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MEDITERRANEAN ACTION PLAN

Third Meeting of the Task Team
on Implications of Climatic Changes
on the Island of Malta

Valletta, 18-20 May 1992

**IMPLICATIONS OF EXPECTED CLIMATIC CHANGES
ON THE ISLAND OF MALTA
REPORT OF THE THIRD MEETING OF THE TASK TEAM**

REPORT OF THE MEETING

Agenda item 1 - Opening of the Meeting

The meeting was opened by Professor D. Attard, Co-ordinator of the Task Team, who welcomed participants on behalf of the Government of Malta, to the Third Meeting of the Task Team on Implications of Climatic Changes on the Island of Malta.

Dr L. Jeftic, Senior Marine Scientist in the Co-ordinating Unit for the Mediterranean Action Plan (MAP) on behalf of Dr M.K. Tolba, Executive Director of UNEP, expressed his appreciation of the work of the Task Team to date and to the Ministry of Foreign Affairs and the Foundation for International Studies for providing support to the meeting.

Agenda item 2 - Election of Officers

The meeting unanimously elected Professor D. Attard, as Chairman, and Dr J. Pernetta as Rapporteur of the meeting. Dr L. Jeftic acted as Technical Secretary of the meeting.

The full list of participants appears as Annex I of this report.

Agenda item 3 - Adoption of the Agenda

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

Agenda item 4 - Presentation and Review of the draft chapters

The draft documents referring to individual chapters of the planned report of the Task Team were presented by their respective authors, as follows:

- 2.1 Climate - Major J. Mifsud;
- 2.3 Hydrosphere - Dr G. De Bono;
- 2.5.2 & 2.5.3 Freshwater & Marine Ecosystems - Professor V. Axiak;
- 2.7 Energy - Mr J. Cachia;
- 2.8 & 2.9 Tourism, Transport & services - Mr S.F. Borg;
- 2.10 Health and sanitation - Professor R. Ellul Micallef;
- 2.11 Population and settlement pattern - Dr G. De Bono.

A full list of presented documents is given in Annex III of this report.

The presentations of individual drafts were followed by extensive discussions during which additions and amendments to the draft chapters were suggested and the possible rearrangements of some material during the preparation of the final consolidated report were considered. Authors noted suggestions for amendment to be undertaken during finalisation of the drafts.

The integration of the findings of the sectoral reports was discussed in relation to the drafting of Chapter 3 - Synthesis of Findings, which is to be prepared by the Co-ordinator of the Task Team with the assistance of Dr. S. Borg. This can only be completed following amendment of the chapters and completion of those sections currently missing from the available drafts.

Major J. Mifsud agreed to co-ordinate the inputs of Task Team members in the preparation of the Chapters on lithosphere (Chapters 2.2). Work on chapter 2.6 - Managed Ecosystems had not yet commenced. Professor V. Axiak agreed to assist with Mr F. Serracino Inglott or his alternative in the preparation of sub-section 2.5.1 on natural terrestrial ecosystems.

Professor D. Attard agreed to prepare and circulate drafts of the introduction and the recommendations for action as soon as the chapters were finalised. A first draft of the synthesis of findings was prepared during the meeting and it was agreed that once the reports were completed this would be circulated to all Task Team members for comment and amendment.

During the course of the extensive discussions of the substantive and detailed presentations made by the various authors, it became apparent that there was a need to now incorporate the findings of the University of East Anglia Climate Research Group (UEA) into the scenarios used in the different sectoral chapters. A summary table of the various scenarios, together with the final operative scenarios based on the IPCC and UEA assessments and predictions, which should be used in the preparation of the Task Team report appears as Annex IV to this report. It was agreed that the time horizon of the year 2050 will be used in the report of the Task Team as the major reference point, and, whenever possible, reference will be also made to the other two time horizons indicated in Annex IV (i.e. year 2030 and the end of the 21st century).

The final agreed outline of the report, together with the authors responsible for the preparation of individual chapters are provided in Annex V of this report. It was agreed that the report would appear as an integrated single volume report and that although individual contributors would not be identified with single sections or chapters of the report the contributions of the various Task Team members would be fully acknowledged in the final report.

The need for high quality figures produced in a uniform format which could be easily reproduced was stressed by the technical secretary. It was also agreed that throughout the report a standardized map will be used and that all references would be grouped into a single section at the end of the report.

Agenda item 5 - Programme for the finalization of the report

It was agreed that final drafts would be provided by the members of the Task Team to the Co-ordinator by the middle of June in order that they can be edited into the form of a single consolidated report. The final draft consolidated report, including all sections, should be sent by the Co-ordinator to Drs L. Jeftic, J. Pernetta and S. Keckes, no later than the end of July. Drs S. Keckes and J. Pernetta are expected to send their written comments to the Co-ordinator and Dr. L. Jeftic.

Dr. L. Jeftic will be responsible for the issuing and distribution of the final draft of the report to the members of the Maltese Task Team and to the Co-ordinators of the other four Mediterranean task teams.

The Task Team for the Malta study would hold a final meeting in Malta, on Monday, 14 September 1992, to consider the comments received on their final draft from Drs L. Jeftic, J. Pernetta and S. Keckes, and any other matter relevant to the finalization of the report.

Subsequently, a joint review meeting of representatives of the five task teams working on case studies in the Mediterranean (Rhodes, Kastela Bay, Syrian coast, Cres/Losinj, Malta) would be held between 15th and 18th September in Malta, to review and discuss the reports of all five task teams. Taking into account the suggestions and comments at the review meeting the final versions of all reports will be prepared by the respective co-ordinators, in co-operation with Dr L. Jeftic, by 15 October 1992. The final reports will be issued by the Mediterranean Co-ordinating Unit in MAP Technical Reports Series, by the end of 1992.

Agenda item 6 - Adoption of the report

The draft report including its substantive annexes was considered and adopted, as it appears in this document.

Agenda item 7 - Closure of the Meeting

Dr Jeftic expressed his satisfaction with the progress to date and with the results of the meeting. He thanked the Chairman and rapporteur; the Government of Malta and the Foundation for International Studies for technical and logistic assistance.

An exchange of courtesies followed after which the Chairman closed the meeting on 20th May 1992.

ANNEX I

LIST OF PARTICIPANTS

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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

LIST OF DOCUMENTS

UNEP(OCA)/MED WG.49/1	Provisional Agenda
UNEP(OCA)/MED WG.49/2	Implications of expected climatic changes on the Island of Malta - A study of the climate trends in Malta (J.M. Mifsud)
UNEP(OCA)/MED WG.49/3	Implications of expected climatic changes on the Island of Malta - The impact of climate change on the hydrology of the Maltese Islands (G. Debono)
UNEP(OCA)/MED WG.49/4	Implications of expected climatic changes on the Island of Malta - Identification and assessment of possible climatic change on marine and freshwater ecosystems (V. Axiak)
UNEP(OCA)/MED WG.49/5	Implications of expected climatic changes on the Island of Malta - Climate and energy in Malta (J. Cachia)
UNEP(OCA)/MED WG.49/6	Implications of expected climatic changes on the Island of Malta - Tourism (S. Borg)
UNEP(OCA)/MED WG.49/7	Implications of expected climatic changes on the Island of Malta - Predicted Health Problems associated with Climate Change (R.E. Micallef)
UNEP(OCA)/MED WG.49/8	Implications of expected climatic changes on the Island of Malta - Impact of global warming on Population and settlement patterns (G. Debono)
UNEP(OCA)/MED WG.49/9	Implications of expected climatic changes on the Island of Malta - Transport (S. Borg)
UNEP(OCA)/MED WG.49/Inf.1	Provisional list of participants
UNEP(OCA)/MED WG.49/Inf.2	Provisional list of documents

ANNEX IV

SCENARIOS FOR THE PREDICTED CLIMATE CHANGE IN MALTA DEDUCED FROM SCENARIOS SUGGESTED BY IPCC AND THE UNIVERSITY OF EAST ANGLIA

SCENARIOS	TIME HORIZON		
	2030	2050	2100
<u>IPCC GLOBAL</u> Temperature Sea level	+1.8 EC + 18 cm +/- 12 cm	- -	+2 to +5 EC + 65 cm +/- 35 cm
<u>IPCC Southern Europe</u> Temperature Rainfall Soil moisture	+2 EC winter +2 to + 3 EC summer + 0 to + 10% winter - 5 to + 15% summer - 15 to - 25% summer	- - - -	- - -
<u>Univ. East Anglia Med</u> Rainfall	for each EC Global + 3% winter - 3% summer		
<u>UNEP Task Teams</u> Temperature Sea level	- -	+ 1.5 to + 3 EC + 24 to 52 cm	- -
<u>Univ. East Anglia for Malta</u> Rainfall* Annual Winter Spring Summer Autumn	for each EC Global + 0.8 to + 0.9 EC no change - 9% - 12 to - 15% no prediction + 14%	for each EC Global + 0.8 to + 0.9 EC no change - 9% - 12 to - 15% no prediction + 14%	for each EC Global + 0.8 to + 0.9 EC no change - 9% - 12 to - 15% no prediction + 14%
<u>Operative Scenarios for Malta</u> Temperature Sea level Rainfall* Annual Winter Spring Summer Autumn	+ 1.44 to + 1.62 EC + 18 +/- 12 cm no change - 16.2% - 21.6 to 27% no change + 25.2%	+ 1.2 to + 2.7 EC + 38 +/- 14 cm no change - 13.5 to -27% - 18 to - 45% no change + 21 to + 42%	+ 1.6 to 4.5 EC + 65 +/- 35 cm no change - 18 to - 45% - 24 to - 75% no change + 28% to + 70%

* Percentage change in rainfall should be related to present values.

ANNEX V

OUTLINE OF THE REPORT

(amended on 20.05.92)

EXECUTIVE SUMMARY (D. Attard)

1. INTRODUCTION (D. Attard)
 - 1.1. Background
 - 1.2. Basic facts concerning Malta
 - 1.3. Methodology and assumptions used in the study

2. IDENTIFICATION AND ASSESSMENT OF THE POSSIBLE CONSEQUENCES OF CLIMATIC CHANGE
 - 2.1. Climate (J. Mifsud)
 - 2.2. Lithosphere (J. Mifsud)
 - 2.3. Hydrosphere (G. De Bono)
 - 2.4. Atmosphere (J. Mifsud)
 - 2.5. Natural ecosystems
 - 2.5.1. Terrestrial (S. Inglott)
 - 2.5.2. Freshwater (V. Axiak)
 - 2.5.3. Marine (V. Axiak)
 - 2.6. Managed ecosystems
 - 2.6.1. Agriculture (S. Inglott)
 - 2.6.2. Fisheries (S. Inglott)
 - 2.6.3. Aquaculture (S. Inglott)
 - 2.6.4. Sylviculture (S. Inglott)
 - 2.7. Energy and industry (J. Cachia)
 - 2.8. Tourism (S. Borg)
 - 2.9. Transport and services (S. Borg)
 - 2.10. Health and sanitation (R.E. Micallef)
 - 2.11. Population and settlement pattern (G. De Bono)

3. SYNTHESIS OF FINDINGS (D. Attard/S. Scicluna)

3.1. Present situation

3.2. Major expected changes and their impacts

4. RECOMMENDATIONS FOR ACTION (D. Attard/S. Scicluna)

4.1. Preventative policies and measures

4.2. Adaptive policies and measures

References