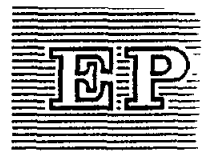
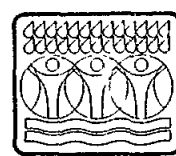




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REPORT OF THE MEETING OF EXPERTS ON FRESH WATER RESOURCES
MANAGEMENT IN THE MEDITERRANEAN REGION CONVENED BY
UNEP AND ORGANIZED IN CO-OPERATION WITH CEEFIGRE

Cannes, 25-29 April 1978

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I. INTRODUCTION

1. As part of the implementation of the Action Plan for the Protection and Development of the Mediterranean Region adopted by the Intergovernmental Meeting on the Protection of the Mediterranean (Barcelona, 28 January - 4 February 1975), and as discussed and approved by the Intergovernmental Meeting of Mediterranean Coastal States on the Blue Plan (Split, Yugoslavia, 31 January - 4 February 1977) and the Intergovernmental Review Meeting of Mediterranean Coastal States on the Mediterranean Action Plan (Monaco, 9-14 January 1978), a Meeting of Experts on Fresh Water Resources Management in the Mediterranean Region was convened by the United Nations Environment Programme (UNEP) and organized in co-operation with the Centre for International Training in Water Resources Management (CEFIGRE). At the kind invitation of the French focal point for the Blue Plan, the Meeting took place at Cannes from 25 to 29 April 1978.

II. PARTICIPANTS

2. The list of participants is contained in annex I to this report.

III. Agenda item 1: OPENING OF THE MEETING

3. The Meeting was opened on Tuesday, 25 April 1978 at 9.30 a.m. at the Chateau Font-de-Veyre, headquarters of the Mediterranean Environment and Development Activities Centre (MEDEAS) at Cannes. It began with a brief ceremony of welcome during which representatives of the French focal point for the Blue Plan, UNEP and CEFIGRE each made a statement.

4. Speaking on behalf of the French focal point for the Blue Plan, Mr. René BOURONE described the Mediterranean Environment and Development Activities Centre as the specific fulfilment of the formal promise made by the French Government at the Intergovernmental Meeting of Mediterranean Coastal States on the Blue Plan (January 1977) to provide UNEP with the premises needed to serve as a Regional Activity Centre of the Blue Plan.

5. In welcoming participants to the Centre, which now became their own, the Secretary of the French focal point said that he was pleased that the first meeting of experts under the Blue Plan could now begin, thus showing that this project was moving from the diplomatic stage to the action stage. He wished the experts every success in their future work and recalled that the Mediterranean Governments had always requested and recommended that all thinking on the subject should lead to specific actions of benefit to the entire Mediterranean community.

6. Following this statement, the representative of UNEP, Mr. Mohamed TANGI, thanked the Secretary of the French focal point for the Blue Plan for the hospitable reception he had accorded the Meeting and the means he had placed at its disposal to ensure the smooth conduct of its proceedings. He then thanked CEFIGRE, which had undertaken the difficult task of making the necessary technical preparations for the Meeting. He also expressed his gratitude to the experts who had prepared the documents on which the work of the Meeting was based. He thanked the experts for their contributions to achieving the goals of the Meeting, stressing that they were participating in it in their personal capacity.

7. Mr. François VALIRON, Administrator of CEFIGRE, said that his organization attached the primary importance, in the field of water management, to effective documentation relating both to physical data and to needs and ways of reconciling one with the other. He noted the importance of the training to be given to

national and regional officials to help them implement a water policy geared to the twofold imperative of economic development and protection of the natural environment. That was in fact one of the goals of CEFIGRE, which was at the disposal of the Blue Plan to help it carry out the measures it might decide on specific points. He hoped that the Cannes Meeting would result in specific projects and determine the means for executing them.

IV. Agenda item 2: ELECTION OF OFFICERS

8. The Meeting unanimously elected the following officers:

CHAIRMAN: Mr. René BOURONE
Secretary of the French focal point for the Blue Plan and
Chairman of the Mediterranean Environment and Development
Activities Centre

VICE-CHAIRMAN: Mr. Fathi GANA
Engineer, Director at the Ministry of Works
Tunisia

VICE-CHAIRMAN: Mr. Panayotis KARAKATSOULIS
Professor of Hydraulic Engineering, Chairman of the
Greek Water Resources Management Co-ordination Committee

RAPPORTEUR: Mr. Sandro PETRICCIONE.
Management Adviser
Cassa per il Mezzogiorno
Italy

Mr. Hamed HELMADI, Engineer, Director of Research, CEFIGRE, acted as technical secretary.

V. Agenda item 3: ADOPTION OF THE AGENDA

9. The Meeting adopted the agenda as reproduced in annex II to this report.

VI. Agenda item 4: INTRODUCTION OF THE MEDITERRANEAN ACTION PLAN

10. The representative of UNEP briefly introduced the Mediterranean Action Plan, which includes the Blue Plan with its prospective study of water resources and the Priority Actions Programme (PAP) for water. He noted that once the details of those two programmes had been worked out, they would be implemented, with the agreement of the Governments of the Mediterranean States concerned, by experts and institutions in the Mediterranean countries and with the support of institutions of the United Nations system and other institutions of the region concerned with problems of water resource management. Both the water resource survey and the Priority Actions Programme for water would be put into operation and co-ordinated according to the same principles as other activities undertaken under the Mediterranean Action Plan.

11. The representative of the United Nations Development Programme (UNDP), Mr. E. BONEV, stated that the organization he represented was following all of the developments under the Mediterranean Action Plan very closely. UNDP was interested in the efforts being undertaken in the Mediterranean countries to solve, jointly and on a regional basis, the development-environment problems they faced. UNDP support for those efforts would depend on the kind of activities proposed and the appropriate procedure necessary to obtain that support.

VII. Agenda item 5: SURVEY ON 'FRESH WATER IN THE MEDITERRANEAN BASIN'

A. SUMMARY OF TERMS OF REFERENCE (DOCUMENT UNEP/WG.16/3)

12. This survey is one of the major surveys to be undertaken in the first stage of the Blue Plan: it consists of exploratory work on the present situation with a view to obtaining an overall picture of trends in the evolution of natural environments as they are affected by the various components of development.

13. The objectives of the water resources survey are:

In the long term, to identify the risks and constraints which might affect the availability of fresh water (in terms of both quantity and quality) in the light of the developments envisaged, and also to cover other aspects of the problem.

In the immediate future, (a) to analyse the present situation of fresh water in its relationship with the sea, in the light of the historical background and from the standpoint of on-going processes, sensitive areas, imbalances and development trends;

(b) to identify priority measures.

14. As presented in document UNEP/WG.16/3, the aims of the water resources survey are to:

(a) Gather basic data made uniform in accordance with the four standard forms annexed to the document;

(b) Establish documentation;

(c) Indicate the recent historical background;

(d) Take stock of the natural potential;

(e) Prepare an inventory of available technologies;

(f) Examine the effects on other elements of the environment and on the components of development;

(g) Identify sensitive areas and imbalances and reveal present trends;

(h) Identify gaps in knowledge.

15. A further aim is to identify priority measures by proposing the following actions, for which the need has already become clear:

(a) Creation of an information centre on water resources in the Mediterranean;

(b) Organization of the training of professional water resources management staff;

(c) Facilitation of the exchange of new and available technologies.

16. The terms of reference were supplemented by the three following background documents, on which introductory statements were made by their authors:

- (a) Introduction to the geography of fresh water resources in the Mediterranean region (UNEP/WG.16/INF.4);
- (b) Provisional inventory data of underground water in the Mediterranean region (UNEP/WG.16/INF.5);
- (c) Provisional inventory data of surface water in the Mediterranean region (UNEP/WG.16/INF.6).

17. The terms of reference were also supplemented by an unnumbered document entitled "Water resources, needs and demand, withdrawals and consumption". This document, which also includes the revised forms A, B, C, D of annexes 1 to 4 to the terms of reference (document UNEP/WG.16/3) is designed to help prepare a uniform approach to the preparation of an inventory of the water resources of the basin and could provide a common methodology for the coastal States.

B. RECOMMENDATIONS

18. After examining and discussing the terms of reference for the survey on "Fresh water in the Mediterranean Basin" (document UNEP/WG.16/3), the Meeting adopted them with amendments. It recommended that certain terms of reference should be reformulated as follows: 1/

18.1 Immediate objectives

Considering water as a vital element and a factor in development:

- (i) to examine the present situation and lay the groundwork for a prospective study, both quantitative and qualitative, of water resources in their relationship with the sea, in the light of the historical background and from the standpoint of on-going processes;
- (ii) to identify the measures regarded as indispensable for the protection of the environment of the basin, which will support and supplement the initial priority measures already identified elsewhere.

18.2 Geographical coverage

The Meeting took the view that the geographical coverage of the survey will be determined by the natural limit of the catchment areas. The natural limit of the catchment areas includes the maximum geographical area of the Mediterranean basin (hereinafter called the Basin), with the exception of the Nile basin, the final delimitation of which will be the subject of a future recommendation. If, provisionally, the Nile basin is taken to be the part downstream from the Aswan Dam, it covers an area of 4.5 million km², including

1/ A new version of the entire terms of reference of the survey on "Fresh water in the Mediterranean Basin", incorporating the amendments and recommendations formulated during this Meeting, has been issued (see document UNEP/WG.16/3/Rev.1).

2 million km² of continental area. Surface and underground flows into or out of the Basin will be taken into account. However, the survey must be limited to the territory of the 18 coastal States of the Mediterranean Sea.

18.3 Preliminary comment

The Meeting considered that "water resources of the Mediterranean Basin" should be taken to mean mainland and insular water included in the geographical area of the Basin. This water will be considered as an element of the natural environment in all its states and regardless of whether it exists as precipitation, run-off (including waste water, recycled water and marginal waters) or evaporation, or in rivers, deltas, lagoons, natural or artificial lakes or surface or underground reservoirs. It can also be considered as a component and factor of development from the standpoint of its different uses and consumption purposes, i.e. irrigation and drainage, household and drinking, sanitation, industry, hydro-electric power, navigation, leisure activities and fishing, natural animal reserves and flood and low-water control. It will, lastly, be studied as a vector of contamination and pollution.

18.4 Basic data

The Meeting considered the provisional dossier of basic data prepared on the basis of published documents for use in the survey and expressed the view that it must be regarded as a preliminary document. The dossier comprises the following documents:

Introduction to the geography of fresh water resources in the Mediterranean region (document UNEP/WG.16/INF.4, prepared by CEEFIGRE);

Provisional inventory data of underground water resources of the Mediterranean region (document UNDP/WG.16/INF.5, prepared by CEEFIGRE);

Provisional inventory data of surface water resources in the Mediterranean region (document UNEP/WG.16/INF.6, prepared by UNESCO).

The Meeting noted that, in the absence of a uniform methodology and terminology, there were clearly some lacunae in the documentation presented in the provisional dossier and the information it contained was heterogeneous. Nevertheless, despite its shortcomings, the dossier represents a point of departure and a working basis; it is as such that it is being submitted to the experts of each coastal State, who are asked to submit comments and suggest improvements, using the note on procedures. When the replies have been analysed, the revised dossier of basic data will be submitted to a panel of consultants from coastal States.

18.5 Sources of information

The information is obtained both from the coastal States of the Mediterranean Sea and from international bodies. The Meeting recommended that sources of information in coastal States should be contacted through national focal points. At the national level, it will be necessary to prepare:

A listing of public and other competent bodies in coastal States and of regional agencies, committees and working groups;

Surveys by or of water authorities in each of the Mediterranean countries, on the basis of standard forms (UNEP/WG.16/3/Rev.1, annexes 1-4) and a questionnaire, on data useful for a prospective study and on additional studies which may be considered desirable at the local, national or regional level.

With regard to international bodies, the Meeting considered that the following deserve mention as potential sources of information:

Final reports on UNDP water projects and reports on on-going projects;

UNESCO work on the Arid Zone, the International Hydrological Decade, the International Hydrological Programme and MAB;

Specific regional studies by WMO, WHO, FAO, etc.;

Work by the Commission of the European Communities, and in particular the Environment and Consumer Protection Service;

Work of the United Nations Water Conference, Mar del Plata, 14-25 March 1977;

Preparatory work for the United Nations Conference on the Human Environment, Stockholm, 5-6 June 1972;

Work on the Mediterranean Action Plan.

Reference should also be made to the documents related to the provisional inventory data of underground and surface water resources in the Mediterranean region submitted to the Meeting (UNEP/WG.16/INF.5 and 6).

18.6 Historical background

The Meeting expressed the view that the analysis of the historical background of the water resources should be conducted with due regard for the following considerations:

It should be limited to the past 100 years - roughly the period for which quantified data are available - and only the last few decades should be taken into account in identifying signs of possible changes, particularly in the climatological field;

The distant past should be referred to only in so far as it helps to explain the present situation;

Priority should be given to changes in human activity rather than to changes in climate;

In considering fluctuations in hydrological, ecological and other variables, efforts should be made, whenever possible, to detect any anomalies by comparison with normal variations.

18.7 Stock-taking of the natural potential

The Meeting recommended that priority should be given in the stock-taking of the natural potential to the following activities, as indicated:

Summary evaluation of water resources: global data by country, zone or basin; balance-sheet of potential renewable water resources, run-off to the sea; physical, chemical and biological quality; unknowns;

Study of the mobilization of resources: resources which are exploitable in socio-economic conditions that are acceptable in the context of the development plans of the countries concerned, and with waste water disposal arrangements that are compatible with the biological equilibrium of the environment; proportion of potential resources mobilized, consumed, transferred or degraded;

Preparation of a bibliography of relevant documents.

The Meeting recommended that the following questions should be included in the survey at a later stage:

Economic aspects: investment costs of large water engineering projects (at current prices); annual operating and maintenance costs for large installations; estimate of investment costs for other installations and of fuel consumption;

Institutional and legal aspects: to be dealt with briefly since consolidated reports on these matters have already been published in respect of some coastal States (for example, the FAO study on water rights in Arab and other coastal States); possible preparation of a brief data sheet for each problem;

Overlapping of technical, economic, legal and institutional aspects: study of the actual application of resource management instruments in various countries with a view to assessing their effectiveness, identification of constraints.

The Meeting considered that the activities provided for in paragraphs 22, 23, 24 and 25 of the terms of reference for the survey (UNEP/WG.16/3) should be included in the second phase of the survey. These activities include the study of the relationship of water resources with (or effects on) other elements of the natural environment and of the relationship with (or effects on) the components of development, and the study of sensitive areas, imbalances and current trends.

18.8 Linking the fresh water survey with the Priority Actions Programme

The Meeting confirmed that the various measures connected with the water survey would support, supplement and possibly correct the initial actions undertaken under PAP. The Meeting considered that the activities planned under paragraphs 21, 28, 29 and 30 of the initial terms of reference (UNEP/WG.16/3) should be undertaken under the Priority Actions Programme.

18.9 Organization

The Meeting recommended that the survey should last one year starting from the date on which the experts are designated. Depending on the results, which will be examined by a meeting of experts of the coastal States, a further survey period may be proposed with a view to identifying other factors indispensable to the prospective study of the Basin.

In accordance with the principles adopted by the Intergovernmental Meeting of Mediterranean Coastal States on the Blue Plan, the survey will be conducted by two experts to be designated, one from the South and one from the North, in order to take into account problems of disparities. The two experts will work in liaison with the Group of Co-ordination and Synthesis (GCS) of the Blue Plan, which is responsible for co-ordinating the other surveys envisaged under the Blue Plan. The experts will work closely both with the services of the coastal States through the national focal point, or with the "water" correspondent of this focal point, as well as the UNDP resident representative, and with the specialized services of the international organizations concerned. The two experts will prepare a programme of work as soon as they are designated.

At the operational level, the survey will be conducted on the basis of the structural links which have already proved valuable in matters of co-ordination and operations in other activities sponsored by UNEP under the Mediterranean Action Plan (PAM). It is suggested in particular that technical focal points specializing in water should be established in each country. At the technical level, the links will be established between the national technical focal points ("water" correspondents) and the regional co-ordinating body, while the other links will be established directly with UNEP.

18.10 Budget

After studying the proposed budget (document UNEP/WG.16/3, paras.35-38), and noting that the water survey was an essential component of the Blue Plan, the Meeting:

Expressed the hope that sufficient funds would be made available for the completion of the survey;

Considered that the budget allocated might prove inadequate;

Expressed the hope that the budget would be revised during the survey if the smooth conduct of the survey required it.

VIII. Agenda item 6: ELEMENTS OF A REGIONAL CO-OPERATION PROGRAMME FOR FRESH WATER RESOURCES MANAGEMENT

A. PRESENTATION OF ELEMENTS WHICH MIGHT BE PART OF A REGIONAL CO-OPERATION PROGRAMME FOR FRESH WATER RESOURCES MANAGEMENT

19. Document UNEP/WG.16/4, entitled "Elements of a regional co-operation programme for fresh water resources management in the Mediterranean region" served as a basis for the discussion of this agenda item. It was supported by four background papers and by a number of specific statements prepared in advance by the experts.

19.1 The background papers, which were introduced by their authors, were:

- (a) Proposals for the organization of training programmes for trainees from Mediterranean developing countries (UNEP/WG.16/INF.7);
- (b) Proposal for pilot experiments concerning appropriate technologies in the field of water resources in the Mediterranean region (UNEP/WG.16/INF.8);
- (c) Consultations on the need for an information system on fresh water resources in the Mediterranean region (UNEP/WG.16/INF.9);
- (d) Case studies on fresh water resources management in the Mediterranean region: technical, economic and institutional aspects (UNEP/WG.16/INF.10).

19.2 The specific statements by experts concerned the following subjects:

- (a) Techniques for efficient use of water.
- (b) Economy and institutions.
- (c) Natural environment and human development (in the Rhone Basin, for example).
- (d) Management in an agricultural type of economy (that of Tunisia, for example).
- (e) Effects of development of the Nile.
- (f) Water and insularity.
- (g) Water demand and disposal demand.
- (h) Water, industry and energy.

20. The Meeting noted that the Priority Actions Programme for water which it has been invited to prepare on the basis of the above-mentioned information is one of the first of the six priority areas selected by the Intergovernmental Meeting of Mediterranean Coastal States on the Blue Plan. It meets the goal of promoting the solidarity and co-operation in water matters which are indispensable for the preservation of the natural environment through the co-ordinated use of water in the Basin in the light of available knowledge.

B. RECOMMENDATIONS FOR A NATIONAL PROGRAMME

21. After discussing document UNEP/WG.16/4, entitled "Elements of a regional co-operation programme for fresh water resources management in the Mediterranean region", the Meeting adopted it with a number of amendments. ^{2/} It also recommended that certain terms of reference and components of the proposed programme should be reformulated as follows:

21.1 Long-term objective

The Meeting recommended that the long-term objective of the programme should, in the spirit of the Mediterranean Action Plan, be to promote the solidarity and co-operation which are indispensable for the preservation of the natural environment, which implies water resource management compatible with the necessary social and economic development and the protection of the national heritage.

21.2 Criteria employed in formulating the programme

The Meeting examined the criteria employed in formulating the programme, as set forth in paragraph 9 of document UNEP/WG.16/4. It recommended that the following criteria should be taken into account in the final preparation of the programme:

UNEP objectives and strategies for water;

Mediterranean experience acquired by UNDP in its operations since 1958;

Recommendations of the United Nations Water Conference, Mar del Plata (14-25 March 1977);

Recommendations of the Intergovernmental Meeting of Mediterranean Coastal States on the Blue Plan (Split, Yugoslavia, February 1977).

Recommendation of the Intergovernmental Review Meeting of Mediterranean Coastal States on the Mediterranean Action Plan (Monaco, January 1978).

The Meeting noted, however, that at the present stage of preparation the requests and primary concerns of Mediterranean coastal States in the matter of water resource management had been put forward only through the views expressed by their experts at the Meeting. They would have to be confirmed and elaborated through visits to water administrators in the States concerned.

21.3 For a water policy in the Basin

The Meeting took note of the over-all proposals for a Basin-wide water policy (document UNEP/WG.16/7, paragraphs 11-17). It emphasized the need to base this policy on more efficient methods and techniques and to stress a more rational management of water resources so as to prevent waste. The Meeting also stressed the importance for this policy of training and the exchange of information.

^{2/} A new version of this document, incorporating the amendments and recommendations made by the Meeting, has been issued (see document UNEP/WG.16/4/Rev.1).

Outline of a Priority Actions Programme

22. After extensive individual consultation, the Meeting of Experts agreed on a number of priority measures and established the order of priority. Some of them concern the entire Basin and are called "regional"; others concern several coastal States and are called "pluri-national" (inter-State); others still are limited to two States and are called "bilateral"; and finally, some measures taken at the national level may be of great regional interest. The programme is thus presented under these four categories and, in the case of regional and pluri-national measures, according to the order of priority established by the Meeting of Experts. Each priority measure bears the symbol MED/WATER followed by a number. It should be noted that the presentation which follows takes into account the order of priority established by the Meeting and the amendments and recommendations which were put forward concerning the content of proposals for action submitted to the Meeting.

(i) Regional measures

23. MED/WATER 1. Training of professional staff in water management and collection of water resources data

Consideration of the work of existing training centres for professional staff and their cultural policy with respect to requirements for training professional staff in the various coastal countries;

Identification of bodies which are competent in the field of water resource management and whose effective policy and international or Mediterranean orientation guarantee the best training;

Co-ordination of the work of training centres sponsored by organizations within the United Nations system;

Arranging for the training of professional staff as far as possible in and by the coastal countries concerned, with or without the advice of the best specialists on the Mediterranean basin;

Determination of the various levels of professional staff capable of being trained;

Organization of training courses for citizens of coastal countries by inviting the officials of those countries to reply to the questionnaire contained in background paper UNEP/WG.16/INF.7.

24. MED/WATER 2. Exchange of methods and techniques for efficient water use

Definition of the concept of "efficient water use", which encompasses several ideas: management of demand by reducing consumption, matching supply to demand in terms of quality and ensuring the optimum utilization of existing resources; the more efficient use of water in terms of economic and social effect; efficiency in terms of social and economic criteria;

Preparation of an inventory of on-going or completed projects involving coastal States in the Basin that are deemed particularly suitable for an exchange of information, but without excluding methods and techniques developed and tested outside the Basin. The list should also include research projects that would permit the spread and introduction of the techniques most suited to the implementation of water projects;

Description of the methods and/or techniques used in each of the projects listed and of the conditions of their use within the framework of multiple-criteria decisions; these decisions take account of the advantages and disadvantages of these techniques against the background of an over-all development of resources and a compromise between various needs;

In illustration of the inventory of particularly suitable projects and research projects concerning the Basin (second paragraph above), there follows an initial list, which is not exhaustive and is given for guidance only:

Water demand and disposal demand in major urban centres (in Athens, for example);

Efficient irrigation methods: drip system, sprinklers of various kinds, regulating mechanisms, use of brackish water;

Methods and devices for reducing domestic consumption;

Coastal collectors for groundwater lost to the sea;

Salt-water and brackish-water desalination on a large or small scale;

Formulation of a national or regional water plan (by basin);

Artificial replenishment of underground reservoirs;

Hydrological forecasting of cyclic shortages;

Remote sensing: aerial, infra-red and satellite photographs;

Tapping of coastal and submarine sources;

Control and reduction of coastal pollution (in the Gulf of Naples, for example);

Regional water-distribution network (southern Italy, Israel);

Use of systems analysis to evaluate the best water-resource management policies (by Cassa per il Mezzogiorno, Italy, for example);

Methodological aspects of water-resource management and specific problems related to pollution control in major river basins (Po, Tiber, Rhone);

Identification and application of appropriate means of exchanging technology, such as: technical visits, study trips, courses, working groups or discussion and research seminars, state-of-the-art reports, etc.;

Planning and launching of a promotional campaign geared to the Basin that would underline the importance of human behaviour, education and the training both of specialists and of the public, and would increase public awareness more of the quality of water and its impact on future supplies and the

protection of the environment than of the quantity, of which people have been aware since ancient times. This promotional campaign would be the prelude to an operational phase of pilot experiments directed towards the introduction of appropriate technologies in the Mediterranean region;

Formulation of priority project MED/WATER 2 on the basis of document UNEP/WG.16/INF.8.

25. MED/WATER 3. Information system on water resources in the Mediterranean Basin

The information acquired and collected on the water resources of the Basin is among the richest in the world. However, the exchange of this information has remained unreliable. It would seem appropriate to decide upon the structure of an information system for use by all coastal countries; such a system could in itself generate a programme of mutual assistance, but it is important to proceed with care.

The first step would be to set up a small-scale information service to provide information upon request; the service would have limited means at its disposal and would endeavour to encourage requests for information and to provide information on a few priority areas of activity. Its tasks would include:

Providing technical and practical support for the analysis of final reports on UNDP projects carried out over the past 20 years and published national documents of all kinds, in order to identify and extract acquired knowledge with a view to applying it in practice;

Drawing up an inventory of documentation and information resources available in coastal countries of the Mediterranean region;

Supplying information to known information services;

Studying possible information systems and choosing an appropriate one.

Priority project MED/WATER 3 will be formulated on the basis of document UNEP/WG.16/INF.9.

26. MED/WATER 4. Re-use of waste water from urban sanitation, industrial effluents or drainage

At present, methods of re-using waste water are being developed or put into practice in the various coastal countries. The waste water comes from urban sanitation, industrial effluents or drainage. Attempts are being made in agriculture to irrigate and fertilize land and in industry to satisfy the demand for water; in aquaculture, various experiments are under way, including experiments related to the re-use of thermal discharges from power stations; in the field of economic water-resource management, waste water is re-used for the artificial replenishment of water tables. In its programme for 1977-1978, the Commission of the European Communities (CEC) is undertaking studies concerning the re-use of waste water in the geographical area with which it is concerned. There is clearly an even greater need for such measures in coastal countries in the southern and eastern regions of the Basin, where water resources are most severely limited.

The preliminary, Basin-wide phase would consist in:

Taking stock of the work and research undertaken in coastal countries;

Establishing criteria, including health criteria, for the quality of re-usable water;

Establishing the links essential to co-operation;

Developing and formulating a "co-operative" programme or project.

27. MED/WATER 5. Feasibility studies concerning chronic or cyclic water shortages in the Mediterranean basin

Events and circumstances in recent decades have shown that crises stemming from water shortages are imminent in the Mediterranean basin. Economic action is as important for reducing the severity of these crises as technical measures. The feasibility of such action should therefore be examined without delay. Initially, it will be confined to a critical analysis of the elements constituting the problem and an initial estimate of financial resources. However, depending on the results obtained, certain feasibility studies could lead to priority action and projects. Such studies must, above all: (a) determine the criteria for selecting investments in the field of water resources; (b) evaluate alternative projects in the light of budgetary constraints; (c) survey the cost and value of water in different social and cultural environments. The most important of these feasibility studies would be concerned with:

The management of chronic and cyclic shortages;

The carriage of fresh water by sea in the Mediterranean (with a market survey).

28. MED/WATER 6. Remote sensing of evolutionary phenomena connected with water resources and their relationship with the sea

The Meeting showed only a limited interest in this proposal, particularly with regard to observation by satellite. It did, however, recommend that the proposal should be examined in depth at future meetings. It is on this understanding that the proposal has been developed and introduced into the new text of the document on the Priority Actions Programme (UNEP/WG.16/4/Rev.1).

Comments on regional activities

29. In addition to the six priority programmes considered and discussed at the Meeting, the following programmes were proposed but were not considered or discussed:

Survey and study of waste and development of a Mediterranean approach to the question of waste and the re-use of waste water;

Preparation of a code of conduct for the discharge of liquid residues;

Rational water management in the coastal zone of the Eastern and Southern Mediterranean with a view to conserving water and protecting the quality of water;

Development of a model showing the impact of waste on the marine environment of the Mediterranean.

(ii) Multilateral (inter-State) programmes30. MED/WATER 7. Island water supplies

A project of this kind would seem to be of interest to Malta, Cyprus, Greece, Yugoslavia, France and Spain. The question is a difficult one and a matter of concern in each country; it is often considered, sometimes in a makeshift way, but is not usually solved satisfactorily. A Mediterranean-wide programme is required. The need for such a programme has already been felt by the Commission of the European Communities (CEC), which included the question among its priorities in the 1977-1981 study programme covering the geographical area with which the Commission is concerned.

It is suggested that the preliminary phase should consist of:

Planning, from the very outset, for multiple-input co-operation and the preparation of a joint programme;

Analysis of the situation in each country and identification of common problems susceptible to joint solutions or conducive to international solidarity;

Application of the results of the seminar on water problems in islands with special regard to desalination and groundwater, organized by the Economic Commission for Europe at Malta (June 1978), as well as the results of similar actions undertaken by other bodies, with a view to implementing specific measures;

Examination of the extent to which the carriage of fresh water by sea in the Mediterranean could make an effective contribution, using the results of project MED/WATER 5;

Preparation of a programme of co-operation.

31. MED/WATER 8. Tapping of coastal and submarine sources

A project of this kind would seem to be of interest to Morocco, Libya, Lebanon, Turkey, Greece, Yugoslavia, Malta, Italy and France. The sources in question consist of groundwater flowing into the sea, usually from karstic reservoirs; run-off takes place either along the coastline or on the sea-bed; coastal and submarine sources producing truly fresh water are very rare and in most cases, the water is brackish, since it is partly sea-water; the water must therefore be tapped before it becomes mixed with salt water in order to ensure that it is fresh. Thus, to avoid any ambiguity, the title should read: "Tapping of fresh water flowing into the sea from coastal aquifers before it becomes mixed with salt water". This topic has been of growing interest for nearly two decades and deserves special treatment. The methods and techniques used to tap fresh water in this way are still rudimentary; practical experiments have been conducted in Greece, Yugoslavia and France, but the results of these experiments still have to be evaluated from the technical and economic points of view before any new experiments are undertaken in the Basin.

At this stage, solidarity among Basin countries is required for joint action, the purposes of which could be to:

Prepare a report on the situation in this area;

Form a working group composed of experts who have participated in the planning or implementation of tapping operations in the Mediterranean area and experts from interested coastal countries;

Through the working group, analyse the situation in each coastal country and plan practical operations suited to local conditions and based on experience gained.

This last operation could lead to priority action at the national level and a regional priority action programme.

GENERAL RECOMMENDATIONS

32. In view of the fact that the "water" factor is present in practically all development operations, the Meeting recommended that the projects identified as priority projects should be carried out within an interdisciplinary and intersectoral framework; this implies the need to involve the various national institutions, as designated by their respective Governments, and the international bodies concerned. In this connexion, the Meeting requested that note should be taken of the offer made by the specialized agencies of the United Nations system and regional bodies, and in particular UNESCO, WHO and WMO, and the offer made by the Commission of the European Communities, to co-operate in the implementation of projects related to their particular area of activity.

33. Noting that the Priority Actions Programme for water is an integral part of the Mediterranean Action Plan (MAP), the Meeting recommended that programme implementation should be based on the structural links which have already proved valuable in matters of co-ordination and operations in other programmes sponsored and co-ordinated by UNEP within the framework of MAP.

34. After adopting its recommendations as a whole, the Meeting expressed its gratitude to those speakers who had introduced particular topics and who are listed in annex IV to this report.

IX. Agenda item 7: OTHER BUSINESS

35. No matters were discussed under this agenda item.

X. Agenda item 8: ADOPTION OF THE REPORT

36. The Meeting adopted its report, leaving the preparation of the final text to the secretariats of CEFIGRE and UNEP.

XI. Agenda item 9: CLOSURE OF THE MEETING

37. Before the closure of the Meeting, the representatives of UNEP and CEFIGRE thanked the participants for what they had accomplished in terms of re-examining the survey of water resources in the Mediterranean Basin and contributing to an adequate formulation of the Priority Actions Programme in respect of water. They also thanked the Secretary of the French focal point for the Blue Plan for the welcome given to the Meeting.

38. After thanking the experts and the organizers, the Chairman declared the Meeting closed.

ANNEX I

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Annex II

AGENDA

1. Opening of the meeting
2. Election of officers
3. Adoption of agenda and suggested timetable
4. Introduction of the Mediterranean Action Plan and the Blue Plan
5. Survey of fresh-water resources in the Mediterranean region
6. Elements of a regional co-operation programme for fresh water resources management
7. Other business
8. Adoption of the report
9. Closure of the meeting

Annex III

LIST OF DOCUMENTS

| | |
|---------------------|--|
| UNEP/WG.16/1 | Provisional agenda |
| UNEP/WG.16/2 | Annotated provisional agenda |
| UNEP/WG.16/3 | Survey of fresh-water resources in the Mediterranean Basin |
| UNEP/WG.16/3/Corr.1 | Survey of fresh-water resources in the Mediterranean Basin |
| UNEP/WG.16/4 | Elements of a regional co-operation programme |

BACKGROUND DOCUMENTS

| | |
|-------------------|---|
| UNEP/WG.16/INF.1 | Provisional list of documents |
| UNEP/WG.16/INF.2 | Provisional list of participants |
| UNEP/WG.16/INF.3 | Document on the implementation of the Blue Plan |
| UNEP/WG.16/INF.4 | Introduction to the geography of fresh-water resources in the Mediterranean region |
| UNEP/WG.16/INF.5 | Provisional inventory data of underground water in the Mediterranean region |
| UNEP/WG.16/INF.6 | Provisional inventory data of surface water in the Mediterranean region |
| UNEP/WG.16/INF.7 | Proposals for the organization of training programmes for trainees from Mediterranean developing countries |
| UNEP/WG.16/INF.8 | Proposals for pilot experiments concerning appropriate technologies in the field of water resources in the Mediterranean region |
| UNEP/WG.16/INF.9 | Consultations on the need for an information system on fresh-water resources in the Mediterranean region |
| UNEP/WG.16/INF.10 | Case studies in fresh-water management in the Mediterranean region: technical, economic and institutional aspects |

Annex IV

LIST OF SPEAKERS ON PARTICULAR TOPICS

| | |
|-------------------|---|
| Mahmoud ABU ZEID | The impact of Nile development programmes |
| Khemais ALOUINI | Fresh-water management in an agricultural economy |
| Jean DOMERGQ | Water, industry, energy |
| Alexander GILAD | Water supplies and the elimination of liquid discharges in the Athens metropolitan area |
| Milorad MILORADOV | Water-management economics and institutions |
| Jean FERRIN | Water, the natural environment and development |
| Frank TOLEDO | Water and insularity |