

TABLE OF CONTENTS

	Page
Background	1
Report of the Meeting	2
Annex I	List of participants
Annex II	Agenda
Annex III	Annotated outline of the Task Team's final report

BACKGROUND

As part of the efforts of the United Nations Environment Programme (UNEP) to analyze the potential implications of predicted climatic 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 on the implications of climatic change 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), with the initial objective of preparing regional studies on expected climatic 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 study¹, 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 1992².

In preparing these case studies it had become apparent that prediction of impacts was constrained by the absence of scenarios of future climates on a regional, sub-regional and local scale. Accordingly the Climatic Research Unit of the University of East Anglia 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 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 climatic 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 climatic 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.

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

² L. Jeftic, J.D. Milliman and G. Sestini (eds.): "Climatic Change and the Mediterranean". 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 1992³.

A third generation of case studies was launched, in 1993, in the framework of the site-specific Coastal Areas Management Programme (CAMP). So far three such studies are being developed (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 Climate Research Unit of the University of East Anglia, 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.⁴

The present meeting is the second meeting of the Task Team for the Albanian coastal case study. The meeting was called to review the first drafts of the chapters contributing to the final report, 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 March 1995, in the premises of the Institute of Hydrometeorology in Tirana, by Ms E. Demiraj, Coordinator of the Task Team on the Implications of Expected Climatic Changes 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 United Nations Environment Programme (UNEP) and of the Coordinating Unit for the Mediterranean Action Plan in preparing for the second meeting of the Task Team.

³ 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.

⁴ 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.

2. Mr L. Jetic, Deputy Coordinator of the Mediterranean Action Plan (MAP), welcomed the participants on behalf of the MAP and UNEP. He expressed his appreciation for the support provided by the Albanian authorities, thanked Ms E. Demiraj for providing premises and facilities for the meeting, and commended the Task Team for the considerable work carried out since the first meeting of the Team in July 1994. He continued by recalling that the purpose of the present meeting is to review the first draft of the Team's final report, to suggest amendments and additions to the present draft report, and to agree on the steps leading to the finalization of the report. In concluding his address, Mr Jetic expressed the hope that both the present meeting and the future work of the Task Team would be successful.

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. Jetic 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.

Presentation and review of the draft chapters - Agenda item 4

6. Mr L. Jetic recalled that the drafts of the individual contributions to the Task Team's report received by the Coordinator of the Task Team were recently made available to all members of the Task Team. The drafts were computer-processed and issued without editorial changes by the secretariat as the first consolidated draft of the final report. This draft served as the main working document of the present meeting.

7. While reviewing the individual contributions to the first draft of the final report, 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. Likewise, the members of the Team were encouraged to identify the gaps in knowledge and data which may be of critical importance for improving the predictions of the likely impacts of the expected climatic change, and the recommendations for measures to cope with these impacts.

8. In the general debate on the drafts of the report's Executive Summary, and chapters 1 (Introduction) and 2 (Identification of present situation and trends), and during the presentation and review of individual contributions to these parts of the report, a number of comments and suggestions have been offered. Many of these were identical to those reflected in the annotated outline agreed for the report at the first meeting of the Task Team. For easier reference, the outline and its annotations are repeated in slightly modified form as Annex III of the present report. In addition to the agreed contents of the individual sections, as described in this Annex, the following specific comments were suggested to be taken into account in the finalization of the report:

Executive Summary (E. Demiraj)

The summary is intended primarily for high-level policy-makers and managers in Albania. Therefore, its style and content (2-3 pages) should be concise and non-technical. Three major issues should be highlighted:

- (a) the main features of expected climatic 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 climatic change; and
- (c) the principal recommendations of the Team for the mitigation of, or suitable adaptation to, the identified negative impacts.

The information contained in the present text of the section on the establishment and work of the Task Team, as well as on the geographic, ecological and socio-economic characteristics of the study area should be elaborated in sections of the report dealing with Background (section 1.1), Basic Facts (section 1.2) and Methodology (section 1.3). The impacts and recommendations identified in the present draft of the Summary should be expanded, modified and completed on the basis of sections 3 (Potential Impacts) and 4 (Recommendations for Action).

Background (section 1.1 - E. Demiraj)

The present text of the section should be expanded by addition of a paragraph on the timeliness of the study due to the long time-lag for the implementation of response measures.

Also, another paragraph should be added referring to the links between the study being prepared by the Task Team and other relevant studies (e.g. the World Bank's coastal zone management study), with particular emphasis on the study's relevance in the context of the Coastal Area Management Programme (CAMP) being prepared for the Albanian coast under the sponsorship of UNEP. The text for the latter should be provided by the secretariat (MAP).

Basic facts about the coastal region of Albania (section 1.2 - E. Demiraj)

An abridged and updated version of Annex VIII from the report of the first meeting of the Task Team should be prepared and included in the final report.

Methodology and assumptions used in the study (section 1.3 - E. Demiraj)

The present text should be amended and expanded in order to cover items and issues identified in Annex III. A list of the Task Team members should be added as an annex to the final report.

Temperature and precipitation scenarios for Albania (section 1.4 - E. Demiraj)

Text to be prepared along the lines indicated in Annex III.

Climate conditions (section 2.1.1 - L. Gjoka Mucaj and V. Mustaqi)

A map should be inserted in the section indicating the location of stations which provided data for the analysis of climate conditions. The periods covered by analyses should be clearly marked in the text or in the tables (e.g., in tables 6-9).

Atmospheric conditions (section 2.1.2 - L. Gjoka Mucaj and V. Mustaqi)

Have smog, dust and fog been observed in the study area ?

Geology (section 2.2.1 - P. Hoxha)

The present text contains a wealth of well presented information which, however, seems of limited relevance to the study. It would seem more appropriate to reduce the information which is not going to be used as a basis for the analysis of potential impacts (section 3) or in making recommendations for action (section 4). At the same time, more information should be provided about the geomorphology of the coastal area, on the type of sea-shores (e.g., sandy, rocky shores) and their extent, and the shore dynamics (sea-level changes, accretion, subsidence, erosion, etc.).

Soils (section 2.2.2 - P. Hoxha)

The main type of soils, and their extent, should be identified and illustrated by a soil (pedological) map, indicating areas now affected by, or vulnerable to, desertification and salinization.

Surface waters (section 2.3.1 - F. Hoxha and M. Bicja)

Annual flow rates should be given for each of the main rivers. Likewise, the types, sources and, whenever possible, the levels (concentration) of pollutants in the rivers should be indicated.

Ground waters (section 2.3.2 - F. Hoxha and M. Bicja)

Ground waters may suffer the greatest impact due to the expected climatic change and therefore they would merit a more detailed analysis than contained in the present text. Their distribution (with reference to Figure 19), present and potential use (e.g., for agriculture, industry, human consumption), and economic importance should be highlighted. Information should be provided on the types, sources and, whenever possible, the levels (concentration) of pollutants affecting at present, or likely to affect in the future, their quality. The eventual changes in the quantity of groundwater resources (e.g., due to over-exploitation) should be mentioned.

Marine waters (section 2.3.3 - F. Hoxha and M. Bicja)

The number and location of tide gauges and eventual other indicators of sea-level change should be indicated. The prevailing currents along the Albanian coast should be described. Information on the quality of coastal waters should be obtained from the Albanian national MED POL monitoring programme and other available sources. The description of lagoons should be coordinated with the text appearing in section 2.4.3.

Terrestrial ecosystems (section 2.4.1 - A. Mullai and L. Gjirkuri)

An estimate should be provided of the extent (in terms of km² and percentage of the study area) of the three identified main terrestrial ecosystems (sandy dunes; Mediterranean pine forests; and phrygas and oak forests). The present text deals exclusively with floral elements and information on fauna associated with these ecosystems should be added.

Likewise, more information should be provided about:

- (a) endemic, rare and endangered species;
- (b) anthropogenic influences on natural ecosystems;
- (c) economic and other values (e.g., habitats of migratory species) of the ecosystems, habitats and species;
- (d) status of protected areas; and
- (e) plans (if any) for the restoration of damaged ecosystems and for the extension of protected areas.

Freshwater and deltaic ecosystems (section 2.4.2 - A. Mullai and L. Gjirkuri)

The present text would benefit from expansion, taking into account some of the comments made on section 2.4.1.

Lagoon ecosystems (section 2.4.3 - A. Mullai and L. Gjirkuri)

The size (in terms of km²) of the lagoons, as well as of the protected areas (national parks, reserves, etc.) should be indicated, and the relevant comments made on section 2.4.1 should be taken into account in amending the text of this section.

Marine ecosystems (section 2.4.4 - A. Mullai and L. Gjirkuri)

Mention should be made of protected areas and protected or endangered species, if any.

Agriculture (section 2.5.1 - M. Selfo)

Agriculture is the sector of economy likely to be affected significantly by the predicted climatic change and it requires a thorough analysis along the lines suggested in Annex III. The last two paragraphs appearing in the present text should be transferred to section 2.2.2 (Soils).

Fisheries (section 2.5.2 - A. Palluqi)

The present text of the section should be expanded with information indicated as desirable in Annex III.

Aquaculture (section 2.5.3 - A. Palluqi)

Aquaculture should be treated in a section separate from fisheries, and a clear distinction should be made between aquaculture practised or planned in marine, freshwater, estuarine and lagoonal environment.

Silviculture (section 2.5.4 - S. Karadumi)

It is assumed that "coastal forests" mean forests in the study area. The prevailing silviculture practices (e.g. exploitation of natural forests, plantations) should be indicated and the economic (commercial) value of managed forests should be assessed. Increased frequency and intensity of forest fires may be one of the major consequences of expected climatic change, and therefore reference should be made to their present occurrence and causes (e.g., self-ignition during hot and dry periods, negligence, arson). It was suggested that the description of the four vegetation types be presented in the form of an annex to the final report.

Energy (section 2.6.1 - E. Gjika)

It would be useful to have an estimate of the potential energy generating capacity based on hydropower. In addition to expressing the changes in the domestic use of energy in percentages of total energy consumption, it would be revealing to provide also figures referring to consumption in MWs.

Industry (section 2.6.2 - E. Gjika)

An estimate should be attempted of the present share of industry in national GDP.

Tourism (section 2.7 - S. Kongoli)

Tourism is another sector of economy which may be influenced by the predicted climatic change and therefore merits a more thorough analysis. Table 15 should be completed with data for 1993 and 1994, and the oscillations indicated for the "average time of sojourn" should be commented. A caption should be provided for Table 16 and the text rendered in English. The same applies for Table 17, if it is retained in its present form.

Transport and transport-related services (section 2.8 - S. Bebi)

Text for this section is missing from the present draft of the report. The section should be drafted along the lines suggested in Annex III.

Sanitation (section 2.9.1 - A. Shehi)

Issues pertaining to sanitation and health aspects should be kept in separate sections, with contents of each section guided by suggestions contained in Annex III. The present text seems to contain all essential elements, but the necessity to keep Tables 18-26 was considered superfluous and adding little to illustrate the text. Should the Task Team decide to keep these tables in their present form, they should be added as annex to the final report. Table 27 was suggested to be associated with section 2.1.2 (Atmospheric conditions) and Table 28 with section 2.3 (Hydrosphere).

Health aspects (section 2.9.2 - A. Shehi)

See comments given for section 2.9.1.

Populations (section 2.10.1 - S. Kongoli)

The present text would need expansion and amendments in order to cover issues indicated in Annex III. Sections on populations and settlements should be kept as separate, albeit interlinked, sections.

Settlements (section 2.10.2 - S. Kongoli)

See comments given for section 2.10.1.

9. In reviewing chapters 3 (Potential impacts) and 4 (Recommendations) the following general and specific comments have been made:

- the present lack of proper balance between chapters 2 and 3 would have to be redressed by considerably expanding the text of chapter 3 and reducing the text of chapter 2;
- chapter 2 should be considered as the background information on which chapters 3 and 4 are based; it should contain only information relevant to a better understanding of chapters 3 and 4;
- the impacts identified in chapter 3 should be as specific as possible, within the limits of uncertainties surrounding the predicted rate and magnitude of the climatic change and taking into account the agreed time horizons for the predictions (years 2030 and 2100); section 3.5.4 (silviculture) presented at the present meeting should be considered a good model;
- the need for more data and information is an obvious basic requirement for a better analysis of impacts and for making more specific recommendations; therefore, whenever such a recommendation is made in chapter 4, it should be highly specific and supported by justifiable arguments; and
- the bulk of the recommendations in chapter 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.

10. After reviewing the first draft of the final report, the following general approach was agreed to be used in the finalization of the report:

- the layout of the final report will follow the outline identified in Annex III, i.e., it will consist of chapters and sections indicated in this Annex;
- a "standard map" for the presentation of the geographic area covered by the study, and facts and sites relevant to this area should be adopted and used in all sections of the report; the inland limits of the study area should be determined along the borders of administrative districts in order to facilitate the use of statistical data based on administrative district;

- the "operative scenarios" developed by the East Anglia University 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 (chapter 2), nor contradictions between the predicted impacts (chapter 3) and the measures recommended to counter these impacts (chapter 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 chapters 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.

Programme of the finalization of the report - Agenda item 5

11. Recalling that the work of the Task Team is associated with the development of the UNEP-sponsored CAMP for the Albanian coastal region, Mr L. Jetic insisted that closer links should be established between the members of the Team and the coordinators of the relevant CAMP activities. He has stressed that it is the only way to ensure full conformity and compatibility between the results of the CAMP and the Task Team's report. In this context, the MAP secretariat and the Committee for Environmental Protection shall ensure full cooperation of coordinators of each activity in the framework of CAMP for Albanian coastal region, as well as their cooperation with other relevant activities and projects (e.g., the World Bank's coastal zone management study).

12. Taking into account the present status of the report, the programme of its finalization was discussed and it was agreed that:

- the first draft of the final report will be amended by the MAP Secretariat using the written additions and corrections provided by the members of the Task Team at the present meeting; the amended version of the first draft will be given to Mr. G. Deliu (hard copy and diskette) for transmission to the Coordinator of the Task Team, and this version of the draft shall be used as the basis for the final report;

- in finalizing the report, the Coordinator and the members of the Team shall follow the approach agreed at the present meeting (see paragraphs 7 - 11, and Annex III);
- the members of the Team shall prepare and submit to the Coordinator the revised sections of chapters 2 and 3, and the sections of chapter 4 for which they are responsible (see Annex III), by mid-May 1995; in preparing their inputs, the Task Team members will specifically liaise with the coordinators of the relevant activities of the CAMP for the Albanian coastal region, and other relevant projects undertaken in that region;
- the members of the Team dealing with cross-cutting issues are encouraged to meet informally and prepare jointly the sections of the report which are of mutual interest to them;
- the narrative part of each section of chapter 2 should be preceded with a listing of the main issues covered in the section, followed by a short and concise summary of the facts relevant to each issue; these summaries should be the basis for presenting the present situation and trends in the executive summary of the report, and for analyzing the impacts and formulation of recommendations in chapters 3 and 4 of the report; in principle, each main issue identified in chapter 2 should be reflected in chapters 3 and 4;
- the revised sections of chapters 2 and 3 shall be submitted to the Coordinator using the present hard copy of the first draft of the report, with clear indication of the changes, amendments, deletions and additions which are suggested to be made; the members of the Team are encouraged to provide comments and suggestions on all, and not only on the sections of the report for which they are responsible;
- the Coordinator shall consolidate the comments, suggestions and the new texts received from the members of the Team and shall submit them as the second draft of the final report to Mr L. Jeftic, using the present hard copy of the first draft of the report, by mid-June 1995;
- the Coordinator is encouraged to meet, as necessary, with the individual members of the Team, or with the Team as a whole, in order to facilitate the preparation of the second draft of the report;
- Mr L. Jeftic shall arrange the computer processing and printing of the second draft of the report; he shall provide the Coordinator with the requisite number of printed versions of the second draft by mid-July 1995;
- the Coordinator shall distribute the second draft of the report to the members of the Team, and they will be expected to provide the Coordinator with their final comments on the whole draft by mid-September 1995; by the same date, the external members of the Task Team will also provide the Coordinator with their comments on the second draft of the report;
- the Coordinator shall inform Mr L. Jeftic about the final comments, amendments and suggestions of the Team on the second draft of the final report by the end of September 1995;

- taking into account the final comments, amendments and suggestions received from the Coordinator, Mr L. Jeftic will issue the third draft of the report by the end of October 1995, and shall provide the Coordinator with the requisite number of copies of the report;
- the third meeting of the Task Team shall be organized by the end of November 1995, to consider and clear the final version of the report;
- Mr. L. Jeftic shall arrange that the final report of the Task Team is issued by the Coordinating Unit for the Mediterranean Action Plan by the end of December 1995; and
- the final report of the Team shall be presented at a national seminar to be held in Albania at a date yet to be agreed, tentatively envisaged for January or February 1996.

Adoption of the report - Agenda item 6

13. 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

14. In his closing remarks, Mr L. Jeftic expressed satisfaction with the results of the meeting, and the constructive spirit in which the meeting had been conducted. He expressed his expectations that the study will be linked closer with the other activities of the ongoing CAMP for the Albanian coastal region and that the Team members will strictly follow the approach agreed at the present meeting. He also thanked the participants, the Chairperson and the Rapporteur for their hard work.

15. Mr G. Deliu, on behalf of the Committee of Environment Protection, commended the good work of the Task Team and reconfirmed the continuing support the Committee intends to offer for the successful completion of the Task Team's work.

16. Ms E. Demiraj, in her closing remarks, thanked the Team members for their contribution to the meeting and expressed her belief that the report will be prepared in accordance with the agreed approach and following the revise calendar of activities. An exchange of courtesies followed after which the Ms E. Demiraj closed the meeting on 23 March 1995.

ANNEX I

LIST OF PARTICIPANTS AND TASK TEAM MEMBERS

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ANNEX II

AGENDA

1. Opening of the meeting
2. Election of officers
3. Adoption of the agenda
4. Presentation and review of the draft chapters
5. Programme of the finalization of the report
6. Adoption of the report
7. Closure of the Meeting

ANNEX III

ANNOTATED OUTLINE OF THE TASK TEAM'S FINAL REPORT with the indication of the person responsible for the preparation of the individual sections of the report

EXECUTIVE SUMMARY (E. Demiraj)

A 2-3 page summary intended as message to high-level policy-makers and managers. It should cover in a concise and non-technical terms (a) the main features of expected climate changes relevant to the coastal areas of Albania; (b) the major ecological and socio-economic impacts identified as the likely consequences of the expected climate changes; and (c) the principal recommendations for the mitigation of, or the suitable adaptation to, the identified negative impacts.

1. INTRODUCTION (E. Demiraj)

1.1 **Background** (E. Demiraj). A short reference to the: (a) origin of the expected greenhouse effect, with basic information on the magnitude of its expected consequences for the study area; (b) importance for timely preparation of studies on the possible impacts of climate changes; and (c) organic link between the study and the CAMP being prepared for the coastal areas of Albania. Repeat the objectives and the expected outputs of the study, as they appear in Annex X to the report of the First Meeting of the Task Team (UNEP(OCA)/MED WG.85/2).

1.2 **Basic facts about the coastal region of Albania** (E. Demiraj). A shorter and updated version of Annex VIII to the report of the First Meeting of the Task Team, with emphasis on facts relevant to the objectives of the study.

1.3 **Methodology and assumptions used in the study** (E. Demiraj). Reference to the creation of the Task Team, the climate scenarios specifically developed for the study area, the inputs from individual members of the Task Team into the study and their interdisciplinary interaction, the meetings of the Task Teams, the links with the relevant Task Teams established in the framework of the CAMP, and UNEP/MAP's support provided for the work of the Team. Repeat the basic assumptions used in the preparation of the study, and in the operative climate scenarios, as they are listed in Annexes VI and X to the report of the First Meeting of the Task Team. Identify, as the area covered by the study, the whole length of the Albanian coastal zone consisting of littoral area, coastal strip and its adjacent sea area, with inland limit of the studied area determined along the borders of administrative districts in order to facilitate the use of statistical data based on administrative districts.

1.4 **Temperature and precipitation scenarios for Albania** (E. Demiraj). Summary of the scenarios appearing in Annex VII to the report of the First Meeting of the Task Team, keeping in mind that the full text of the scenarios, as they appear in Annex VI to the report of the First Meeting of the Task Team, will be an annex to the final report of the Task Team.

2. IDENTIFICATION OF PRESENT SITUATION AND TRENDS (E. Demiraj)

2.1 Climate conditions and atmosphere (L. Gjoka Mucaj and V. Mustaqi)

2.1.1 **Climate conditions.** Using the existing data from continuous observations during the last three decades on the Albanian meteorological stations, the variations of climate-related parameters (atmospheric pressure, air temperature, precipitation, wind, sunshine, solar radiation, cloudiness) will be analyzed. Yearly, seasonal and daily averages, maximums and minimums, as well as return periods will be calculated whenever feasible. The frequency and intensity of extreme conditions (e.g. drought, storms), and some rare phenomena (e.g., snow, fog, frost) will be determined.

2.1.2 **Atmospheric conditions.** Recognizing the nonexistence of a suitable database, the section will be based on qualitative description of atmospheric conditions (e.g., smog, dust) relevant to the study.

2.2 Lithosphere (P. Hoxha)

2.2.1 **Geology.** The geological structure and geomorphology of the coastal area will be described, with reference to tectonic conditions. A geological map of the coast, with some geological profiles, will be provided. The type of sea-shores, and their extent along the coast will be identified, and the shore dynamic (sea-level changes, accretion, subsidence, erosion, etc.) will be analyzed on the basis of historic and recent data and observations.

2.2.2 **Soils.** The distribution and main properties of soil types in the coastal area will be identified. A soil map of the coastal area will be provided, with the indication of areas now affected by, or vulnerable to, desertification and salinization.

2.3 Hydrosphere (F. Hoxha and M. Bica)

2.3.1 **Surface waters.** The total flux, and its seasonal variations, of all surface waters into the Adriatic and Ionian seas will be provided. An estimate will be made for the quality of the waters (e.g., state of pollution) and for the amount of suspended matter carried by the rivers into the sea.

2.3.2 **Ground waters.** The distribution, boundaries and magnitude of coastal ground water reservoirs, and their hydrological dynamics, will be described on the basis of available data and observations.

2.3.3 **Marine waters.** Variations in sea level (see also section 2.2.1) and patterns of dynamic processes (currents, waves, etc.) will be described. The extent of coastal lakes and lagoons, as well as their hydrodynamic relation to marine or surface waters, will be presented.

2.4 Natural ecosystems (A. Mullai and L. Gjoknuri)

2.4.1 Terrestrial ecosystems. Information will be provided on the principal coastal ecosystems and habitats, including on their present and past natural boundaries, vegetation types, species composition, biodiversity and their dependence on geomorphology and soils (see also sections 2.2.1 and 2.2.2). Special reference will be made to: (a) endemic, rare, and endangered species; (b) anthropogenic influences on terrestrial ecosystems; (c) economic and other values (e.g., habitats of migratory species) of the ecosystems, habitats and species; (d) status of protected areas; and (e) plans for the restoration of damaged ecosystems and for the extension of protected areas.

2.4.2 Freshwater and deltaic ecosystems. Description to follow the general approach outlined for section 2.4.1, taking into account the specifics of freshwater and deltaic ecosystems (e.g., information on hydrological conditions and water quality).

2.4.3 Lagoon ecosystems. Description to follow the general approach outlined for sections 2.4.1 and 2.4.2, taking into account the specifics of lagoon ecosystems.

2.4.4 Marine ecosystems. Description to follow the general approach outlined for section 2.4.1, taking into account the specifics of marine ecosystems.

2.5 Managed ecosystems (A. Palluqi, M. Selfo and S. Karadumi)

2.5.1 Agriculture (M. Selfo). Identification of the past, present and foreseeable main agricultural activities and products in the coastal areas. The commercial value of the products, and the importance of agriculture in the national economy, will be assessed. Reference will be made to land-use patterns and to agricultural practices which may be affected by the consequences of climate change (e.g., increased soil erosion and salinization)

2.5.2 Fisheries (A. Palluqi). The main fisheries resources will be identified and an estimate will be provided, on the basis of fishery statistics, about the past trends and present level of their exploitation (commercial, subsistence, export). The main fishing methods (techniques and technologies), and the status of stocks (e.g., over- or under-exploited), will be highlighted.

2.5.3 Aquaculture (A. Palluqi) The present status and the past trends in the development of coastal aquaculture (marine, freshwater, estuarine and lagoonal) will be described (e.g., geographic distribution of sites, cultivated species, annual harvests, types of aquaculture, commercial value of the harvest, etc.). Foreseeable trends in development of aquaculture, and possible conflicting interests with other development sectors (e.g., tourism, settlements, industry) will be identified.

2.5.4 Silviculture (S. Karadumi). The past and present areas covered by silviculture in the coastal area will be determined. The main crops (cultivated species), their use and commercial value, and the prevailing silviculture practices (e.g., exploitation of natural forests on sustainable basis, plantations) will be described.

2.6 Energy and industry (E. Gjika)

2.6.1 Energy. The past and present levels of energy requirements in the coastal area will be given, by main sources of energy (e.g., hydroelectric, thermoelectric) and principal user sectors (e.g., industry, households, tourism, etc.). The future energy requirements of the coastal area will be assessed, using data from other sectors of this report (e.g., 2.6.2, 2.7, and 2.10.2).

2.6.2 Industry. An inventory will be prepared of the main industrial installations in the coastal areas. Installations away from the coast will be listed only if they have a significant influence on the coastal areas (e.g., by polluting the area, requiring harbour or coastal/maritime transport facilities). The present status and foreseeable future of the listed installations will be indicated.

2.7 Tourism (S. Kongoli). The past trends and present status of tourism in Albania will be described (i.e., sites, number of hotels, beds, tourists; revenue from tourism; type of tourism: catering for international or domestic market, camping). The future prospects for the development of tourism will be assessed.

2.8 Transport and transport-related services (S. Bebi). The section will describe the present status and past trends in: (a) road traffic in coastal areas; (b) maritime transport associated with Albanian harbours, and transit through Albanian coastal waters, including harbour installations and waste disposal facilities associated with harbour activities; (c) railway transport, including railway stations and installations and facilities associated with their operations; and (d) air transport, including airports and facilities associated with their operations. Future trends in the development of these transport means, their significance in the context of Albania's socio-economic development, and their potential environmental impact, will be assessed.

2.9 Sanitation and health aspects (A. Shehi)

2.9.1 Sanitation. The present status of sanitary conditions in the urban, rural and touristic areas will be reviewed, with support of statistical data and information. The review will specifically include references to: (a) freshwater supply for human consumption; (b) housing conditions; (c) disposal and treatment of domestic liquid and solid waste; and (d) vector control programmes (e.g., for the control of malaria).

2.9.2 Health aspects. Data and information will be provided on the past and present distribution patterns and frequencies of main illnesses, and causes for death, with special reference to illnesses and death which may be directly or indirectly associated with climate conditions (e.g., respiratory, cardiovascular, cataracts, skin cancer, malaria).

2.10 Populations and settlements (S. Kongoli)

2.10.1 Populations. The past trends in population dynamics relevant to the coastal area will be described and their causes highlighted (e.g., natural growth of coastal population, movements from the hinterland, emigration). The trends foreseeable in future population movements, and the main likely driving forces in these trends (e.g., better climate conditions than in inland; job opportunities in industry, tourism and services; availability of infrastructure ensuring higher living standards and quality of life).

2.10.2 Settlements. A review will be provided of the evolution (growth) of settlements along the coast of Albania, with an analysis of the main factors which contributed to this growth. The adequacy of the present infrastructure supporting the settlements will be assessed. The likely future trends in the evolution of coastal human settlements will be estimated.

3. POTENTIAL IMPACTS OF EXPECTED CHANGES ON NATURAL SYSTEMS AND SOCIO-ECONOMIC ACTIVITIES (E. Demiraj)

- 3.1 Atmosphere⁵
- 3.2 Lithosphere
- 3.3 Hydrosphere
- 3.4 Natural ecosystems
- 3.5 Managed ecosystems
- 3.6 Energy and industry
- 3.7 Tourism
- 3.8 Transport and transport-related services
- 3.9 Sanitation and health aspects
- 3.10 Populations and settlements

4. RECOMMENDATIONS FOR ACTION (E. Demiraj)

- 4.1 **Suggestions for actions to avoid, mitigate and adapt to the predicted effects (E. Demiraj)**
 - 4.1.1 Atmosphere
 - 4.1.2 Lithosphere
 - 4.1.3 Hydrosphere
 - 4.1.4 Natural ecosystems
 - 4.1.5 Managed ecosystems
 - 4.1.6 Energy and industry
 - 4.1.7 Tourism

⁵ The responsibility for the preparation of subsections 3.1-3.10 and 4.1.1-4.1.10 is identical with responsibilities indicated for subsections 2.1-2.10.

4.1.8 Transport and transport-related services

4.1.9 Sanitation and health aspects

4.1.10 Populations and settlements

4.2 **Suggestions for follow-up to the present study** (E. Demiraj)

REFERENCES (E. Demiraj)

ANNEXES (E. Demiraj)