment and the marine environment does not recognize national borders. Certainly the resulting situation in the Adriatic will not depend only on the measures taken in one bordering state. The same is true for other areas such as the Aegean and the Ligurian Sea. The proposal is that the Mediterranean is divided into areas where the effects of joint management actions will be visible and that ecosystem modeling can be used to support management decisions. This will also give us the opportunity to have different priorities, indicators and target levels in the different areas. It is, however, expected that some objectives will be applied at the Mediterranean scale and that some indicators and target levels will be common in more than one area.

Bio-geographic (such as composition of faunal communities and patterns of primary production) and oceanographic features (temperature, salinity, water mass movements, nutrients, basin morphology, etc.) are normally used for setting ecosystem boundaries and these could be used for defining management regions not forgetting that differences between the regions are not only ecological. Factors such as existing political, social and economic divisions cannot be ignored. Identifying management areas, not only efficiency will be enhanced but local societies will also have the freedom to make their own choices.

Identifying different management areas doesn’t mean dividing countries into groups. The dividing lines do not take into consideration borders and it is possible that certain counties

(such as Italy) because of their geographical position may have national jurisdiction in more than one area. In addition, **all** countries will sit together to discuss each area separately and make recommendations on objectives, indicators and target levels that will be forwarded to the meetings of Contracting Parties for adoption. We must also bear in mind that when we come to the action plans they will basically be implemented at the national level as it is the case with the SAP and the NAPs.

As an example, the HELCOM Contracting Parties in adopting the Baltic Sea Action Plan in November 2007 divided the Baltic, which is 6.25 times smaller than the Mediterranean (2.5 to 0.4 million sq. km) into seven sub-regions for the issue of eutrophication (see Table I below). This allowed them to use ecosystem modeling (MARE NEST) to estimate maximum allowable nutrient inputs to reach good environmental status and the corresponding needed nutrient reductions in each sub-region.

Table I. The seven sub-regions of the Baltic for the reduction of nutrients (Extracted from the Baltic Sea Action Plan)

Sub-region	Maximum allowable nutrient input (tonnes)		Inputs in 1997-2003 (normalised by hydrological factors)		Needed reductions	
	Phosphorus	Nitrogen	Phosphorus	Nitrogen	Phosphorus	Nitrogen
Bothnian Bay	2,580	51,440	2,580	51,440	0	0
Bothnian Sea	2,460	56,790	2,460	56,790	0	0
Gulf of Finland	4,860	106,680	6,860	112,680	2,000	6,000
Baltic Proper	6,750	233,250	19,250	327,260	12,500	94,000
Gulf of Riga	1,430	78,400	2,180	78,400	750	0
Danish straits	1,410	30,890	1,410	45,890	0	15,000
Kattegat	1,570	44,260	1,570	64,260	0	20,000
Total	21,060	601,720	36,310	736,720	15,250	135,000

A first attempt to divide the Mediterranean into areas was undertaken in the early stages of the MED POL programme where the Mediterranean was divided into ten regions (Fig 1). From the management point of view, this division may be attractive but the division may not be justified on the basis of bio-geographic differences; also it may create difficulties from the coordination point of view at the national as well as the MAP level.

In all textbooks, when describing the Mediterranean Sea, reference is made to Eastern and Western regions (as shown in Fig. 2) on the basis of evident oceanographic and bio-geographic differences. It must also be noted that in certain text books there is also mention of the Central Mediterranean as a distinct region as shown in Fig. 3. In this division, the Adriatic Sea belongs to the Central Mediterranean; however, the Adriatic is a distinct semi-enclosed area with shallow depths in the north and the Po River changing the bio-geographic features, and therefore the region can be further divided as shown in Fig. 4. The identification of four Mediterranean eco-regions was also a suggestion of an ICES working group. Another option is to consider that the Tyrrhenian Sea could also constitute a separate area as shown in Fig. 5

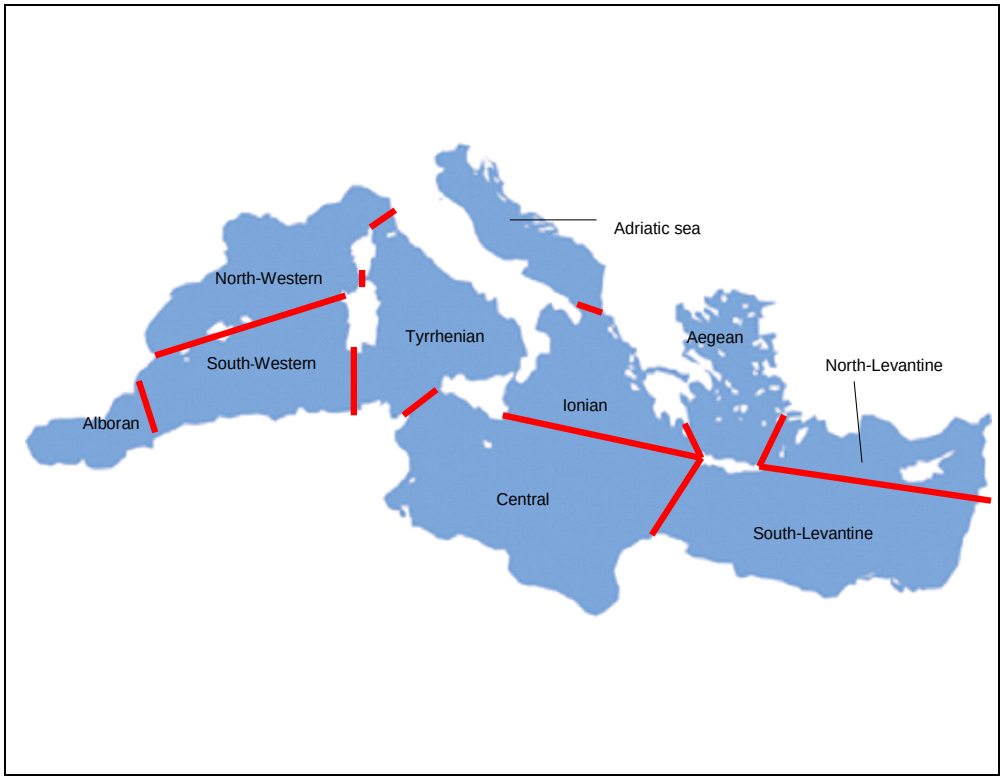

Fig. 1. The division of the Mediterranean as proposed in the early stages of the MED POL programme.

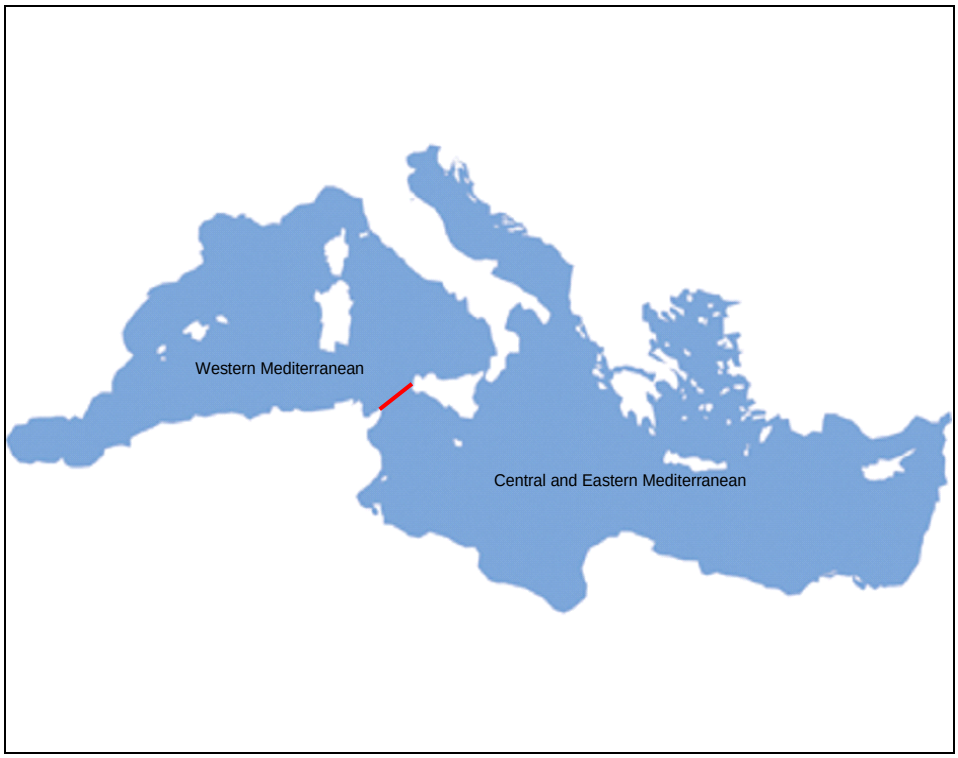

Fig. 2 The Mediterranean divided into two regions

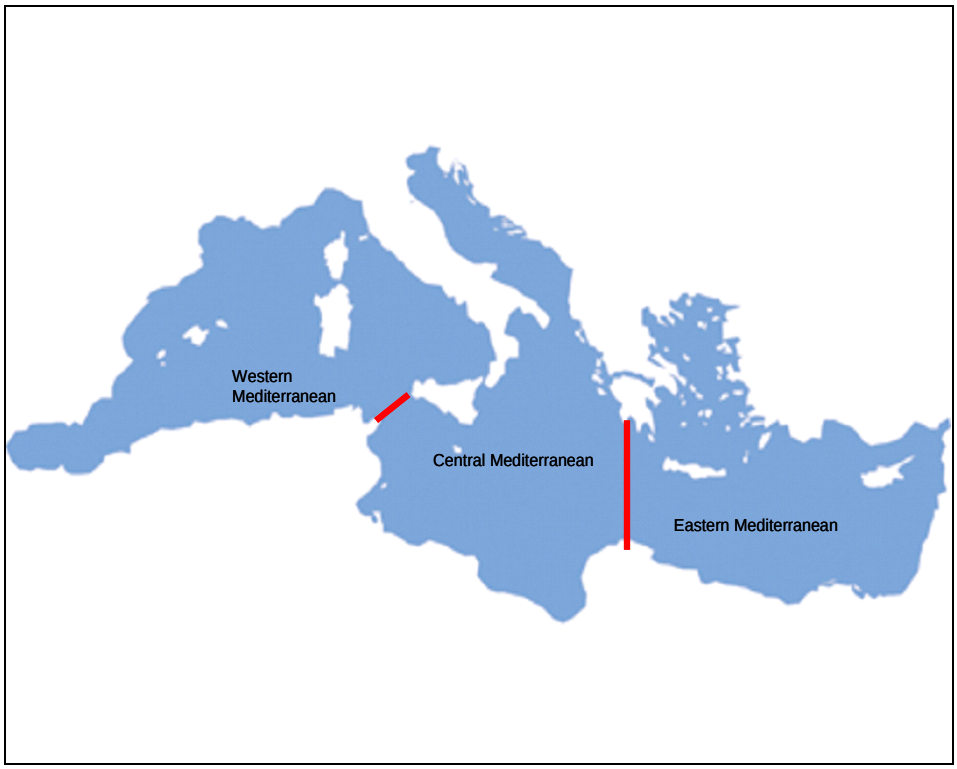

Fig. 3 The Mediterranean divided into three regions

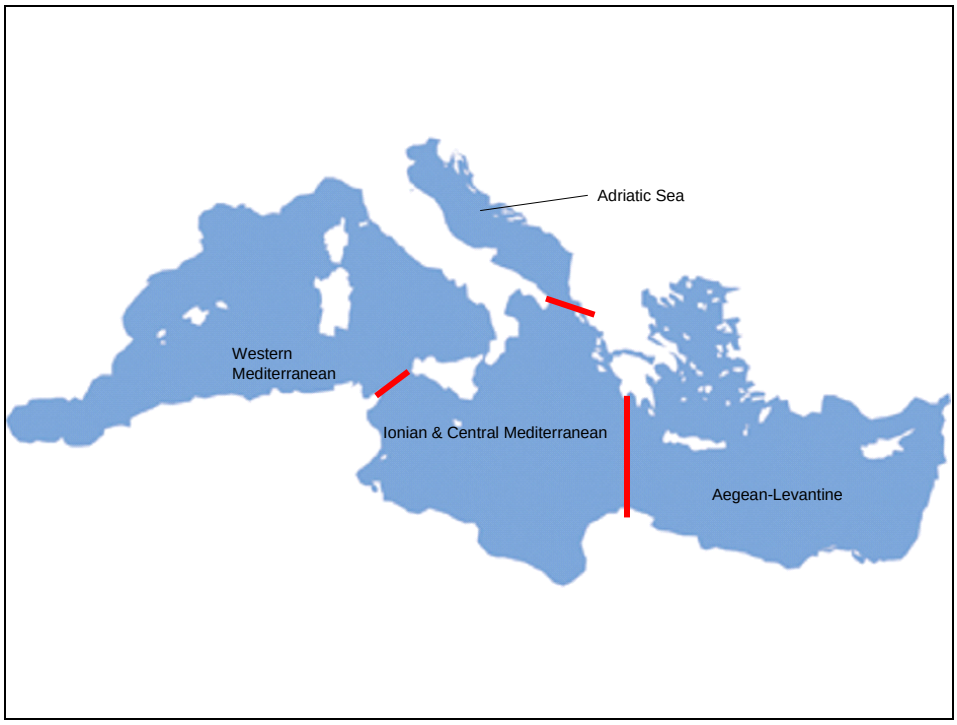

Fig 4. The Mediterranean divided into four regions

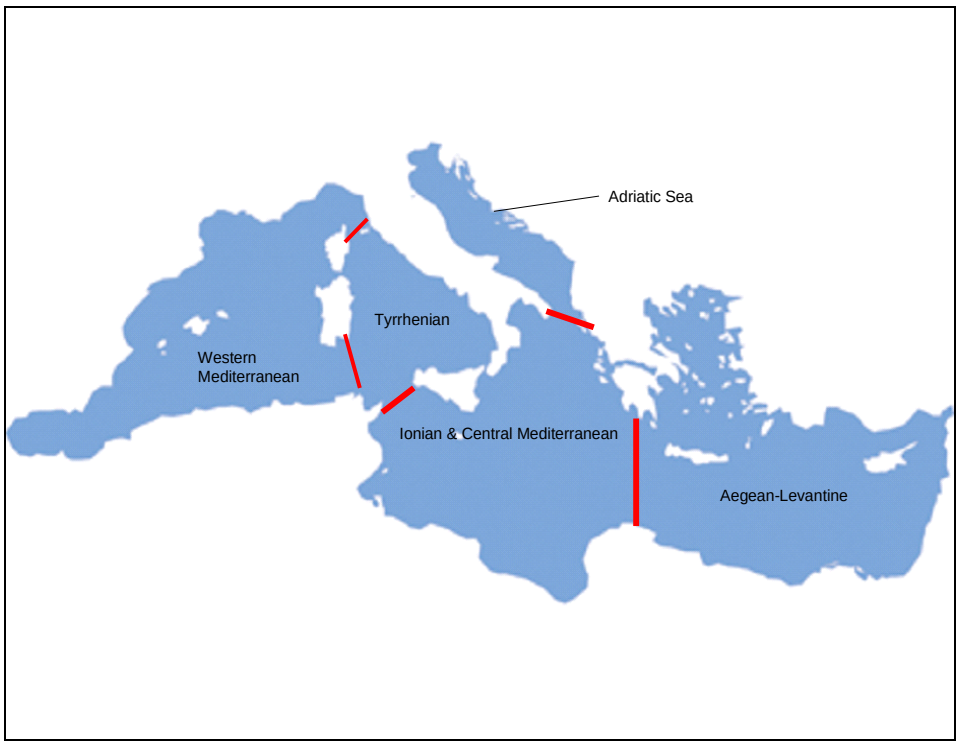

Fig 5. The Mediterranean divided into five regions

It may be possible to identify even more distinct areas. However, the secretariat is of the opinion that four or five management areas would be a good solution. The meeting is expected to consider the issue and decide on management areas.

3. Considering the initiation of pilot project(s)

After considering the issue of the spatial application of the approach (possible identification of the appropriate management areas), the meeting will consider the initiation of pilot activities in one or more areas before embarking on full-scale activities.

It is true that in many cases, pilot projects have been initiated to test the application of the approach before its full implementation. For the Mediterranean, if management areas are identified, pilot projects could be initiated in one or two management areas of the basin and the experience gained could be utilized in the other areas. Pilot projects could be initiated in well-studied areas where ample information regarding the ecological status and the impacts and threats as well as sources is available. It would also be advantageous if countries in the sub-region had previous experience in regional common projects and good cooperation.

However, it is possible that the experience gained may be specific to the region and the application of the findings to the rest of the Mediterranean could be a challenge. Another issue to be considered is the loss of valuable time in management areas not participating and the possibility that these will fall out of the process.

Another option is to proceed cautiously in all areas utilizing experience from other regions especially from the Baltic. This will also allow a different pace in areas with special problems.

The Meeting is expected to decide on the initiation of pilot projects or not. The secretariat is of the opinion that at this stage work should continue in all the management areas bearing in

mind that through the implementation of step 3 a number of information gaps will be identified in certain areas and this is important to decide on further action.

4. Identification of important ecosystem properties and assessment of ecological status and pressures

This is in fact step 3 of the road map and what it actually requires is stock-taking of the present situation in the specific area as regards ecosystem properties and status, pressures and impacts. It is really a science-based activity, using the best information and practices available. It requires a description of the ecosystem, based on the best available knowledge of ecosystem structure (species and size compositions, spatial distributions, population trends, etc.), function (productivity, predator-prey linkages, energy flows), and environmental quality (contaminants, nutrients, physical destruction of the habitats, etc.).

In conjunction with an analysis of ecosystem functioning, the identification of pressures and impacts on the ecosystem is necessary. These can include pollution by hazardous substances from a variety of sources, microbiological pollution, eutrophication caused by excessive inputs of nutrients, marine debris, anthropogenic underwater noise, invasive alien species, loss of biodiversity, physical destruction of habitats and the alteration of ecosystem structure and functioning by a variety of factors, some natural and some human-induced.

Within MAP, relevant activities were undertaken from time to time. It is pertinent to mention here the cooperation of UNEP/MAP with the European Environment Agency in producing two relevant documents, one in 1999 entitled “State and pressures of the marine and coastal Mediterranean environment” and in 2006, entitled “Priority issues in the Mediterranean environment”.

As a first step it is proposed that existing information is gathered in a document or two for which there will be agreement on the table of contents. If for a certain issue there is no information this should be pointed out and suggestions put forward for its collection.

It is proposed that the responsibility for the preparation of the document is assigned to a group of experts consisting of at least one expert per country of the region. The group will assign its coordinator and all area coordinators will communicate between them to exchange views and streamline the work so that each group will work in a comparative way. Members of the group will work through e-mail but each area group will have two meetings; a kick-off and a final meeting.

A proposal for the table of contents is made here below to facilitate discussions**.**

I. <u>Ecosystem status</u>

1. Introduction
2. Physical and chemical characteristics
   - 2.1 Topography and bathymetry
   - 2.2 Temperature, salinity, currents, water masses, etc
   - 2.3 Nutrients (dissolved inorganic nitrogen and phosphorus, total nitrogen and phosphorus), dissolved oxygen and pH.
3. Biological characteristics
   - 3.1 Description of water column biological communities (basically phyto- and zooplankton)
   - 3.2 Information on invertebrate bottom fauna, macro-algae and angiosperms
   - 3.3 Marine mammals and reptiles including species status and population dynamics

3.4 Inventory of exotic and non-indigenous species including abundance and distribution
3.5 Fish populations including abundance and structure

4. Habitat types

Predominant seabed and water column habitat types should be described in terms of physical, chemical and biological features. Habitats of special scientific or biodiversity interest or habitats subject to intense or specific pressures should be identified.

II. Pressures and impacts

1. Contamination by hazardous substances (includes heavy metals, halogenated and petroleum hydrocarbons, antifoulants etc. from all sources as well as radionuclides).
2. Dumping activities (introduction of substances and impact)
3. Nutrient and organic matter enrichment (includes organic matter e.g. from rivers, sewers and mariculture and substances rich in nitrogen and phosphorus compounds such as fertilizers from all sources including agriculture, aquaculture and atmosphere).
4. Biological disturbance (non-indigenous species, microbial pathogens, impact of fisheries on non-target species).
5. Physical disturbance
   5.1 Effects from man-made structures and constructions
   5.2 Impacts on the seabed and siltation changes (e.g. from fishing and boating activities, dredging material, outfalls, etc)
   5.3 Effects of underwater noise and litter
   5.4 Activities affecting temperature (e.g. power plants) and salinity (e.g. in lagoons from constructions).

III. Priorities

This chapter could include all issues of serious concern (eg. health issues) and hot spot areas where urgent action is needed.

5. Planning for the future

According to the approved road map the next two steps (4 & 5) are:

- Development of a set of ecological objectives corresponding to the Vision and strategic goals;
- Derivation of operational objectives with indicators and target levels.

Bearing in mind the ecosystem approach principles, the Secretariat would like to encourage full involvement of all participants in planning future activities. The Meeting of Government-designated experts is expected to participate actively in preparing proposals for the Contracting Parties rather than rubber stamping proposals put in front of them.

During this meeting, in addition to the two steps above involving ecological objectives, operational objectives, target levels and indicators, the Meeting is also expected to exchange views, having in mind work undertaken in other fora (especially European) on secondary issues such as: (a) assessment methodologies, (b) determination of good ecological status and quality elements, (c) capacity building, (d) socio-economic considerations, and (e) public awareness and participation.

ANNEX I

Recommendations of the first Government-designated Experts' Meeting on the application of the ecosystem approach

(Athens, 20-21 February 2007)

1. The meeting recommends that the following roadmap for the application of the ecosystem approach be submitted to the Contracting Parties for adoption:

b) Progressively apply the ecosystem approach to the management of human activities that may affect the marine and coastal environment.

c) Initiate a process, involving scientists and policy makers, and when appropriate, with other competent bodies/organizations/authorities, aiming at the gradual application of the ecosystem approach which would include the following steps:

i) Definition of an ecological Vision for the Mediterranean.

ii) Setting of common Mediterranean strategic goals.

iii) Identification of the important ecosystem properties and pressures[*].

Ecosystem properties include *inter alia*: physical and chemical features, habitat types and biological features. Pressures and Impacts include physical damage and other physical disturbance, interference with natural hydrological processes, contamination by hazardous substances, nutrient and organic matter enrichment and biological disturbance.

iv) Development of a set of ecological objectives corresponding to the Vision and strategic goals.

Ecological objectives should relate to ecosystem health, structure and/or function and should take into consideration the analysis of ecosystem properties and pressures.

v) Derivation of operational objectives with indicators and target levels.

Operational objectives, the achievement of which requires action, should be derived from the ecological objectives. On the basis of the initial assessment made, a comprehensive set of environmental targets and associated indicators should be set with the aim to guide progress towards achieving good environmental status in the marine and coastal environment. A target level is a specific value of an indicator associated with a particular objective. This value can be set as an objective that must be achieved. When deciding on targets and indicators the relevant existing environmental targets, set out at national or international level in respect of the same waters should be taken into account, ensuring that these targets are mutually compatible.

vi) Revision of existing monitoring programmes for ongoing assessment and regular updating of targets.

vii) Redrafting the management plans.

In drafting the management plans all relevant work already undertaken within MAP, will be taken into consideration. Management plans will also include

[*] From this step onwards, it is necessary to consider the appropriate spatial and temporal scale of application of the approach

supplementary activities such as monitoring, research, capacity building, information, etc

d) Consider the launching of pilot projects as a model for the application of the ecosystem approach.

2. As far as the first step is concerned the meeting agrees to recommend to the Contracting Parries the adoption of the following ecological vision:

A Mediterranean with marine and coastal ecosystems that are healthy, productive and biologically diverse for the benefit of present and future generations.

3. As far as the strategic goals are concerned, on the basis of the objectives of the relevant priority field of action of the MSSD and the experience gained by other international and regional bodies, the meeting proposes the following three goals for marine and coastal areas:

a) To protect, allow recovery and, where practicable, restore the structure and function of marine and coastal ecosystems thus also protecting biodiversity, in order to achieve and maintain good ecological status allowing for their sustainable use.

b) To reduce pollution in the marine and coastal environment so as to ensure that there are no significant impacts or risk to human and/or on ecosystem health and/or on uses of the sea and the coasts.

c) To preserve, enhance and restore a balance between human activities and natural resources in the sea and the coasts and reduce their vulnerability to risks.

4. The Meeting also agrees that, throughout the process of applying the ecosystem approach, a number of actions would be necessary. In particular,

i) Study the socio-economic consequences of the proposed management actions and put forward ideas for alleviating them.

ii) Use the best available scientific information for setting the target levels. In addition, ensure that the capacity exists to determine the indicators at the required accuracy, precision and frequency. In this regard, it should be noted that assessment, monitoring, and scientific research are required to provide a sound scientific basis for identifying ecological objectives, selecting indicators, and assessing the effectiveness of measures taken by providing regular evaluations of the ecosystem status.

iii) Initiate and maintain a process to inform the public and involve the stakeholders in the entire course of implementation, in particular, a) prepare an information package on the objectives for the benefit of the stakeholders and the general public and b) obtain feedback from all stakeholders on the management actions and tools proposed.

iv) Assist countries, where necessary, in the implementation of the management activities.

5. In implementing the management plans, the Contracting Parties will apply the ecosystem approach principles especially adaptive management, periodic reviews and updates, and the principle of decentralization to the lowest appropriate level.

ANNEX II

Decision IG 17/6 of the 15th Ordinary Meeting of the Contracting Parties (Almeria, Spain, 15-18 January 2008)

The implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment

The 15th Meeting of the Contracting Parties,

Recalling decision V/6 of the Conference of the Parties to the Convention on Biological Diversity regarding the description and the application of the ecosystem approach,

Recalling paragraph 30(d) of the Johannesburg Plan of Implementation encouraging the application of the ecosystem approach by 2010,

Recalling also its decision, adopted at its 14th Meeting held in Portoroz, Slovenia, to follow the initiative of the European Commission relating to a project on the ecosystem approach, with a view to the possible application of the ecosystem approach by the whole MAP system,

Acknowledging with satisfaction the work accomplished in the framework of the joint EC/MAP project on the application of the ecosystem approach,

Noting with appreciation the conclusions and recommendations of the Government-designated Experts' Meeting held in Athens in February 2007,

Decides to progressively apply the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment for the promotion of sustainable development;

Decides to initiate a process, involving scientists and policy makers, and when appropriate, other competent bodies/organizations/authorities, aiming at the gradual application of the ecosystem approach which would include the following steps:

v) Definition of an ecological Vision for the Mediterranean.
vi) Setting of common Mediterranean strategic goals.
vii) Identification of important ecosystem properties and assessment of ecological status and pressures*.
viii) Development of a set of ecological objectives corresponding to the Vision and strategic goals.
ix) Derivation of operational objectives with indicators and target levels.
x) Revision of existing monitoring programmes for ongoing assessment and regular updating of targets.
vii) Development and review of relevant action plans and programmes;

Agrees*,* as far as the first step of the process is concerned, on the following ecological vision for the Mediterranean:

> *"A healthy Mediterranean with marine and coastal ecosystems that are productive and biologically diverse for the benefit of present and future generations"*;

* From this step onwards, it is necessary to consider the appropriate spatial and temporal scale of application of the approach

Agrees, as far as the second step of the process is concerned, on the following strategic goals for marine and coastal areas, on the basis of the relevant priority field of action of the MSSD and the experience gained by other international and regional bodies:

d) To protect, allow recovery and, where practicable, restore the structure and function of marine and coastal ecosystems thus also protecting biodiversity, in order to achieve and maintain good ecological status and allow for their sustainable use,
e) To reduce pollution in the marine and coastal environment so as to minimize impacts on and risks to human and/or ecosystem health and/or uses of the sea and the coasts,
f) To prevent, reduce and manage the vulnerability of the sea and the coasts to risks induced by human activities and natural events;

Requests the Secretariat to continue work on the basis of the road map specified above, taking into consideration relevant work undertaken by other regional and international organizations and initiatives and enhancing cooperation with them.