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**MEDITERRANEAN ACTION PLAN**

Third Meeting of the Task Team on  
Implications of Climatic Changes on  
the Albanian Coast

Tirana, 21-23 November 1995

**REPORT OF THE THIRD MEETING OF THE TASK TEAM ON  
IMPLICATIONS OF CLIMATIC CHANGES ON THE ALBANIAN COAST**

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## BACKGROUND

As part of the efforts of the United Nations Environment Programme (UNEP) to analyze the potential implications of predicted climate change and to assist the governments in designing policies and measures which may avoid or mitigate the expected negative effects of this change, or to adapt to them, task teams were established in 1987 for six regions covered by the UNEP-sponsored Regional Seas Programme (Mediterranean, Wider Caribbean, South Pacific, East Asian Seas, South Asian Seas, and South East Pacific regions). The initial objective of the teams was the preparation of regional studies on the potential impact of expected climate change on coastal and marine ecosystems, as well as on the socio-economic structures and activities within these regions. Additional task teams were later established for the West and Central African, Eastern African, Persian/Arabian Gulf and Black Sea regions.

During the work on the Mediterranean regional study<sup>1</sup>, in the period from 1987 to 1989, it was felt that while the general effects might be similar throughout the Mediterranean region, the response to these effects would have to be highly site-specific. Therefore in the framework of the Mediterranean Task Team six specific case studies were prepared (deltas of the rivers Ebro, Rhone, Po and Nile; Thermaikos Gulf and Ichkeul/Bizerte lakes) in 1989. The final results of the work on the Mediterranean regional studies and on the six case studies were published as a book in 1992<sup>2</sup>.

In preparing these case studies it had become apparent that prediction of impacts was constrained by the absence of regional, sub-regional and local scale scenarios of future climates. Therefore, the Climatic Research Unit of the University of East Anglia (CRU/UEA) had been commissioned by UNEP to attempt to produce a Mediterranean Basin scenario and to develop scenarios of future local climate for the selected case study areas.

Using the experience of the "first generation" case studies, in 1990 the preparation of the "second generation" of Mediterranean site-specific case studies was initiated for the Island of Rhodes, Kastela Bay, the Syrian coast, the Maltese islands, and the Cres-Losinj islands.

The objectives of these studies were:

- to identify and assess the possible implications of expected climate change on the terrestrial, aquatic and marine ecosystems, population, land- and sea-use practices, and other human activities;
- to determine areas or systems which appear to be most vulnerable to the expected climate change; and
- to suggest policies and measures which may mitigate or avoid the negative effects of the expected impact, or adapt to them, through planning and management of coastal areas and resources;

using the presently available data and the best possible extrapolations from these data.

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<sup>1</sup> Implications of expected climate changes in the Mediterranean. MAP Technical Reports Series No. 27. UNEP, Athens, 1989.

<sup>2</sup> L. Jeftic, J.D. Milliman and G. Sestini (eds.): "Climatic Change and the Mediterranean - Vol I.". Edward Arnold Publ., London, 1992.

The final results of these five case studies were presented at the meeting on Implications of Climatic Changes on the Mediterranean Coastal Areas (Island of Rhodes, Kastela Bay, Syrian Coast, Malta and Cres/Losinj), held in Malta in September 1992<sup>3</sup>.

The methodological experience gained through the conduct of the eleven first and second generation case studies, as well as a comparative analysis of the main results of these studies, together with a more detailed report on the five second generation case studies, are currently being published as a book<sup>4</sup>.

A third generation of Mediterranean case studies was launched, in 1993, in the framework of the site-specific Coastal Areas Management Programme (CAMP). So far three of these studies are being completed (Fuka-Matrouh coastal region in Egypt, the Albanian coast and Sfax region in Tunisia).

While the first generation of the case studies was prepared by individual experts, the preparation of the second and third generation case studies was entrusted to multidisciplinary task teams established by UNEP in close cooperation with the relevant national authorities. Each team consists of about ten national experts, and a few (2-3) external members who assist the work of national experts. The final reports of the task teams are a collective work of the teams as a whole.

The Task Team for the Albanian coast was set up in December 1993, and it held its first (preparatory) meeting in Tirana, 12-14 July 1994. The meeting considered the temperature and precipitation scenarios prepared for Albanian coastal region by the CRU/UEA, and the experience gained by the other task teams in preparing their reports. On the basis of these information, the meeting agreed on the time horizons (years 2030 and 2100), as well as on the scenarios for temperature, precipitation and sea-level rise which will be used in the preparation of the Task Team's report. The meeting also agreed on the outline of the final report, on the distribution of the tasks among the members of the Team, as well as on the workplan and timetable for the preparation of the report.<sup>5</sup>

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<sup>3</sup> The report of this meeting, containing the main findings, conclusions and recommendations of the five studies, was published as document UNEP(OCA)/MED WG.55/7.

<sup>4</sup> L. Jeftic, S. Keckes and J. Pernetta (eds.): "Climatic Change and the Mediterranean - Vol II.". Edward Arnold Publ., London, in press.

<sup>5</sup> Report of the first meeting of the Task Team on Implications of Climatic Changes on the Coastal Area of the Albanian coast (Tirana, 12-14 July 1994). UNEP(OCA)/MED WG.85/2.

A second meeting of the Task Team was held (Tirana, 21-23 March 1995) to review the first drafts of chapters prepared by the members of the Task Team since their first meeting, as their contributions to the final report. While reviewing the drafts, numerous concrete suggestions were made for amendments of the drafts and a programme for the preparation of the final draft of the report was agreed.<sup>6</sup>

The present meeting is the third and final formal meeting of the Task Team. The meeting was called to review the final draft of the report which was prepared since the second meeting of the Task Team and to agree on the programme for the finalization of that report.

## **REPORT OF THE MEETING**

### Opening of the meeting - Agenda item 1

1. The meeting was opened, on 21 November 1995, by Ms E. Demiraj, Coordinator of the Task Team on the Implications of Expected Climate Change on the Coastal Area of Albania. She welcomed the participants on behalf of the Committee of Environmental Protection of Albania and expressed appreciation for the support of the Coordinating Unit for the Mediterranean Action Plan (MAP) of UNEP in preparing the third meeting of the Task Team. Ms E. Demiraj informed the meeting about the reasons for which, since the last meeting of the Team, additional experts were coopted as members of the Team and introduced them to the meeting.

2. Mr L. Jeftic, Deputy Coordinator of the MAP, welcomed the participants on behalf of the MAP and UNEP. He expressed appreciation for the support provided by the Albanian authorities, thanked Ms E. Demiraj for making the meeting arrangements, and commended the Task Team for the considerable work carried out since the second meeting of the Team in March 1995. He continued by recalling that the purpose of the present meeting is to review the final draft of the Team's report, to suggest amendments and additions to the present draft, and to agree on the steps leading to the finalization of the report.

3. The meeting's participants are listed in Annex I to this report.

### Election of officers - Agenda item 2

4. The meeting unanimously elected Ms E. Demiraj, Coordinator of the Task Team, as Chairperson, and Mr S. Keckes as Rapporteur of the meeting. Mr L. Jeftic acted as technical secretary of the meeting.

### Adoption of the agenda - Agenda item 3

5. The provisional agenda as proposed by the secretariat was adopted and appears as Annex II to this report.

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<sup>6</sup> Report of the second meeting of the Task Team on Implications of Climatic Changes on the Coastal Area of the Albanian coast (Tirana, 21-23 March 1995). UNEP(OCA)/MED WG.94/2.

Review of the final draft of the report - Agenda item 4

6. Mr L. Jeftic recalled that the draft of the consolidated final report received from the Coordinator of the Task Team was issued by the secretariat with minor editorial changes<sup>7</sup>, and made available to all members of the Task Team.

7. While reviewing the individual chapters in sections 2 of the draft final report (*Identification of Present Situation and Trends*), numerous concrete suggestions were made for the improvement of their quality and for the possible harmonization of the texts dealing with the same or similar issues in various parts of the report. Furthermore, the authors of the chapters were invited to revisit the specific comments and suggestions recorded in the report of the second meeting of the Task Team and use these as additional guidance in revising the present text, if appropriate.

8. In reviewing sections 3 (*Potential Impacts*) and 4 (*Recommendations*) the following general and specific comments have been made:

- the balance between sections 2 and 3 would still benefit from adjustment in favour of section 3; it could be achieved either by expanding section 3 with a more imaginative reference to the material contained in section 2, or by deleting from section 2 the material which is not used as background information on which sections 3 and 4 are based;
- an attempt should be made to be more specific about the impacts identified in section 3, within the limits of uncertainties surrounding the predicted rate and magnitude of the climate change and taking into account the agreed time horizons for the predictions (years 2030 and 2100); and
- whenever possible and feasible, the recommendations in section 4 should be site specific and of practical nature from the standpoint of policy-makers, planners and managers, enabling their meaningful integration into the formulation and implementation of national development strategies, policies and plans; recommendation for data and information gathering should be highly specific and supported by justifiable arguments.

9. It was stressed and understood that the *Executive Summary* is intended primarily for high-level policy-makers and managers in Albania. Therefore, its style and content should be concise and non-technical. Three major issues should be highlighted:

- (a) the main causes and features of expected climate change relevant to the coastal areas of Albania;
- (b) the major ecological and socio-economic impacts identified by the Task Team as the likely consequences of the expected climate change; and
- (c) the principal recommendations of the Team for the mitigation of, or suitable adaptation to, the identified negative impacts.

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<sup>7</sup> Issued as UNEP(OCA)/MED.WG.98/2.

10. It was suggested that the information contained in the present draft of the *Executive Summary* on the establishment and work of the Task Team, as well as on the geographic, climatic, ecological and socio-economic characteristics of the study area should be shifted to other chapters of the report.

11. It was recognized that the draft report as a whole does not seem to identify clearly and stress sufficiently the major impacts which may be foreseen as the consequence of expected climate change by the two time horizons selected for the study. Likewise, most of the recommendations in section 4 of the draft are not in a form easily understandable and readily usable by high-level policy-makers and managers. Therefore, each member of the Task Team was asked to identify, during the meeting, 3-4 major potentially harmful or beneficial impacts as seen from his/her sectoral perspective. A consolidated list of impacts was then prepared on the basis of individual suggestions and the items on the list were prioritized individually by each of the meeting's participants by rating, on the scale from 10 to 1, the ten most important harmful impacts as seen from an integrated cross-sectoral perspective. No scale was used for rating the potentially beneficial impacts; the participants of the meeting were simply asked to identify those impacts which they considered as beneficial. The results of the exercise are reflected in Annex III.

12. The analysis of the results reveals that drought, i.e. the prolongation of dry periods during the low-precipitation summer seasons, may be the most important direct consequence of the predicted climate change which, in turn, may lead, or significantly contribute, to a cascade of secondary impacts rated by the Task Team as potentially highly harmful (e.g., shortage of adequate quality drinking water, soil erosion, reduction in the extent of arable land, increased need for irrigation of arable land, decrease in the flow of surface waters, decrease in the recharge of aquifers). The predicted sea level rise is the second most important factor likely to cause or contribute to another set of highly rated negative impacts, such as: intrusion of saline water in coastal aquifers, coastal erosion, increased salinization of lagoons and flooding the low lying coastal plains, and impairment of coastal sewerage systems which operate by gravitational flow.

13. The relatively high harmful rating assigned to certain impacts (e.g., increased mixing of surface and deep marine waters, increase in vector transmitted illnesses, increased salinity and temperature of surface marine waters) and the relatively low rating assigned to the impact of sea level rise on harbour installations and operations, was considered somewhat surprising and, if justified, would require a credible elaboration in section 3 of the Team's final report. Likewise, the harmful ratings assigned to impacts such as extension of tourist season, and increased potentials for aquaculture development and use of solar energy, are somewhat peculiar in view of absence of explanation about their potentially harmful nature in the present draft of the Team's report.

14. It was noted with interest that all except one (decreased energy demand for heating) of the impacts identified by the meeting as potentially beneficial were also identified as potentially harmful impacts. However, this apparent contradiction was not considered as inconsistent with the conclusion of the Team that a number of identified impacts may have both beneficial and harmful aspects. The only oddity is the listing of decrease in the flow of surface water as potentially beneficial impact of climate change.

15. The meeting agreed that the rating of the impacts identified at the present meeting, as reflected in Annex III, should be the basis for the revision of section 3 of the report in order to obtain a well-balanced presentation of the implications of the predicted climate change on the Albanian coast. Furthermore, it was agreed that:

- (a) the options (recommendations) for mitigation of, or adaptation to, each of the identified major impacts should be elaborated in section 4 of the report; and

- (b) the main features of each of the identified major impacts and of the options for the corresponding mitigation and/or adaptation measures should be the highlights of the report's Executive Summary.

16. After reviewing the draft of the final report, the following general approach was confirmed to be used in the finalization of the report:

- a "standard map" for the presentation of the facts and sites relevant to the study area should be used in all sections of the report;
- the "operative scenarios" developed by the CRU/UEA will be attached to the final report of the Task Team, as an annex of the report; therefore there is no need to give, in either of the substantive chapters of the report, an expanded review of the results contained in the scenarios;
- specific issues (e.g., sea currents, precipitation, pollution) relevant to several sections of the same chapter should be treated only in one of the sections, preferably in the one which comes up first in the chapter and with cross-reference to it in the relevant subsequent section(s);
- the captions and legends of figures and tables should be standardized; the same system of measures (units) and their notations should be used consistently throughout the report;
- references should be consolidated in a list at the end of the report; references should be listed in a standard (uniform) style and format; no reference should be included in the list of references unless it is quoted in the main body of the report, and vice versa;
- there should be no inconsistencies in the presentation of the report's factual basis (section 2), nor contradictions between the predicted impacts (section 3) and the measures recommended to counter these impacts (section 4);
- whenever possible, the degree of uncertainty underlying certain predictions should be emphasized;
- the recommendations should be formulated as alternative options, whenever feasible; and
- the executive summary of the final report, as well as sections 3 and 4 should be written in a non-technical language, keeping in mind that they are primarily addressed to national policy-makers and managers.

17. The need to achieve the highest possible level of uniformity and consistency in the terminology used in the report was recognized. In this context it was agreed:

- (a) to use consistently throughout the report the following terms, expressions and notations:



- "climate change" instead of "climate changes", "climatic change" or "climatic changes";
  - "sea level" instead of "sea-level" or "sealevel";
  - "man-made" instead of "manmade" or "man made";
  - "," i.e. commas instead of "." i.e. full stops to separate thousands from hundreds, as in 45,950; "." should be used as decimal point separating decimals from full units, as in 5.88;
  - "salinity" instead of "o/oo", e.g. "the salinity of the water is 36.77";
  - "L" instead of "l" as abbreviation for litre; and "tons" instead of "t" or "T";
  - negative exponents instead of "/"; e.g. "gL<sup>-1</sup>" instead of "g/l"; however, when such notation in text related to biology may cause confusion or misunderstanding, the more traditional forms could be used, such as "organisms/m<sup>2</sup>";
  - "and" instead of "&"; and
  - "c.f." instead of "according to", "from" or "after" in reference to publications listed in the list of references;
- (b) not to be written with capital letters, unless they appear at the beginning of a sentence:
- seasons of the year ("winter", "summer", etc.); and
  - vernacular (i.e. the non-scientific) names of animal and plant species;
- (c) to indicate, whenever available, the local vernacular names of plant and animal species along with their scientific and English vernacular versions; after the local vernacular versions have been used for the first time, it would be preferable to use only these local vernacular names in the further text of the report;
- (d) to use "Fig. Y" as abbreviation in the narrative part of the report; however, this term should appear in full:
- at the beginning of a sentence, i.e. "Figure Y indicates ..."; and
  - in caption of figures, i.e. "Figure X. Population distribution ...";
- (e) to indicate the source of information contained in tables and figures by adding at the end of captions the relevant reference in bracket, e.g. "(source: Jones, 1992); and
- (f) to refer to tables and figures in the narrative part of the report by reference to the respective number of the table or figure and not be by indication of page on which they appear.

Programme for the finalization of the report - Agenda item 5

18. Mr L. Jeftic recalled that the work of the Task Team is associated with the development of the UNEP-sponsored CAMP for the Albanian coastal region and invited the Coordinator and members of the Task Team to continue maintaining a close cooperation with the coordinators of the relevant CAMP activities.

19. Taking into account the present status of the report as well as the comments and suggestions recorded in paragraphs 8 - 17 above, the programme for the finalization of the Task Team's report was discussed and agreed as follows:

- the authors responsible for the individual chapters of the report will prepare the revision of the chapters of the report for which they were responsible, taking into account the relevant suggestions and conclusions of this meeting, and submit them to the Coordinator of the Team - by 8 December 1995;
- the Coordinator will consolidate the inputs received from the members of the Task Team, and coordinate the preparation of the revised final draft of the report taking into account issues mentioned in paragraphs 8 - 17;
- the Coordinator will distribute to the members of the Task Team the revised final draft, and call a meeting of the national Task Team members to obtain their final comments and clearance on the draft;
- the revised final draft report will be submitted by the Coordinator of the Task Team to Mr L. Jeftic - by 22 December 1995;
- Mr L. Jeftic shall arrange the final editing and printing of the report by the Coordinating Unit for the MAP - by 15 February 1996.

20. Plans are being made to present the main findings and recommendations of the Task Team work at a seminar which will consider the results of the CAMP for Albania, at a date yet to be agreed.

Adoption of the report - Agenda item 6

21. The draft report, including its annexes, was considered and adopted by the meeting, as it appears in this document.

Closure of the meeting - Agenda item 7

22. In his closing remarks, Mr L. Jeftic expressed satisfaction with the results of the meeting, and thanked the Chairperson and the participants for the constructive spirit in which the meeting had been conducted. He expressed his expectations that the results of the study will be found as an important contribution to the CAMP being prepared for the coastal region of Albania.

23. Ms E. Demiraj thanked the Team members for their contribution to the preparation of the Team's report, and UNEP/MAP for the substantive and logistic support which made the preparation of the report possible. An exchange of courtesies followed after which Ms E. Demiraj declared the meeting closed, on 23 November 1995.

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**ANNEX II**

**AGENDA**

1. Opening of the meeting
2. Election of officers
3. Adoption of the agenda
4. Review of the final draft of the report
5. Programme for the finalization of the report
6. Adoption of the report
7. Closure of the meeting

## ANNEX III

**LIKELY MAJOR IMPACTS ASSOCIATED WITH EXPECTED CLIMATE CHANGE**  
**(listed in priority order and with indication of**  
**relative importance assigned by the Team to the individual impacts)**

(a) Harmful impacts

Drought, particularly in summer	98
Intrusion of saline water in coastal aquifers	50
Shortage of adequate quality drinking water	48
Soil erosion (physical)	43
Reduction in the extent of arable land due to soil erosion and alteration caused by climate change	37
Coastal erosion	37
Increased exchange of water between lagoons and the sea due to sea level rise, i.e. elevation of lagoons' salinity	32
Increased mixing of surface and deep marine waters with concomitant changes in oxygen transport and in the composition of marine fauna and flora	31
Increase in flooded coastal areas (ligatines) due to sea level rise	30
Impairment of coastal sewerage systems operated by gravitational flows due to sea level rise	26
Increased need for irrigation of arable land	25
Increase in illnesses transmitted by biological vector	25
Increased temperature and salinity of surface marine waters	20
Decrease in the flow of surface waters	20
Structural changes (species compositions and abundance) in natural ecosystems	19
Soil alteration (chemical) due to salinization, loss of nutrients, etc.	13
Decrease in the recharge of aquifers	13
Increased intensity and frequency of storms, rains, floods	11
Intensified karst formation	10
Increased demand for industrial fresh water (cooling especially) and treatment of used water	10
Increase in illnesses and mortality associated with extreme climatic events (e.g. heat strokes)	10
Extension of tourist season into periods of year presently too cold	9
Altitudinal and north/south shifts in the location of natural ecosystems	8
Harbour installations and operations affected by sea level rise	7
Land slides	6
Increased demand for freshwater needed for aquaculture	5
Increased potentials for altitudinal and north/south shifts in lands under forests, particularly in replacing deciduous with evergreen forests in the northern part of the study area	4
Changes in the type of crops in order to adapt to new climate conditions	3

Increased potentials for aquaculture (introduction of new species, prolonged periods of intensive growth, etc.)	3
Changes in the lagoon-cultivated species due to changing salinity of lagoons	3
Increased potentials for use of solar energy	3
Increased intensity and frequency of fog	1

(b) Beneficial impacts

Extension of tourist season into periods of year presently too cold	9
Increased potentials for use of solar energy	9
Decreased energy demand for heating	8
Increased potentials for aquaculture (introduction of new species, prolonged periods of intensive growth, etc.)	7
Increased exchange of water between lagoons and the sea due to sea level rise, i.e. elevation of lagoons' salinity	3
Increased potentials for altitudinal and north/south shifts in lands under forests, particularly in replacing deciduous with evergreen forests in the northern part of the study area	1
Increased mixing of surface and deep marine waters with concomitant changes in oxygen transport and in the composition of marine fauna and flora	1
Decrease in the flow of surface waters	1
Altitudinal and north/south shifts in the location of natural ecosystems	1
Changes in the type of crops in order to adapt to new climate conditions	1