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## MEDITERRANEAN ACTION PLAN

Conference on the Presentation of the Final Results  
of the Coastal Area Management Programme for the  
Coastal Region of Syria

Damascus, 25-26 October 1994

## REPORT OF THE CONFERENCE ON THE FINAL RESULTS OF THE COASTAL AREA MANAGEMENT PROGRAMME FOR THE COASTAL REGION OF SYRIA

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## INTRODUCTION

- 1 Ever since the beginning of its activities, the Mediterranean Action Plan (MAP) has been aware of the need to apply the process of integrated management of coastal zones and integrated planning in the process of environmental protection of the Mediterranean.
2. In order to develop such process in the framework of MAP, a document on policy recommendations on refocusing MAP activities towards the development of environmentally sound integrated management of the Mediterranean coast was submitted to and adopted by the Fifth Ordinary Meeting of the Contracting Parties to the Barcelona Convention and its related protocols (1987).
3. Based on the preliminary work of the Priority Actions Programme (PAP) during the 1988-1989 biennium on the four country pilot projects, the Sixth Ordinary Meeting of the Contracting Parties (1989) decided to continue work on the four ongoing MAP pilot projects and renamed the programme as the Coastal Areas Management Programme (CAMP).
4. At the proposal of the Government of the Syrian Arab Republic, the Sixth Ordinary Meeting of the Contracting Parties (1989) decided to recommend that the CAMP for the Syrian coastal region be developed and implemented as one of the first four CAMPs in the framework of MAP.
5. After preparatory activities, the Agreement Relative to the Coastal Areas Management Programme for the Coastal Area of Syria was signed by the Government of the Syrian Arab Republic and UNEP in June 1990. Activities in the framework of this CAMP were implemented from 1990 to 1994.
6. The conference was organised by the Syrian Ministry of the Environment in Damascus on 25-26 October 1994 in order to present the results of the CAMP for the Syrian coastal region
7. The list of participants (64 in total) is attached as Annex I to this report.

## AGENDA ITEM 1 - OPENING OF THE CONFERENCE

8. The conference was opened by H.E. Mr. Abdul Hamid El-Munajed, Minister of State for Environmental Affairs of the Syrian Arab Republic. Mr. El-Munajed stressed that many scientific and environmental activities were initiated and implemented through this study. Examples of such studies are Environmental Impact Assessment of Amrit Tourist Complex, development of the Geographic Information System, development scenarios, implications of climatic change and integrated planning study.
9. He informed the participants that the Ministry of the Environment is working on many activities relevant to the existing international conventions and the Agenda 21. The ultimate goal of such activities is sustainable development. Significant progress was made towards the establishment of the port reception facilities, protection of groundwater, sewage collection, treatment and disposal, control of the use of pesticides in agriculture and others.

10. Mr. L. Jetic, Deputy Coordinator of MAP, welcomed the participants on behalf of Ms. Elizabeth Dowdeswell, the Executive Director of UNEP, and expressed his gratitude to the Ministry of the Environment of the Syrian Arab Republic for hosting and organising the conference.

11. Mr. Y. Awaidah and Mr. S. Nasri were elected unanimously as Chairman and Rapporteur of the conference.

12. The agenda of the conference is attached as Annex II to this report.

## **AGENDA ITEM 2 - COASTAL AREAS MANAGEMENT PROGRAMME (CAMP) OF MAP AND CAMP FOR THE SYRIAN COASTAL REGION**

13. Mr. L. Jetic briefed the conference on the United Nations Environment Programme (UNEP), Regional Seas Programme and the Mediterranean Action Plan (MAP). He presented the basic concepts, objectives, structure and activities of MAP and CAMP. He pointed out that the main objective of each CAMP project was to introduce or develop the process of integrated planning and management of Mediterranean coastal areas and to contribute to the sustainable development and environmental protection of the area in case. He also presented the list of activities which were implemented in the framework of the CAMP for the Syrian coastal region.

14. Description of the CAMP for the Syrian coastal region and copies of transparencies used in this presentation are attached as Annex III to this report.

## **AGENDA ITEM 3 - PRESENTATION OF ACTIVITIES CARRIED OUT IN THE FRAMEWORK OF CAMP FOR THE SYRIAN COASTAL REGION**

### **Agenda Item 3.1 - Marine Pollution Monitoring Programme and Land-based Sources of Pollution Protocol**

15. Mr. L. Jetic and Mr. A. Youssef introduced this subject, presenting the structure, objectives, and results of these activities and pointed out problems encountered.

16. A short summary of this activity and copies of transparencies used in the presentation are attached as Annex IV to this report.

### **Agenda Item 3.2 - Implications of Expected Climatic Changes on the Syrian Coastal Region**

17. Mr. L. Jetic and Mr. N. Al Shalabei introduced this subject and presented the information on greenhouse effect, climatic changes, objectives and structure of the case studies, scenarios of the climatic changes in the Mediterranean and Syrian coastal region and main conclusions of the study.

18. A short summary of this activity and copies of transparencies used in the presentation are attached as Annex V to this report.

### **Agenda Item 3.3 - Integrated Planning Study of the Syrian Coastal Region**

19. Mr. I. Trumbic and Mr. Z. Jouweijati introduced the preliminary study for the integrated plan of the Syrian coastal region. Its preparation had been based on the integrated approach to coastal area management as developed by PAP/RAC. They stressed that, according to their knowledge, the study was the first of its kind prepared for the Syrian coastal region. Its novelty was based on two facts. First, it provided a comprehensive insight into the development and environmental problems of the homogenous coastal area of Syria, and second, it introduced regional approach in Syrian planning practice. The preparation of the study provided an opportunity to raise the capacities of Syrian experts for coastal area management, while the study itself was a very good basis for all subsequent CAMP activities.

20. Copies of transparencies used in the presentation are attached as Annex VI to this report.

### **Agenda Item 3.4 - Coastal Resources Management Plan (CRMP)**

21. Mr. S. Truta and Mr. Y. Awaidah introduced this subject. The following topics of the CRMP were presented: continuity of planning in the Syrian coastal zone based on the results and outputs of the preliminary study of the Syrian coastal zone; basic findings in the coastal zone - an environment in transition due to its importance on the national level (development of basic industry, infrastructure network, intensive agriculture, tourism development); main environmental issues and problems; and objectives of planning and management including major management policies for land- and sea-use and use of the entire coastal strip.

22. The outputs of the CRMP were presented with: proposals for establishing SPAs in the coastal zone; proposals for historic monuments protection; and proposed land-use and management measures to be taken (presented on the segments of north Lattakia and south Jableh).

23. The set of 50 diapositives (taken from helicopter flight) illustrating environmental issues and development potentials of the Syrian coastal zone were shown during the presentation.

24. A short summary of this activity and copies of transparencies used in the presentation are attached as Annex VII to this report.

### **Agenda Item 3.5 - Environmental Impact Assessment of Amrit Tourist Complex**

25. Mr. A. Baric and Mr. Y. Awaidah introduced this subject. The main goals of the action on Environmental Impact Assessment (EIA) were presented and the way of implementation of the action was described. The main goals were to: introduce a practical procedure of EIA as an important tool in development activities; train national experts on practical EIA procedure; and prepare EIA for the Syrian (Amrit) tourist complex.

26. A team of national experts was created with the assistance of a PAP consultant with the task of preparing an EIA of the Amrit tourist project.

27. The activity ended in a training course on EIA addressed to various national experts who had not been involved in the preparation of EIA.

28. A short summary of this activity and copies of transparencies used in the preparation are attached as Annex VIII to this report.

#### **Agenda Item 3.6 - Development of Geographic Information System**

29. Mr. I. Trumbic, Mr. S. Nasri and Ms. H. Sakka introduced the results of the activities carried out within the training programme on Geographic Information System (GIS). After giving a brief presentation on what GIS is, the participants were informed on the objectives, outputs, conclusions and recommendations for the follow-up of this activity. Syrian experts were commended for their achievements and it was stressed that there is an experienced and skilled GIS team in Syria which is fully capable of undertaking complex activities in the future.

30. A short summary of this activity and copies of transparencies used in the presentation are attached as Annex IX to this report.

#### **Agenda Item 3.7 - Development/Environment Systemic and Prospective Approach for the Syrian Coastal Region**

31. Mr. A. Hoballah, Mr. Y. Awaidah, Mr. Z. Jouweijati and Ms. A. Zeno introduced the subject. In the introduction, Mr. Hoballah gave a short general overview of the philosophy, objectives, programme and results of the Blue Plan. Regarding the CAMP for the Syrian coastal region, the Blue Plan systemic and prospective approach, including preparation of scenarios, intends to highlight the opportunities and conflicts which may arise between development and environmental protection on the Syrian coast in the future.

32. Its basic position is that future development of the Syrian coast is likely to cause significant environmental effects, if not carefully planned, which are likely to affect the development potential of the Region.

33. The Syrian Coastal Region has significant advantages at a national and possibly at an international level as well. The former relate to its favorable climate and rich water resources which render it suitable for agriculture and recreation/tourism. The latter stems from the strategic position of the Region as a gate of Syria (and adjacent Arab countries) to the Mediterranean and European markets.

### **Agenda Item 3.8 - Specially Protected Areas**

34. Mr. L. Jetic and Mr. M. Al Nimeh introduced this subject and reported on the approach, programmes and results achieved so far.

35. Following a request made by the Minister of Environment in Syria, the Regional Activity Centre for Specially Protected Areas (SPA/RAC) realised a mission in June 1994 to evaluate the possibilities of establishing coastal or marine protected areas. In close cooperation with the National Focal Point for SPA, RAC/SPA is preparing a workplan for the preparatory steps to the proclamation of a protected area covering site, identified as area of high natural interest.

36. The next steps are:

- a. identify the suitable boundaries and zoning of the protected area;
- b. draft in conformity with the relevant national legislation proposals for the needed legal acts;
- c. identify the main threats; and
- d. outline a management plan.

37. It was agreed to consider this project as a pilot project which could be extended in the future to other sites.

38. The objectives and the expected benefits of the above-mentioned programme are believed to be in line with the objectives of item 7.10 "Specially Protected Areas" of the CAMP Syria agreement.

39. In case of availability of funds, RAC/SPA expects to start the OUMTOYOUR project early next year.

### **AGENDA ITEM 4 - MAP EXPERIENCE IN ATTRACTING OUTSIDE FINANCIAL RESOURCES FOR CAMP PROJECTS**

40. Mr. L. Jetic introduced this subject. He gave an overview of past experience in attracting funds from the World Bank, Mediterranean Technical Assistance Programme (METAP), European Investment Bank, Global Environment Facility (GEF), European Union, United Nations Development Programme (UNDP) and the Arab Gulf Fund for UN Development Organisations (AGFUND).

41. He underlined that each of the above-mentioned organisations/programmes has its own rules of procedure which should be strictly followed in order to apply for funds.

### **AGENDA ITEM 5 - CONCLUSIONS AND RECOMMENDATIONS**

42. In a general debate that followed the presentations, a number of participants took part. The main issues raised during the debate referred to follow-up activities to the CAMP for the Syrian coastal region, continuation of research activities and monitoring, further strengthening of institutional coordination and capabilities.

43. Mr. S. Nasri, Rapporteur of the conference, read the draft conclusions and recommendations which were discussed and amended.

44. The text of conclusions and recommendations adopted by the participants are attached as Annex XI to this report.

#### **AGENDA ITEM 6 - CLOSURE OF THE CONFERENCE**

45. Mr L. Jeftic thanked the participants for their contribution to the conference. He expressed MAP's views that the CAMP for the Syrian coastal region was very successful and that due to agreed principles, heavy commitments and lack of adequate financing, this CAMP has to be closed as a UNEP project. However, he expressed hopes that the project would go on as a Syrian national project. Further regretting that it had not been possible to secure the participation of international financial institutions (World Bank, UNDP, EU and others), he hoped that they will finance follow-up activities.

46. Mr. L. Jeftic thanked the Ministry of the Environment of the Syrian Arab Republic for their support and cooperation as well as all the Syrian experts and institutes involved in the implementation of this CAMP.

47. In his role as a chairman of the conference, and as a representative of the Ministry of the Environment, Mr. Y. Awaidah expressed his satisfaction with presentations at this conference and stated that the conference was unanimous in wishing that the project continues through follow-up activities in cooperation with international organisations and institutions.

48. Mr. Awaidah expressed the gratitude of the Syrian Government to MAP for its contribution in the implementation of this CAMP.

49. The conference closed on 26 October 1994 at 14,30 hours.



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ANEX II

AGENDA

## AGENDA

1. Opening of the Conference
2. Coastal Areas Management Programme of MAP
3. Presentation of activities carried out in the framework of the Syrian coastal region
  - 3.1 Marine pollution monitoring programme and land-based sources of pollution protocol
  - 3.2 Implications of expected climatic changes on the Syrian coastal region
  - 3.3 Integrated planning study of the Syrian coastal region
  - 3.4 Coastal Resources Management Plan (CRMP)
  - 3.5 Environmental Impact Assessment of Amrit Tourist Complex
  - 3.6 *Development of Geographic Information System*
  - 3.7 Development/environment, systemic and prospective approach for the Syrian coastal region
  - 3.8 Specially Protected Areas
4. MAP experience in attracting outside financial resources for CAMP projects
5. Conclusions and recommendations
6. Closure of the conference

**ANNEX III**

**COASTAL AREAS MANAGEMENT PROGRAMME (CAMP)  
OF MAP AND CAMP FOR THE SYRIAN COASTAL REGION**

## STRATEGY, OBJECTIVES AND MAIN EXPECTED BENEFITS AND OUTPUTS OF THE CAMP FOR THE SYRIAN COASTAL REGION

Generally speaking, the major objective of the Coastal Areas Management Programme, carried out in the period 1991-1993 and later extended to 1994 to complete some of the activities, corresponds to the objective set for the previous period. that is, to use the method of integrated planning and management of resources to achieve a higher degree of harmony between the development and environmental protection of the Syrian coastal region. The knowledge obtained through the preparation of the study points out the need to continue with the integrated approach to the interdependent problems of the economic and demographic development and the protection and promotion of the physical environment in which these occur.

### A. Strategy of the Programme

The strategy of the programme departed from the assumptions discussed in the preliminary study and further elaborate them. The stress was shifted from a general view of individual activities to precisely identified problems and priorities, and through them, to the implementation of general development concepts as proposed in the study. The selected problems and priorities, elaborated to various degrees, followed the general concept of integrated planning and management of resources.

Such a strategy required a selective approach to the identification of areas in which the majority of activities will be carried out. Since the problems of pollution, as well as development resources and potentials, were concentrated in the immediate coastal zone of the region, the programme focused on that particular area.

### B. Objectives of the Programme

The general objective of the programme was to protect and rationally utilise the coastal resources over a relatively long period of time. The task of such a programme was to determine and recommend the management measures (particularly in the domains of land and sea use, environmental protection, rehabilitation of historic monuments, etc.) with a view to resolving the existing environmental conflicts and setting up the optimum paths of the future dynamic development.

### C. Main Expected Benefits of the Programme

This programme was expected to provide the following benefits:

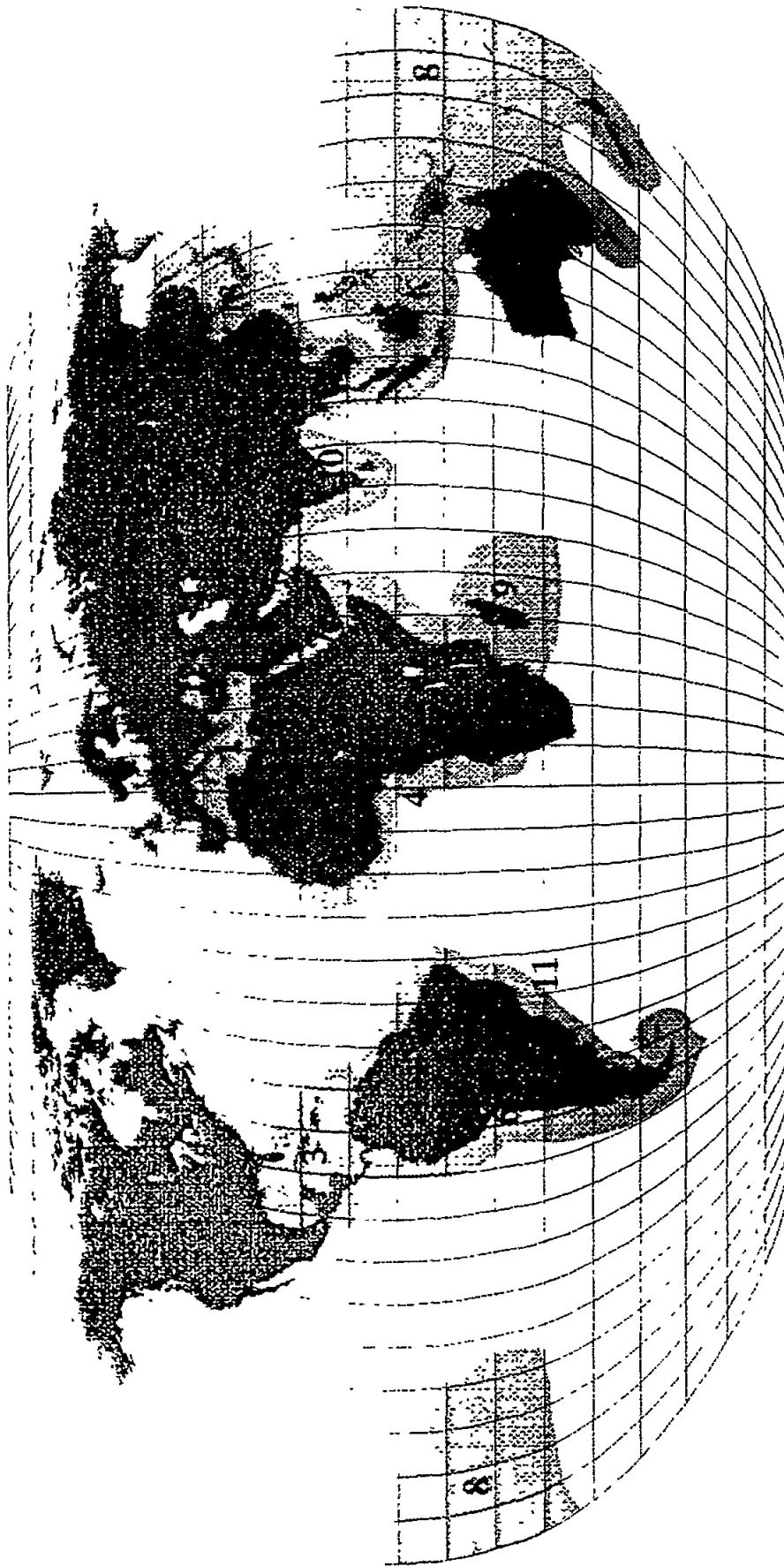
- improvement of the state of a number of ecosystems;
- incorporation of environmental considerations into planning activities and decision-making process;
- enhancement of the local capacities in solving various development and environment problems;
- transfer of knowledge from relevant international organisations to local institutions;
- practical verification of theoretical and methodological knowledge of MAP components; and
- creating conditions for responding to some accidental situations.



**D. Main Expected Outputs of the Programme**

The following were expected to result as main outputs of the programme:

- proposals for immediate actions;
- technical and economic measures for addressing existing environmental problems;
- integrated management plans;
- studies and reports on the specific subjects;
- training of local and national experts;
- demonstration projects;
- monitoring programme;
- data base for various development and environment aspects; and
- software to be used in solving some specific problems.



- |                                    |                                    |                                |
|------------------------------------|------------------------------------|--------------------------------|
| 1. Mediterranean Region            | 6. South East Pacific Region       | 11. South West Atlantic Region |
| 2. Kuwait Action Plan Region       | 7. Red Sea and Gulf of Aden Region | 12. Black Sea Region           |
| 3. Wider Caribbean Region          | 8. South Pacific Region            | 13. North West Pacific Region  |
| 4. West and Central African Region | 9. Eastern African Region          |                                |
| 5. East Asian Seas Region          | 10. South Asian Seas Region        |                                |

UNEP/MED  
3 September 1993  
Internal Code: REG-J/AS 3

### Geographic coverage of UNEP Regional Seas Programme

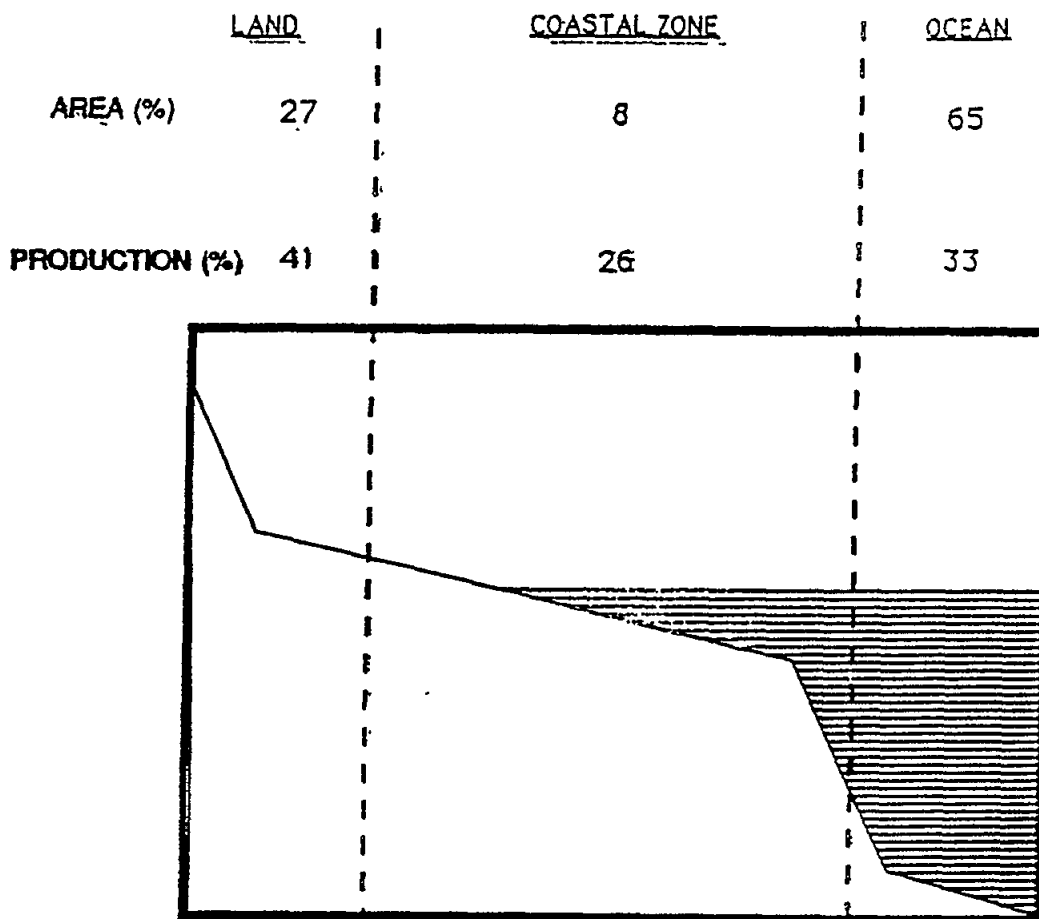
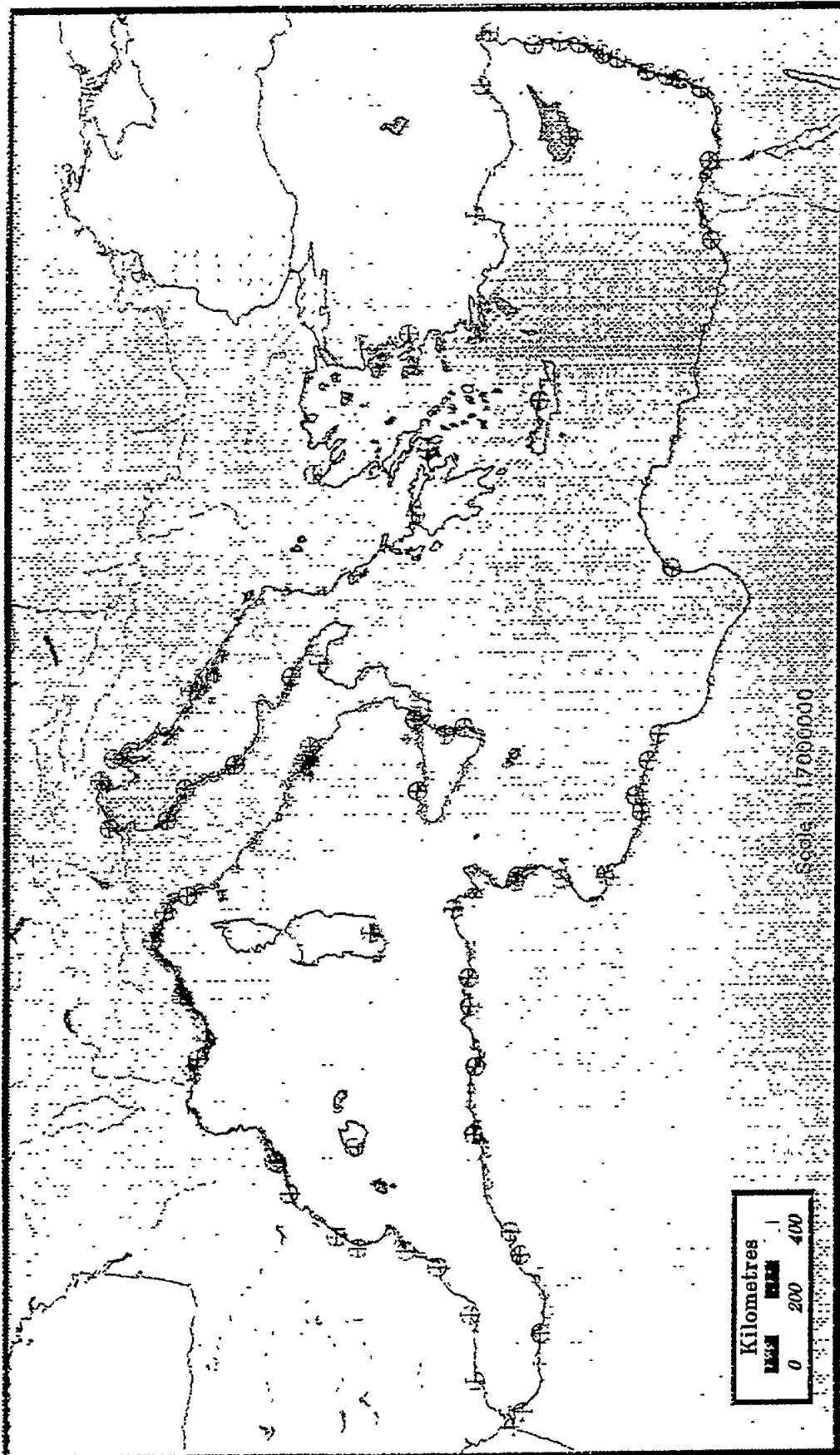


Fig. 2 Estimates of the relative area and biological production (as % of global total) for non-coastal land, the coastal zone, and the open ocean

# Mediterranean Coastal Cities

Population:  
○ 10,000 to 100,000  
⊕ Above 100,000



Kilometres  
0 200 400

Scale 1:700,000

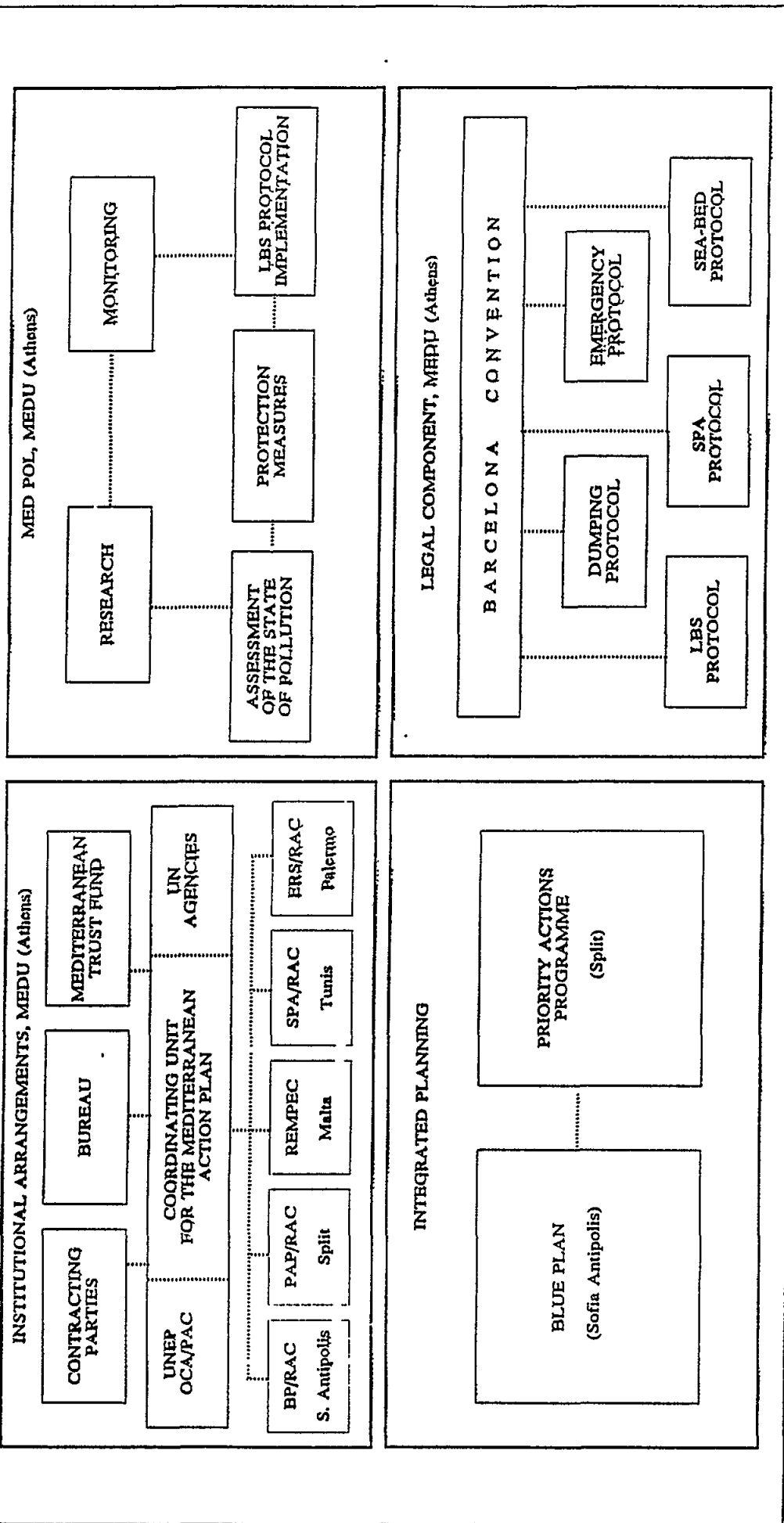
Internat. C. for Stat. II

February 1993

III.1 MED.11

# MEDITERRANEAN ACTION PLAN (MAP)

COORDINATION OF ALL FOUR COMPONENTS BY THE COORDINATING UNIT FOR MAP (MEDU), Athens



MEDU = COORDINATING UNIT FOR MAP; OCA/PAC = OCEANS AND COASTAL AREAS PROGRAMME ACTIVITY CENTRE; BP = BLUE PLAN; RAC = REGIONAL ACTIVITY CENTRE; PAP = PRIORITY ACTIONS PROGRAMME; REMPEC = REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE; SPA = SPECIALLY PROTECTED AREAS; ERS = ENVIRONMENT REMOTE SENSING; MED POL = COORDINATED PROGRAMME FOR RESEARCH, MONITORING, ASSESSMENT OF THE STATE OF POLLUTION AND PROTECTION MEASURES; LBS = LAND-BASED SOURCES; SEA-BED = EXPLORATION AND EXPLOITATION OF SEA-BED.



**Figure 1. Methodological Framework for MAP Coastal Area Management Programmes**

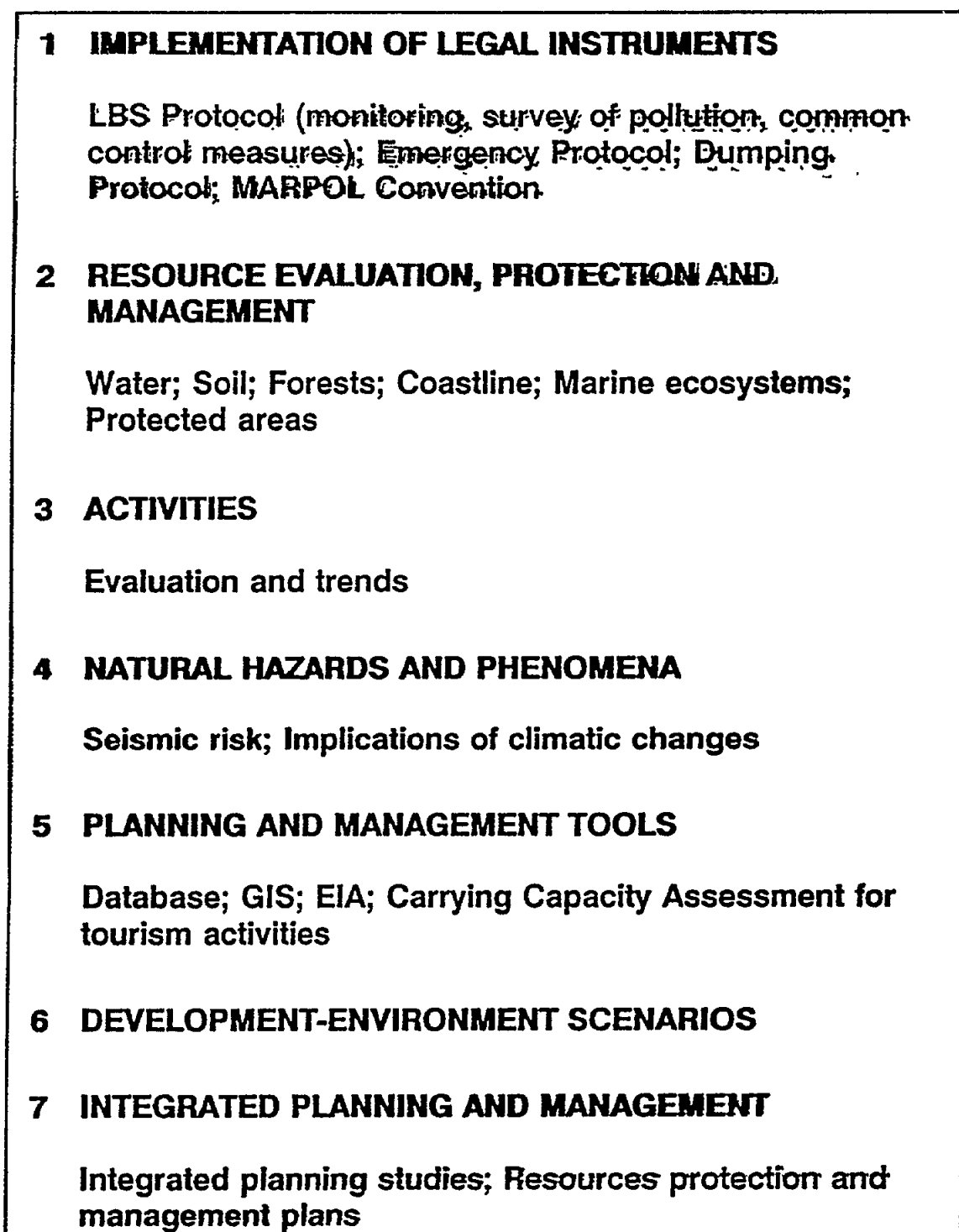
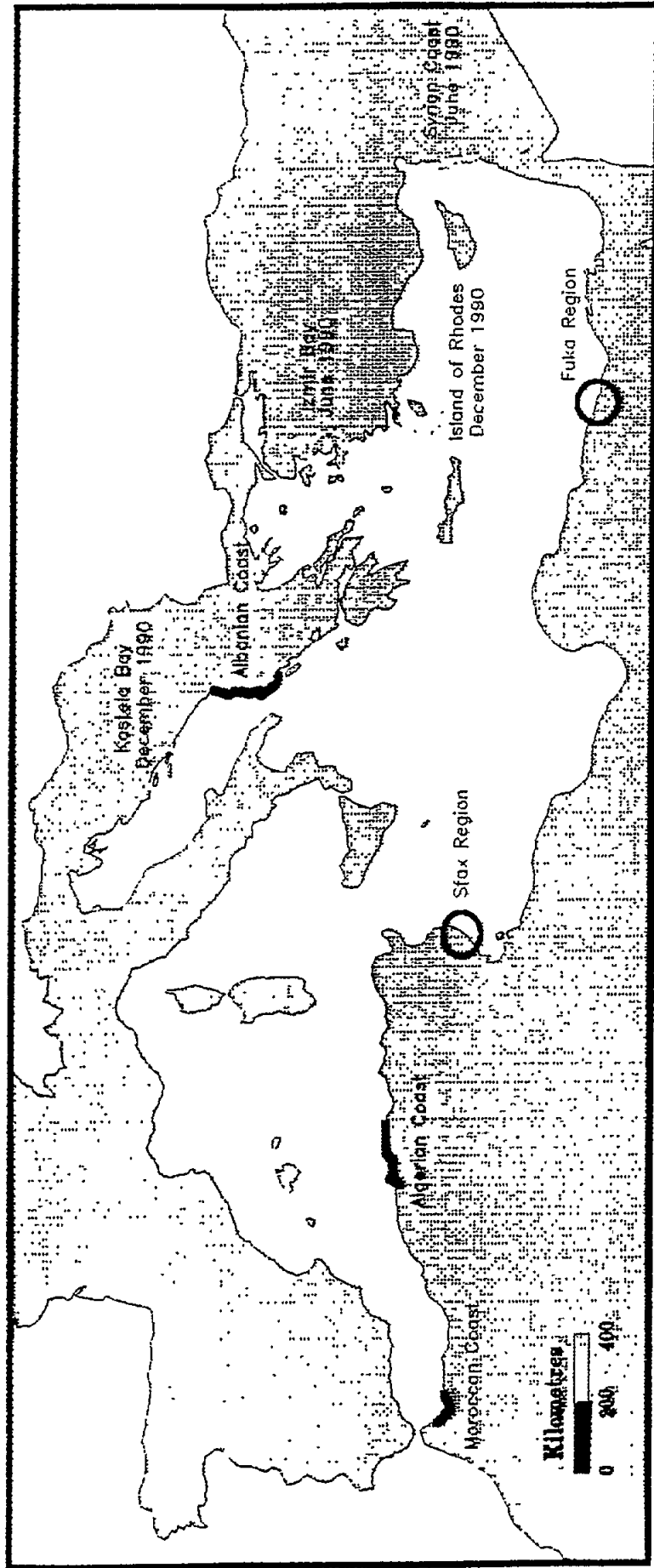


Figure 3. Standard Content of CAMPs

# Coastal Area Management Programmes

On-going Programme ■ Programme in Preparation Stage ■ Programme to be Initiated



June 1992

UNEP/MEDU

Internal Code LAMP/ICB

Scale 1:15000000



## **CAMP FOR THE COASTAL REGION OF SYRIA**

### **ACTIVITIES**

1. **LAND-BASED SOURCES AND DUMPING PROTOCOLS**
2. **EMERGENCY PROTOCOL (CONTINGENCY PLAN) AND MARPOL CONVENTION (PORT RECEPTION FACILITIES)**
3. **MONITORING OF THE MARINE ENVIRONMENT**
4. **IMPLICATIONS OF EXPECTED CLIMATIC CHANGES ON THE COASTAL REGION OF SYRIA**
5. **PROTECTION AND MANAGEMENT PLAN FOR HISTORIC MONUMENTS**
6. **TRAINING PROGRAMME ON GIS AND ITS APPLICATION IN THE COASTAL RESOURCES MANAGEMENT PLAN**
7. **ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF AN AREA SELECTED FOR TOURISM DEVELOPMENT**
8. **DEVELOPMENT/ENVIRONMENT SCENARIOS**
9. **COASTAL RESOURCES MANAGEMENT PLAN**
10. **SPECIALLY PROTECTED AREAS**

**ANNEX IV**

**MARINE POLLUTION MONITORING PROGRAMME AND  
LAND-BASED SOURCES OF POLLUTION PROTOCOL**

As part of the CAMP for the coastal region of Syria, the MED POL National Monitoring Programme, ongoing since 1986 along the Syrian coast, was recognised as the tool for the assessment of the quality of coastal waters which would contribute to the preparation of the management programme of the entire coast.

The MED POL Monitoring Programme of the Syrian coast includes 59 stations in two geographical areas (north and south). The programme of monitoring covers coastal areas and bathing beaches as well as samples taken from the fish markets. In the coastal areas the parameters include heavy metals and halogenated hydrocarbons in biota and petroleum hydrocarbons and nutrients in sea waters. At the bathing stations, the programme foresees the determination of faecal coliforms.

Three laboratories are designated to participate in the programme: the Central Laboratory of the Ministry of Environment in Damascus, the Marine Research Centre in Lattakia and the Coast Centre in Lattakia. While the Coast Centre is responsible for the microbial monitoring on the beach along the entire coast, the two other laboratories are responsible for, respectively, the southern coast (Central Laboratory) and the northern coast (Marine Research Centre).

As a result of the agreed working programme, pollution data were received on heavy metals in sea water and marine organisms and on micro-organisms in sea water.

The data on heavy metals in marine organisms, as part of the agreed programme in the period 1990-1993, refer only to samples taken from the fish markets of Lattakia, Baniyas and Tartous. The agreed coastal stations were not visited in spite of the agreement and the market samples were collected and analysed only by the Marine Research Institute in Lattakia.

Considering the limited amount of data received, it is not possible to reach any conclusions on the trend of pollution along the Syrian coast. The data on heavy metals (cadmium, chromium, lead, zinc, copper, mercury) however, indicate that the levels of pollution is within the common range found along the Mediterranean. It is worth noting however, that the samples were all taken from the fish market which cannot guarantee the ultimate origin of the fish. In addition, the results show the coefficient of variation as >50%, the reason for this big value being found in the heterogeneity of the organisms selected (organisms of very different sizes and collected during different months of the year).

The microbial data received over a two year period (1991-1992) include 32 stations covered by the Coast Centre in Lattakia.

Similar consideration can be made on the results of the microbial monitoring. Although in general the same stations were selected in the two-year period, a decrease in the total number of samples was noted from 1991 to 1992. Also, the frequency of sampling was not uniform and additional information such as the hour of sampling was not reported.

As to the results of the microbial monitoring, it seems that there are a number of areas both in the north and in the south where the central and local authorities have to pay special attention since the quality of the bathing waters, at least at the time of the sampling, did not seem to have an acceptable standard. However, in view of the irregular sampling frequency, the data analysis cannot lead to any scientifically acceptable conclusion.

The organisation of the pollution monitoring programme in Syria has shown that a greater effort should be made by the Syrian authorities to strengthen the existing institutes in terms of infrastructures, personnel and equipment and ensure that the programme is implemented. The MED POL programme, within the limits of its modest budget, has provided scientific training, equipment, regular visit of experts and maintenance of the existing instruments, but it is not sufficient if an adequate monitoring programme has to be carried out all along the coast. A proper pollution monitoring programme can provide the scientific basis to the decision makers and planners for an environmentally sound coastal management and thus more attention should be given to the needs of the existing laboratories.

In conclusion, if the several years of implementation of the monitoring programme have somehow improved the local capabilities in carrying out sampling and analysis, it is believed that not enough emphasis is still given by the Syrian authorities to the role that the use of the results of a continuous monitoring system of the marine pollution can have in the framework of a coastal management programme. Therefore, considering that the planning of the programme was prepared taking into account the local problems and the local capabilities, it is recommended that no efforts should be spared by the Syrian authorities to assist the selected laboratories in implementing the agreed programme.

As part of the CAMP Agreement a full programme of implementation of the provisions of the Land-Based Sources Protocol was prepared. In particular, the preparation of the survey of the LBS sources of pollution was considered as priority, considering the important implications that its results might have on other components, such as the pollution monitoring programme.

To this purpose, questionnaires to gather information on liquid domestic discharges, industrial discharges and oil discharges from refineries and reception facilities were sent to the Ministry of Environment for completion. A consultant also visited the country and assisted the Ministry in filling the questionnaires.

The work which was carried out resulted in the gathering of a number of information which contributed to the overall picture of the environmental problems of the coastal region of Syria.

The permanent population of Syria in coastal towns and cities resulted of 530,831 inhabitants. The increase during the summer season was not indicated. Out of the total population, 96.5% appeared to be connected to municipal sewerage systems, 1.5% to other sewerage systems, while the 2% used other ways of sewage collection.

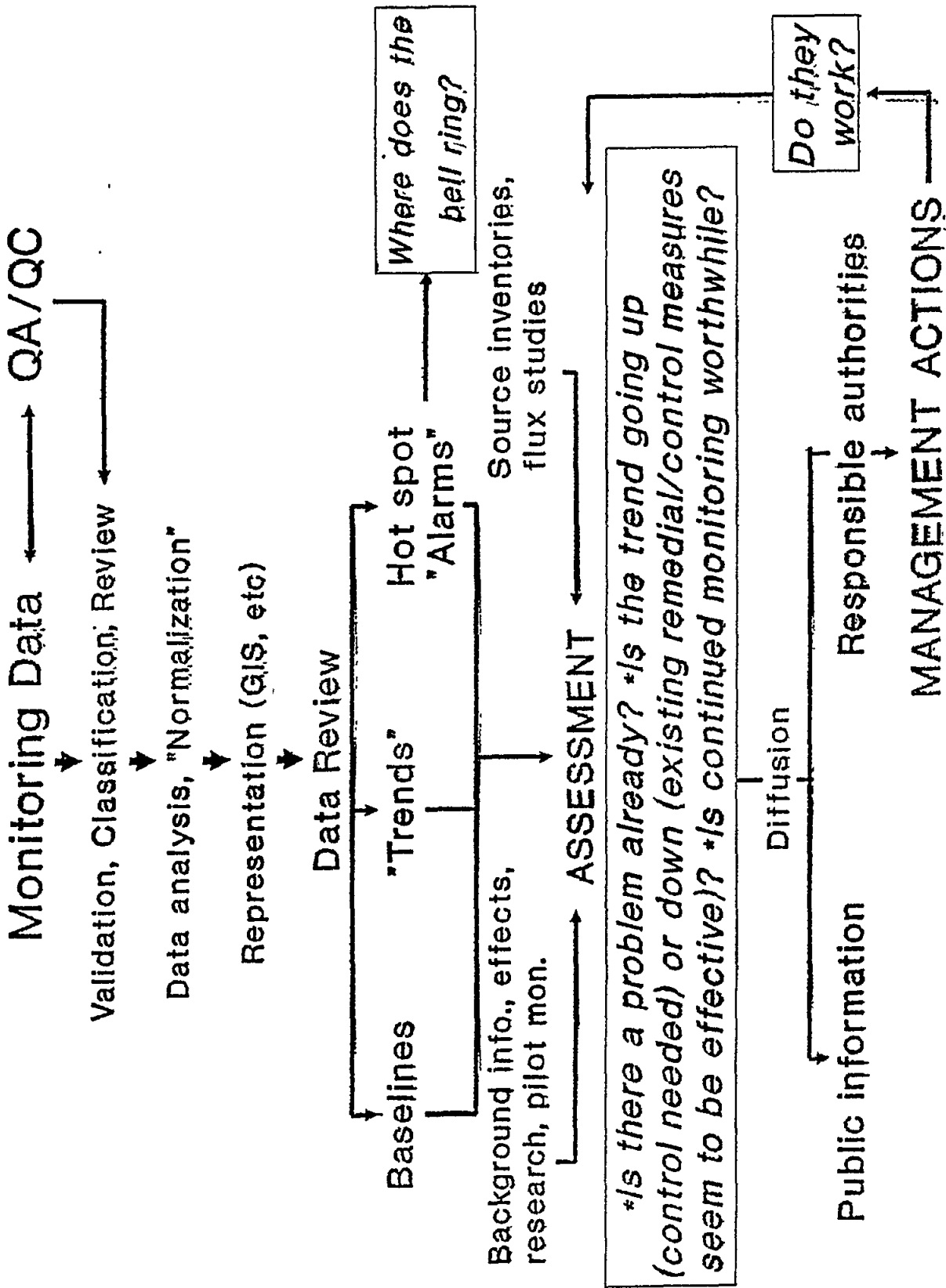
All the waste waters are discharged into the sea. Of the total annual amount of waste waters (24.8% million cubic meters), 99% is not treated, and only 1% is treated secondary.

No indication was given as to the fate of the sludge generated by the secondary treatment.

The annual amount of solid wastes was reported as 144,880 tons. A significant amount of solid wastes (30.4%) is composted, and the remaining 69.6% is disposed on land.

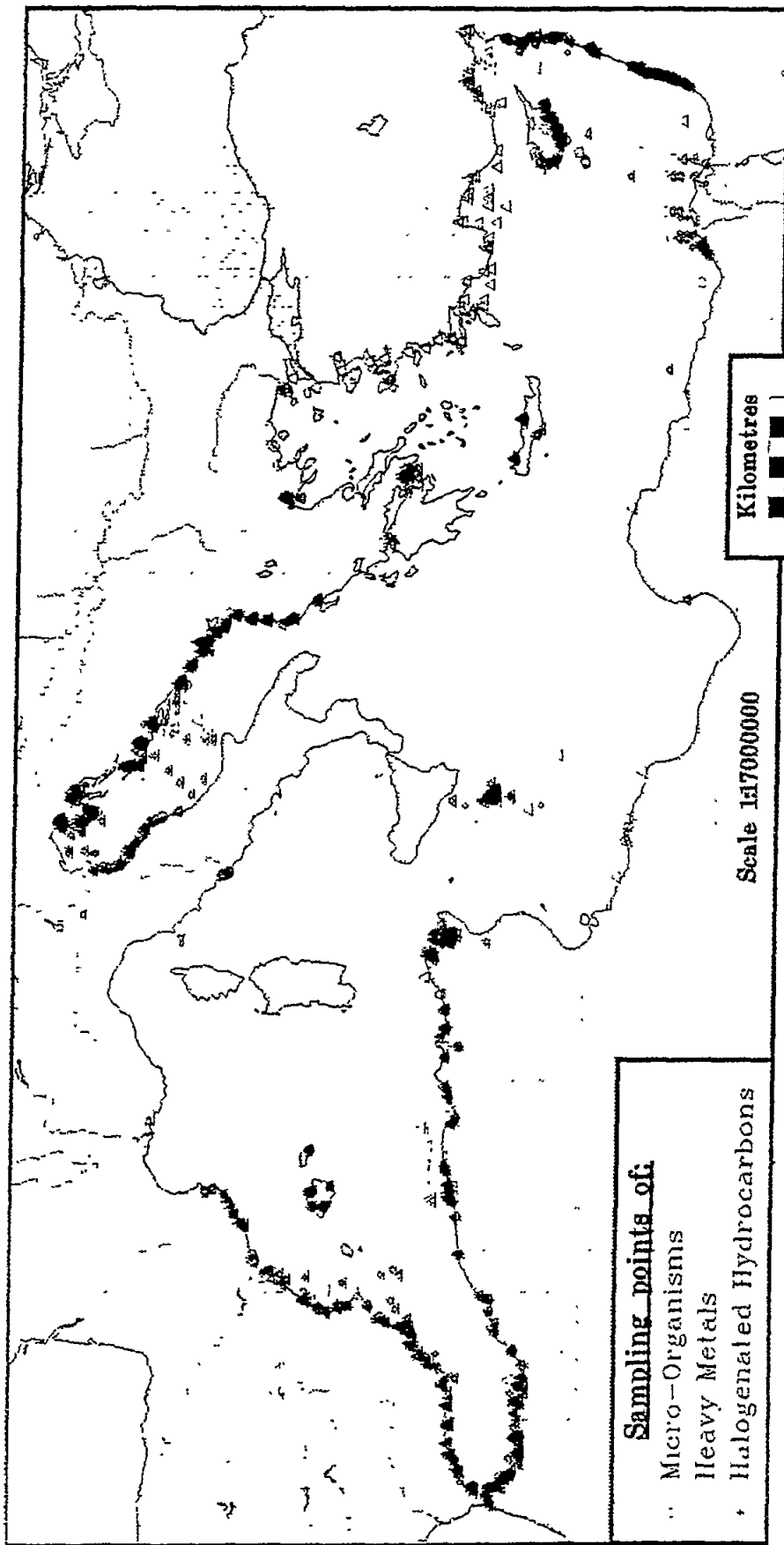
If on the one hand it is necessary to say that this activity improved the general knowledge on the coast, on the other hand it should be stressed that the data are still incomplete and that additional efforts should be made to provide those information which were not included in the questionnaires.

With reference to the implementation of the provisions of the Protocol on LBS, it is important to stress that Syria should consider the twelve pollution control measures adopted by the Contracting Parties and translate the recommendations into national laws.



# MONITORING STATIONS

## Mediterranean Pollution Monitoring MED POL Phase II - 1988 to 1992

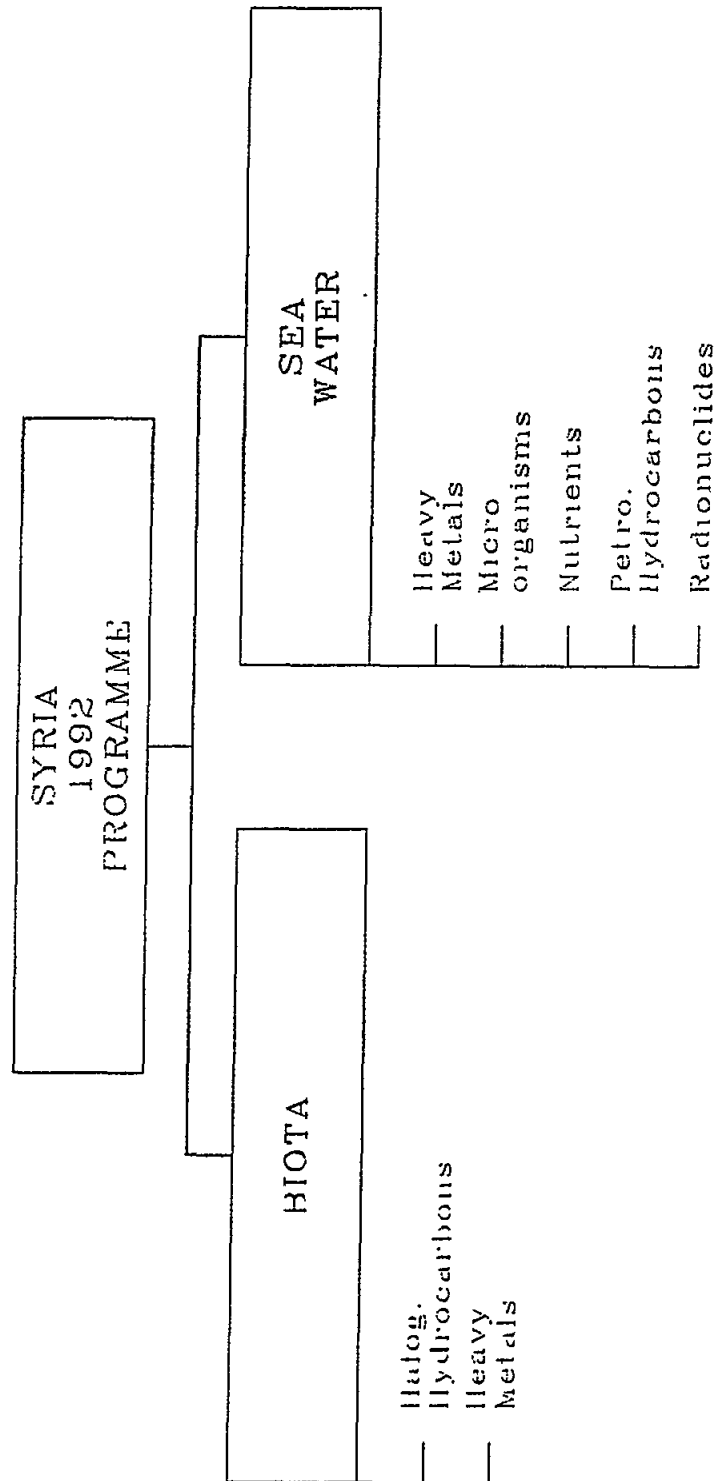


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1 March 1991

Sampling points of:  
• Micro-Organisms  
• Heavy Metals  
• Halogenated Hydrocarbons

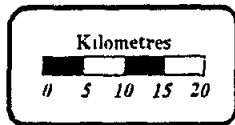
# MED POL II - MONITORING AGREEMENT PROGRAMME SYRIA 1992





# SYRIA

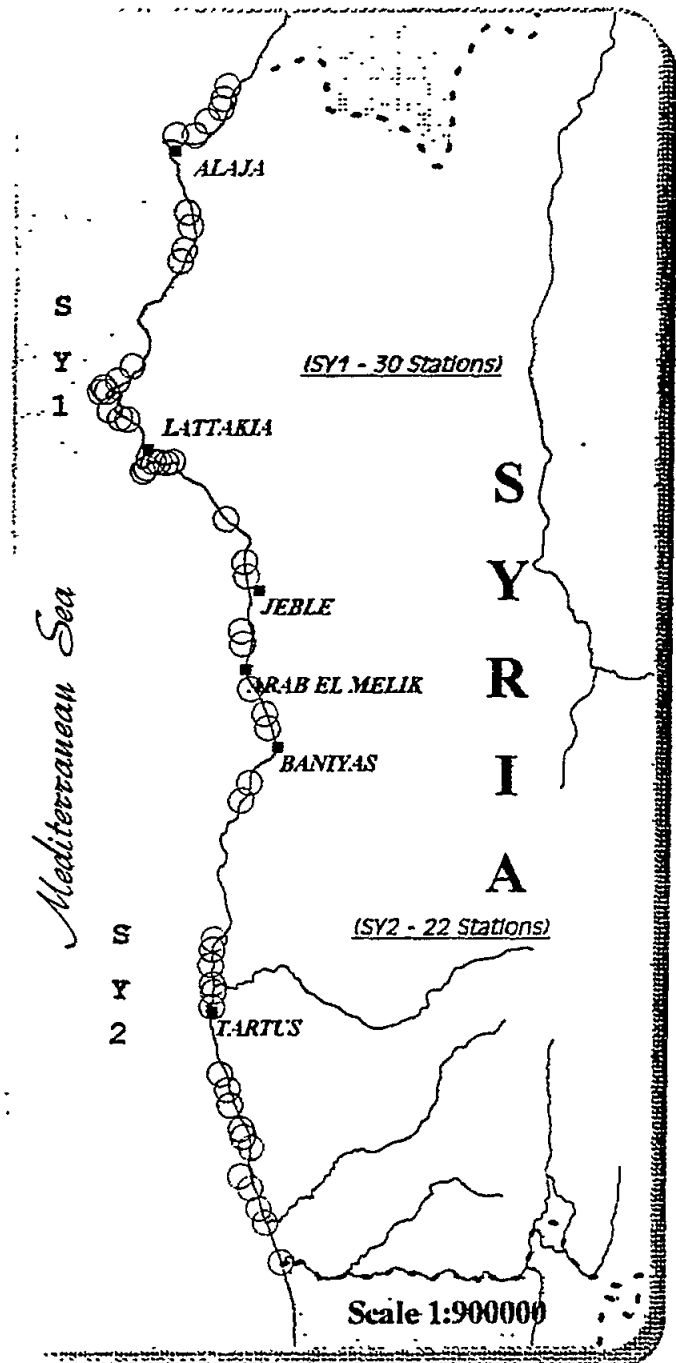
## Bathing Waters Stations for 1994



UNEP MEDU

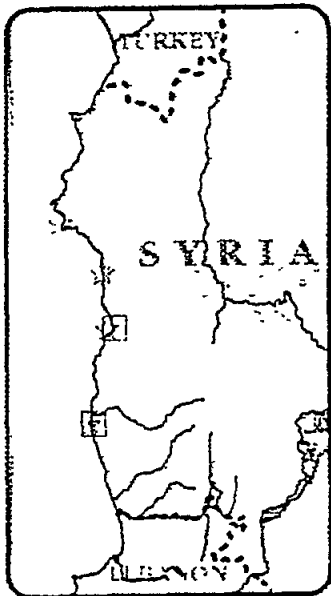
22 September 1994

Internal Code SYRBA94 AN

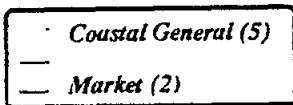


# SYRIA

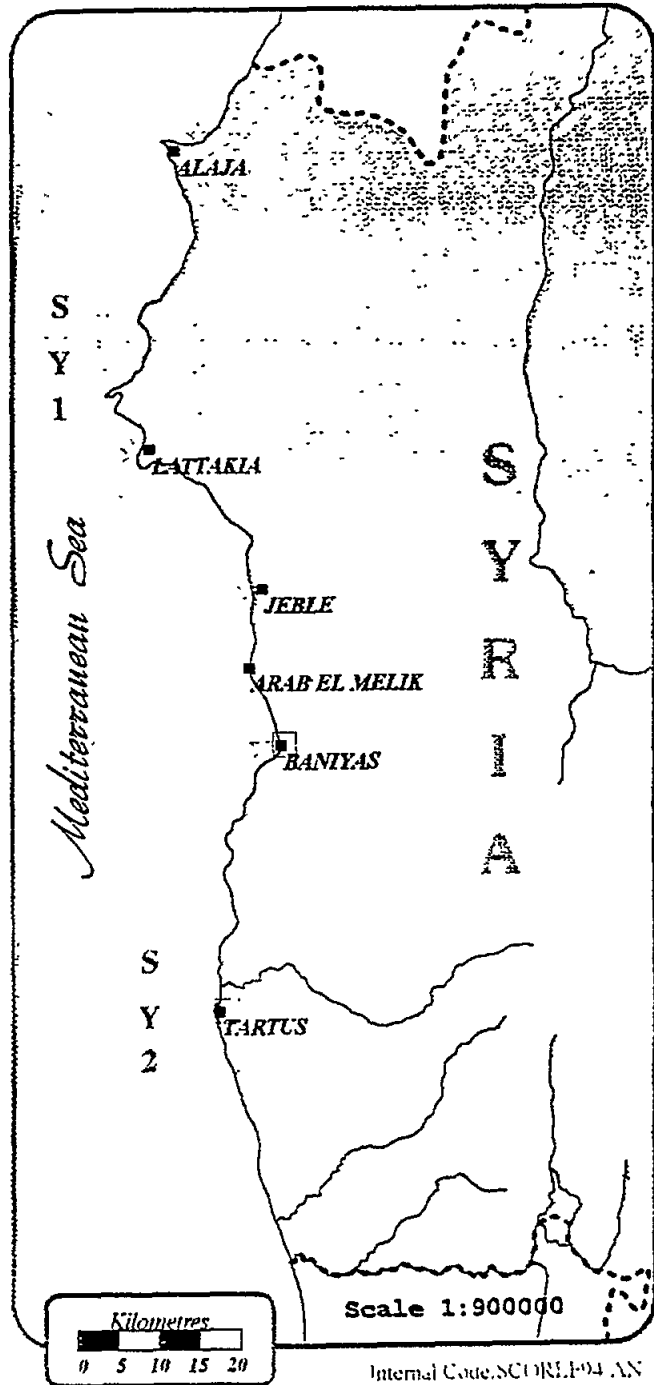
## Coastal/Reference Stations for 1994



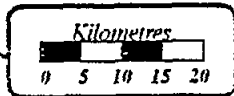
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UNEP/MEDU  
22 September 1994



Scale 1:900000



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**Figure 2.2**

**Annual mean concentration of heavy metals in marine organisms from Baniyas Market during 1992**

**Syria MED POL Phase II**

ppb FW

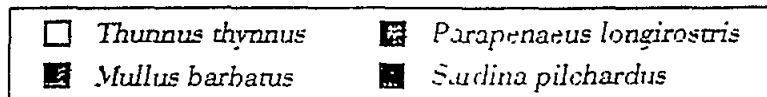
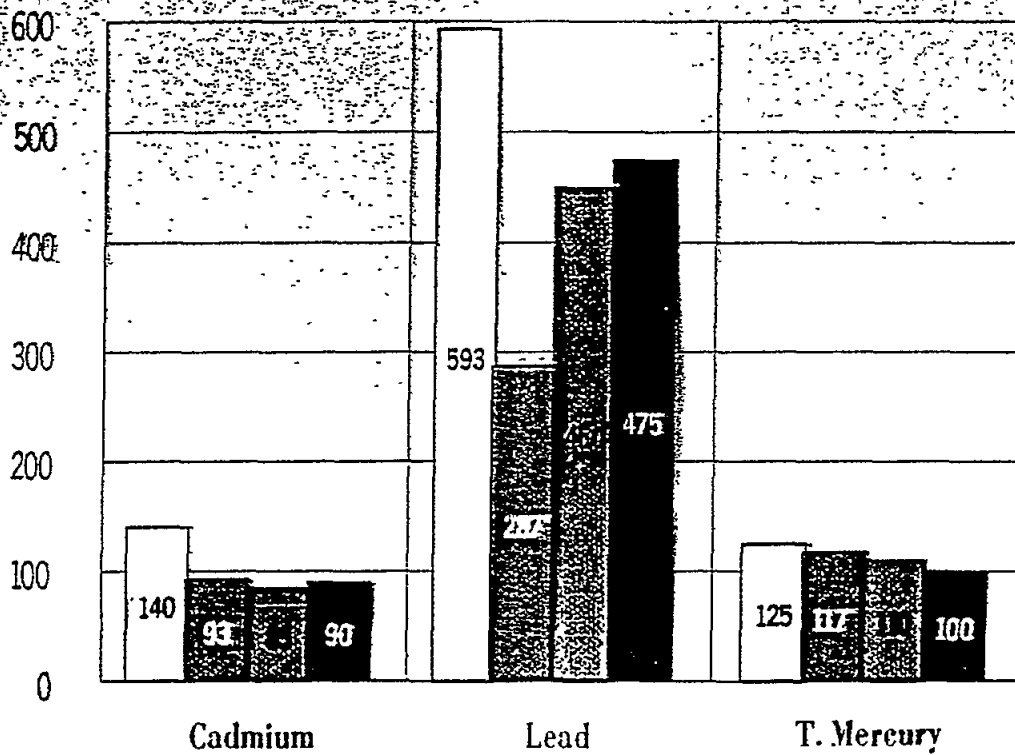
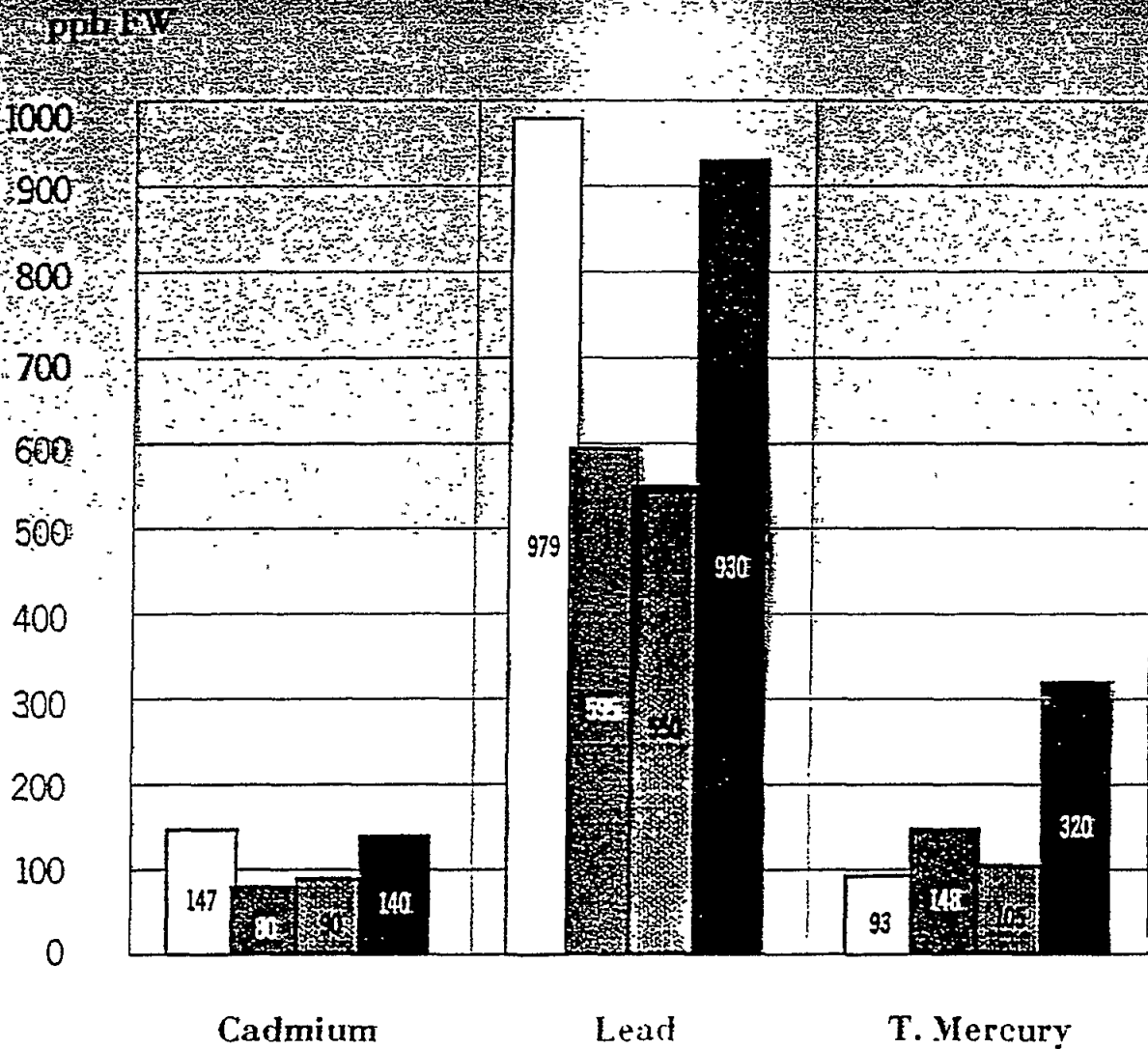



Figure 23

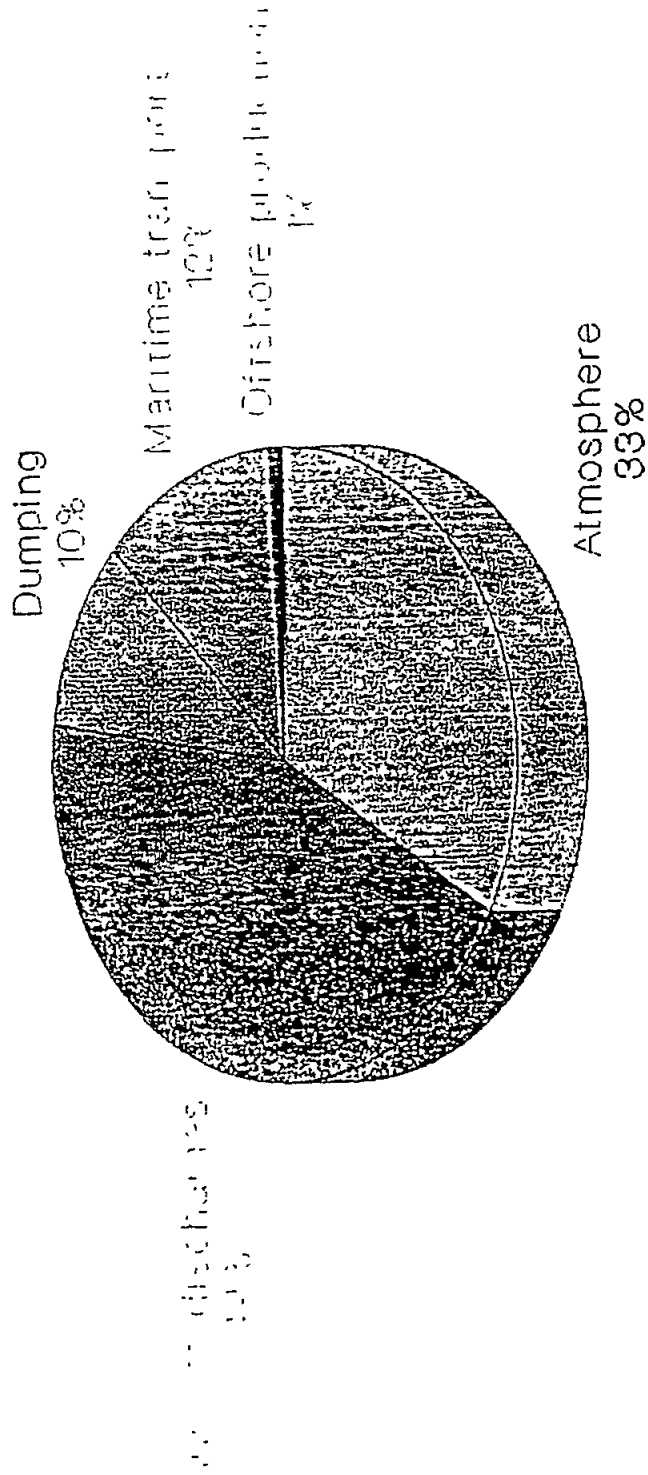
Annual mean concentration of heavy metals in marine organisms from Tartus Market during 1992

Syria MED-POL Phase III



	<i>Thunnus thynnus</i>		<i>Penaeus kerathurus</i>
	<i>Mullus barbatus</i>		<i>Sardina pilchardus</i>

# Relative contribution of contaminants to the marine environment



(based on GESAMP 1990)

Table 3 - Inventory of Land-Based Sources of Pollution  
Estimated Annual Amount of Municipal Waste Water

No.	TOTAL WJ 10 <sup>6</sup> m <sup>3</sup> /yr	UNTREATED WJ 10 <sup>6</sup> m <sup>3</sup> /yr	X	TREATED WASTE WATER						REMARKS
				PRELIM.	X	PRIM.	X	SEC.	X	
1.	8.52	8.52	100	0	0	0	0	0	0	
2.	71.44	61.78	86	9.51	13	0	0	0.15	0.2	
3.	16.66	14.75	88	0	0	0	0	2.05	12	
4.	361.0	47.7	13	0	0	0	0	313.2	87	
5.	6.13	1.09	18	0	0	5.04	82	0	0	
6.	589.29	180.62	31	45.22	8	17.3	3	346.15	59	
7.	26.8	24.51	99	0	0	0	0	0.29	1	
	1,077.86	339.02	31	54.73	5	22.34	2	661.84	61	

Table 4 - Inventory of Land-Based Sources of Pollution  
Waste Water Systems and Treatment at the Municipal Sewer System

NO.	COUNTRY	POPULATION			ESTIMATED POPULATION SERVED			SEWAGE TREATMENT AT THE MUNICIPAL SEWER SYSTEM				
		NORMAL	AVERAGE SEASONAL INCREASE	TO THE MUNICIPAL SEWER SYSTEM	TO OTHER SEWER SYSTEMS	SERVED BY OTHER SYSTEMS	PRELIM.	PRIMARY	FINAL	SECONDARY	YEAR	
1.	ALBANIA	174,000	66,000	222,000	0	0	0	0	0	0	0	0
2	CROATIA	677,830	160,462	603,145	10,577	194,579	0	0	0	0	0	0
3.	CYPRUS	249,778	120,299	0	25,594	342,483	0	0	0	0	0	0
4	FRANCE	2,961,258	2,234,173	4,667,700	0	0	0	0	0	0	3,890,350	0
5.	SLOVENIA	77,365	77,112	135,194	0	18,455	0	0	0	0	0	0
6.	SPAIN	6,174,723	7,083,794	12,692,167	241,585	229,572	1,106,763	324,086	0	7,034,948	0	0
7.	SYRIA	530,83	0	512,167	7,600	11,070	0	0	0	0	0	0
	TOTAL	10,845,785	9,741,860	18,832,589	287,356	0	1,106,763	324,086	0	10,925,290	0	0

**COMMON MEASURES  
ADOPTED BY THE CONTRACTING PARTIES  
TO THE BARCELONA CONVENTION**

<b>INTERIM ENVIRONMENTAL QUALITY CRITERIA CONCERNING MERCURY CONTENT OF SEAFOOD</b>	<b>SEPT. 1985</b>
<b>INTERIM ENVIRONMENTAL QUALITY CRITERIA CONCERNING MICROBIAL CONCENTRATIONS OF BATHING WATERS</b>	<b>SEPT. 1985</b>
<b>MAXIMUM CONCENTRATION OF MERCURY IN EFFLUENT DISCHARGES</b>	<b>SEPT. 1987</b>
<b>ENVIRONMENTAL QUALITY CRITERIA CONCERNING MICROBIAL CONCENTRATIONS OF SHELLFISH WATERS</b>	<b>SEPT. 1987</b>
<b>CONTROL OF POLLUTION BY USED LUBRICATING OILS</b>	<b>OCT. 1989</b>
<b>CONTROL OF POLLUTION BY CADMIUM AND CADMIUM COMPOUNDS</b>	<b>OCT. 1989</b>
<b>CONTROL OF POLLUTION BY ORGANOTIN COMPOUNDS</b>	<b>OCT. 1989</b>
<b>CONTROL OF POLLUTION BY ORGANOHALOGEN COMPOUNDS</b>	<b>OCT. 1989</b>
<b>CONTROL OF POLLUTION BY ORGANOPHOSPHORUS COMPOUNDS</b>	<b>OCT. 1991</b>
<b>CONTROL OF POLLUTION BY PERSISTENT SYNTHETIC MATERIALS</b>	<b>OCT. 1991</b>
<b>CONTROL OF POLLUTION BY RADIOACTIVE SUBSTANCES</b>	<b>OCT. 1991</b>
<b>CONTROL OF POLLUTION BY PATHOGENIC MICROORGANISMS</b>	<b>OCT. 1991</b>
<b>CONTROL OF POLLUTION BY CARCINOGENIC, TERATOGENIC AND MUTAGENIC SUBSTANCES</b>	<b>OCT. 1993</b>



**ANNEX V**

**IMPLICATIONS OF EXPECTED CLIMATIC CHANGES  
ON THE SYRIAN COASTAL REGION**

This project forms part of a wider, Integrated Planning Project for the Syrian coastal region undertaken within the framework of the Coastal Area Management Programme (CAMP) of the Co-ordinating Unit for the Mediterranean Action Plan. The report was prepared by a Task Team of national and international experts who were asked to evaluate the implications of future climatic changes and sea level rise on the coastal zone of Syria. The study was undertaken through a review of existing information and an expert evaluation of the likely implications of scenarios of future climate. These scenarios were developed by the University of East Anglia as part of the Mediterranean Co-ordinating Unit's wider activities in the field of climatic change impact assessment for the Mediterranean Basin.

The objectives of these studies were:

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

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

The Syrian coastal region occupies only around 2% of Syrian national territory but is home to 11% of the population and is of national importance in terms of agriculture, contributing about 11% to Gross National product. Energy production is high (35% of the national total) and some industrial activities such as cement production (38% of national production) and petroleum refining (50% of national total) are well developed in the region. International tourism is not well developed at present although the region has considerable potential in this regard. The coastal region is well supplied with transport links, including maritime, air and land based - roads and railways.

The climate is typically Mediterranean with cool dry winters and hot dry summers. The coastal region is dominated by the Jebel al Sahel mountain range which runs parallel to the coast some 20-40 km inland and affects the coastal climate. Rainfall increases from around 760-900 mm yr<sup>-1</sup> in the coastal plains to a maximum of 2000 mm yr<sup>-1</sup> in the mountains.

The soils of the area reflect the underlying geology which is dominated by limestones and dolomite and are of the typical Mediterranean red-brown types. Soils are generally deeper than 1m in the coastal plain. Fresh water supplies are adequate although some streams dry up during the summer. Irrigation is practised on 16% of the cultivated land which covers in excess of a quarter of a million hectares.

The task team has established that there are considerable gaps in the data concerning many aspects of the coastal system, including amongst others, inadequate information on natural ecosystems, both marine and terrestrial, on oceanography and beach dynamics. In addition the socio-economic projections are inadequate to enable the development of accurate planning scenarios beyond a short time frame.

Under scenarios of climatic change, temperatures will rise, more in the highland areas than in the coast with consequent impacts on natural and managed ecosystems and agricultural production. It is believed that the frequency of extreme events could increase, particularly the frequency of torrential rainstorms with consequent increases in soil and slope erosion. The rather uncertain scenarios of future rainfall suggest that the region may be slightly drier than at present.

Under scenarios of moderate sea level rise (20cm higher than present) the vulnerability of the Syrian coastal region may be increased but the Task team concluded that the impacts of such a rise would be of less significance than the impacts of non-climatic factors, including population increase and present development trends. Small enclosed "pocket beaches" may be the most vulnerable coastal types to increasing sea levels.

Although water resources are at present adequate the hydrological system was seen as one which is vulnerable to the impacts of climatic change and sea level rise, particularly since the demand for freshwater is likely to rise with population growth and increased agricultural production. Water quality may be adversely affected by salinization of groundwater; vegetation cover may decline and soil erosion may increase in a warmer world, although these systems will be more affected by the other sources of change indicated above.

In planning for and addressing future changes in the Syrian coastal region the Task Team recommends that:

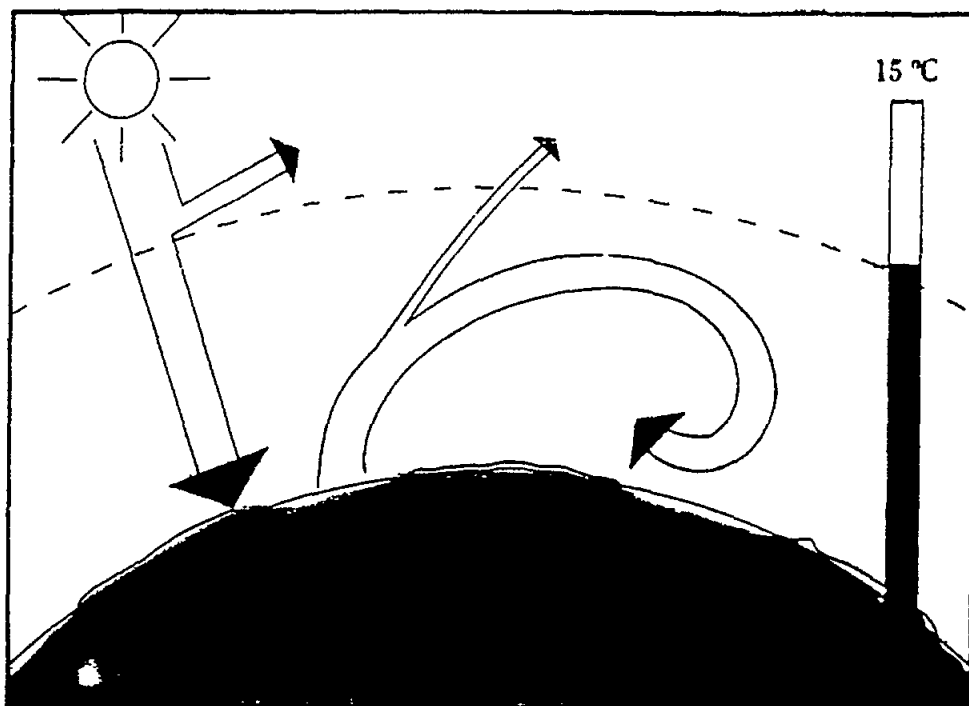
- enhanced programmes of data acquisition be initiated to provide a sound information base on present systems and processes as the basis for future planning;
- integrated approaches to coastal zone planning and management be adopted which include *inter alia* evaluation of specific sites to sea level rise and evaluation of specific alternatives for protection and or zoning of development and infrastructure;
- environmental impact assessments be undertaken for all major developments in the region; and,
- programmes of air pollution abatement, water resource management, renewal energy use, international co-operation and vegetation/land use mapping be implemented as soon as practicable.

On the basis of the results of the work of the Task Team, the following major impacts expected from the predicted climate change were identified

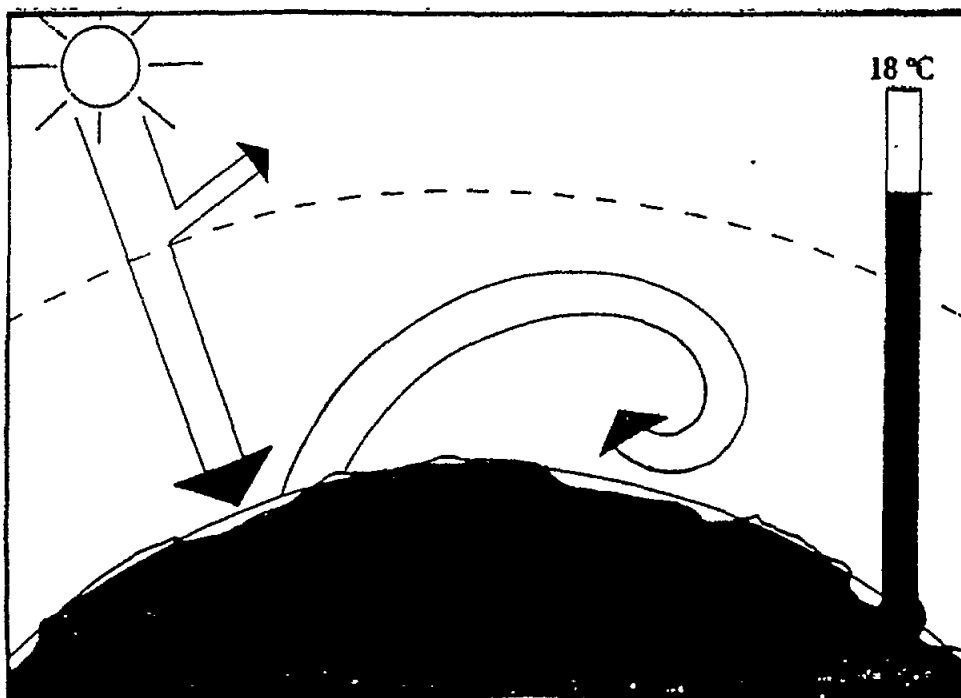
- gradual acceleration in the next century of soil erosion and general modification of vegetation cover due to increased aridity;
- increased salinization (expected by 2030) of underground water due to increased evaporation during a longer dry season and to sea level rise; and
- erosion of beaches and significant damage to coastal structures and human settlements close to the shore will occur as a consequence of exceptional storm surges even if mean sea level rise is only of the order of 10 cm.

The following action was suggested to cope with the above mentioned impacts:

- **Problems of soil and coastal erosion and increased salinization should be dealt with through integrated coastal zone management and planning. Such planning should include development of water management plans, monitoring programmes; and, establishment of a data bank on natural and cultivated vegetation.**

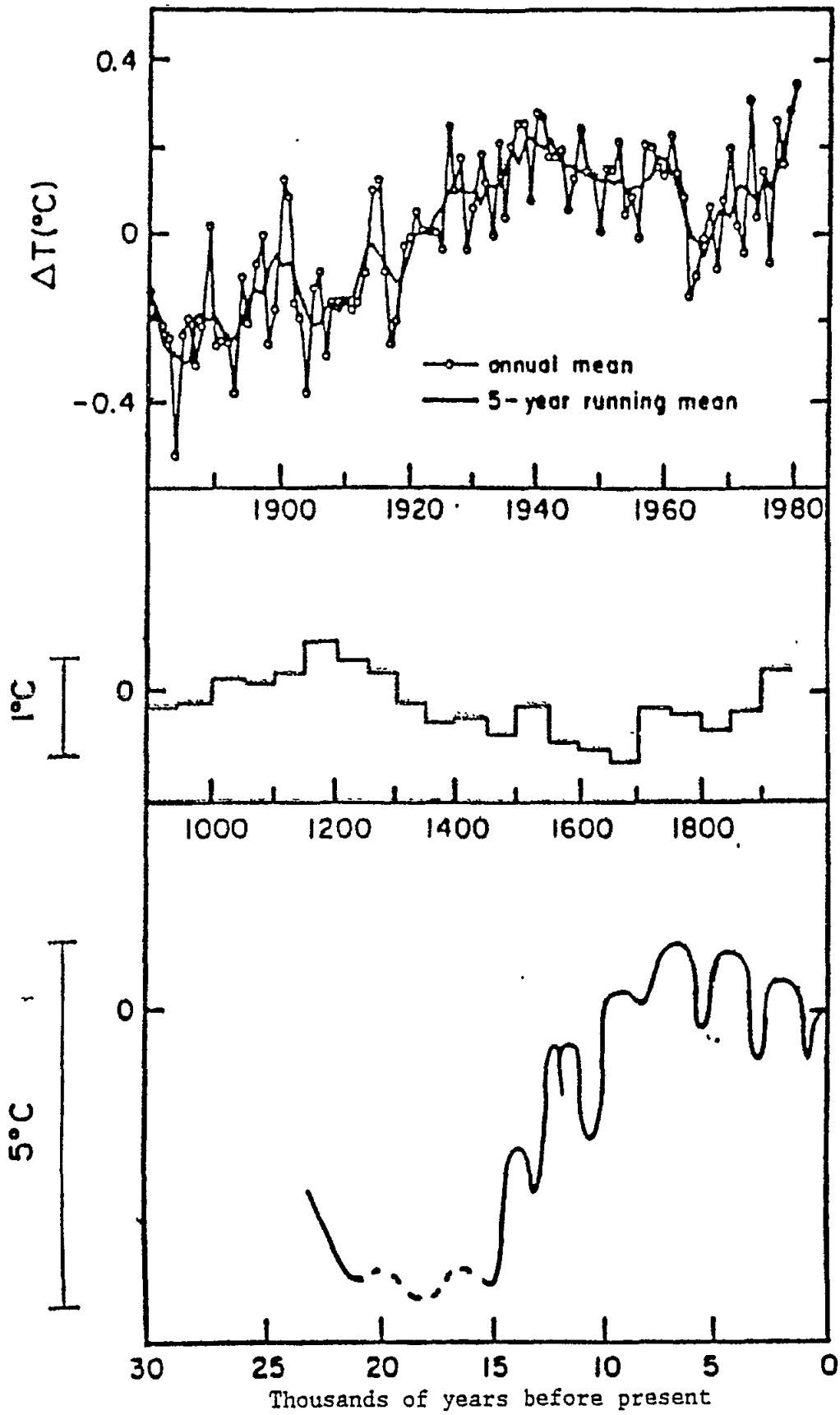


**GREENHOUSE EFFECT AT PRESENT**



**GREENHOUSE EFFECT IN THE FUTURE**

(From *Maîtriser le réchauffement de la planète*, Agence pour la Qualité de L'air, Paris)



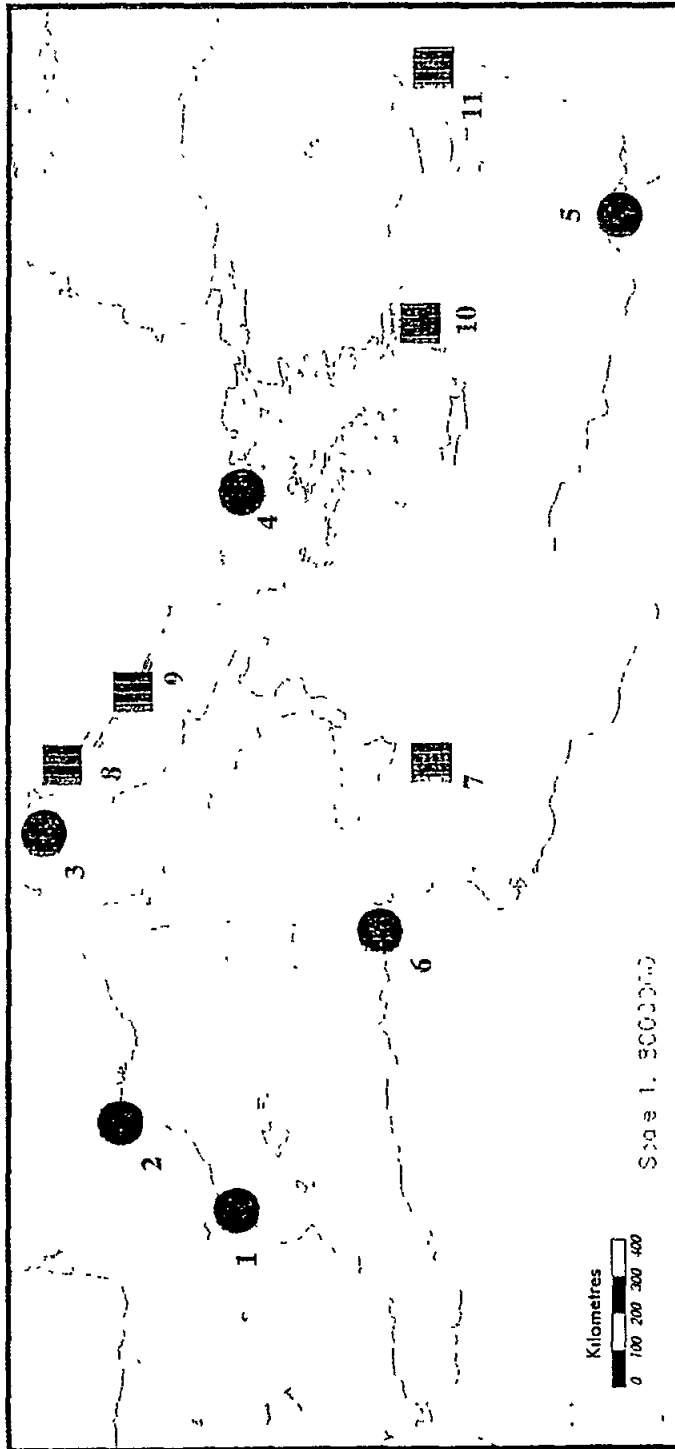
## **OBJECTIVES OF SITE SPECIFIC CASE STUDIES**

### **OBJECTIVES OF THE CASE STUDY ARE:**

- **TO IDENTIFY AND ASSESS POSSIBLE IMPLICATIONS OF EXPECTED CLIMATE CHANGE ON THE TERRESTRIAL, AQUATIC AND MARINE ECOSYSTEMS, POPULATIONS, LAND-USE AND SEA-USE PRACTICES AND OTHER HUMAN ACTIVITIES;**
- **TO DETERMINE AREAS OR SYSTEMS WHICH APPEAR TO BE MOST VULNERABLE TO THE EXPECTED CLIMATE CHANGE; AND**
- **TO IDENTIFY OPTIONS AND GIVE RECOMMENDATIONS FOR PLANNING AND MANAGEMENT OF COASTAL AREAS AND RESOURCES, AS WELL AS FOR PLANNING AND DESIGN OF MAJOR INFRASTRUCTURE AND OTHER SYSTEMS.**

# THE MEDITERRANEAN REGION

Location of Case Studies on Implications of Climatic Changes



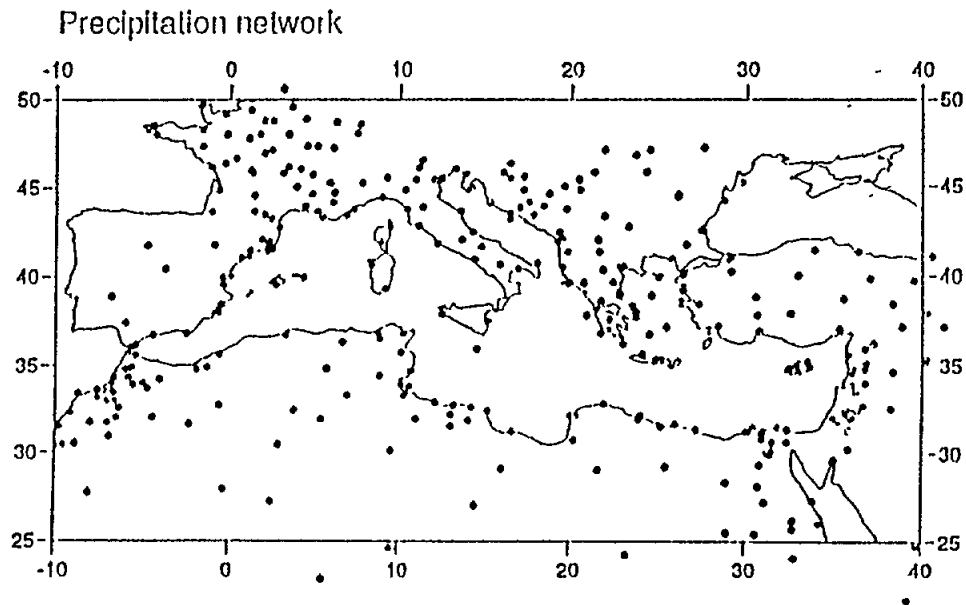
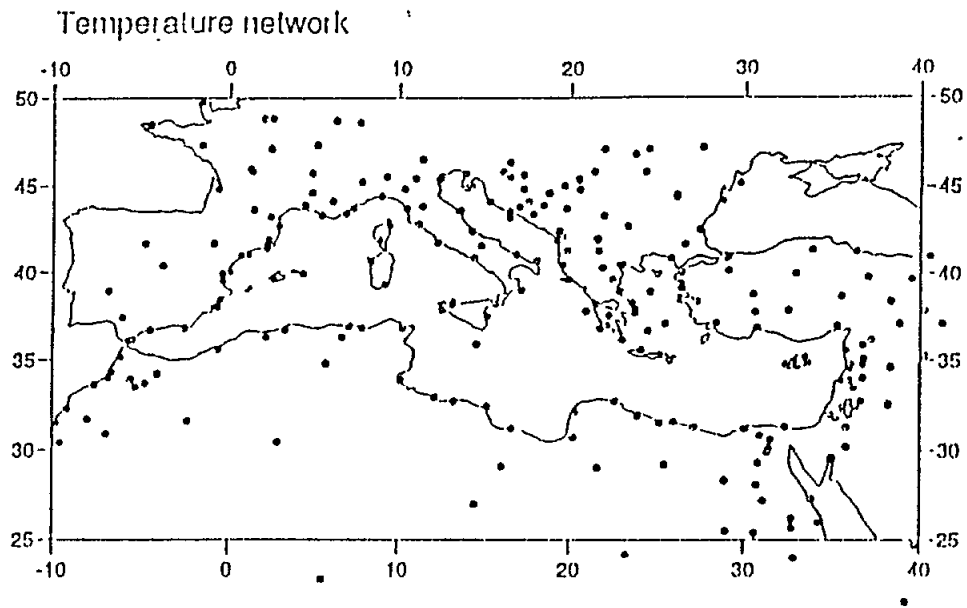
1987 - 1989

- 1. EBRO DELTA
- 2. GULF OF LION/RHONE DELTA
- 3. PO DELTA/VENICE LAGOON
- 4. THERMAIKOS GULF
- 5. NILE DELTA
- 6. LAKES ICHKEUL/BIZERTE

1990 - 1992

- 7. MALTA ISLAND
- 8. CRES LOSINJ ISLANDS
- 9. KASTELA BAY
- 10. RHODES ISLAND
- 11. SYRIAN COAST





Network of temperature (above) and precipitation (below) measuring stations  
(Palutikof *et al.* 1991).

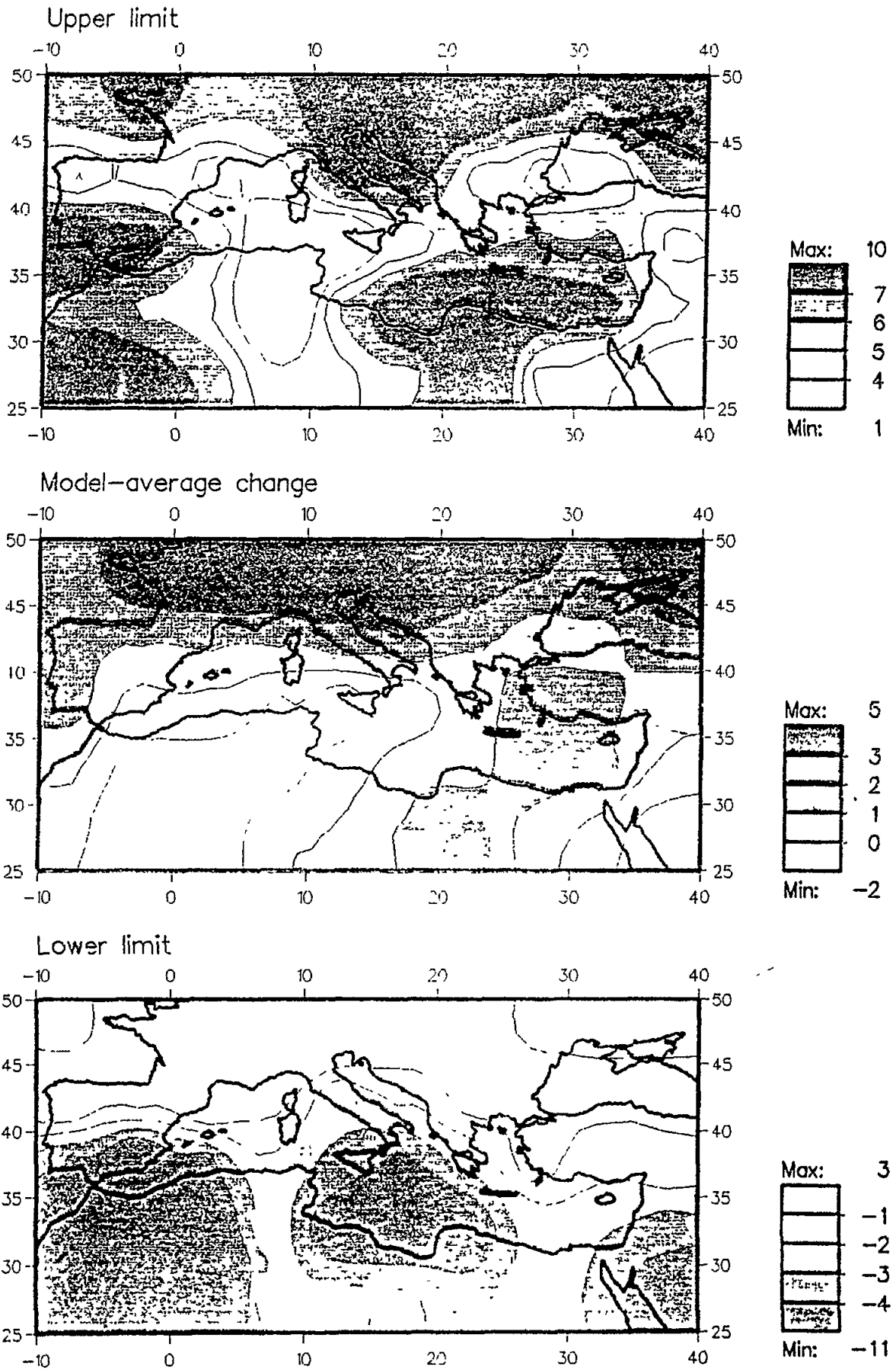
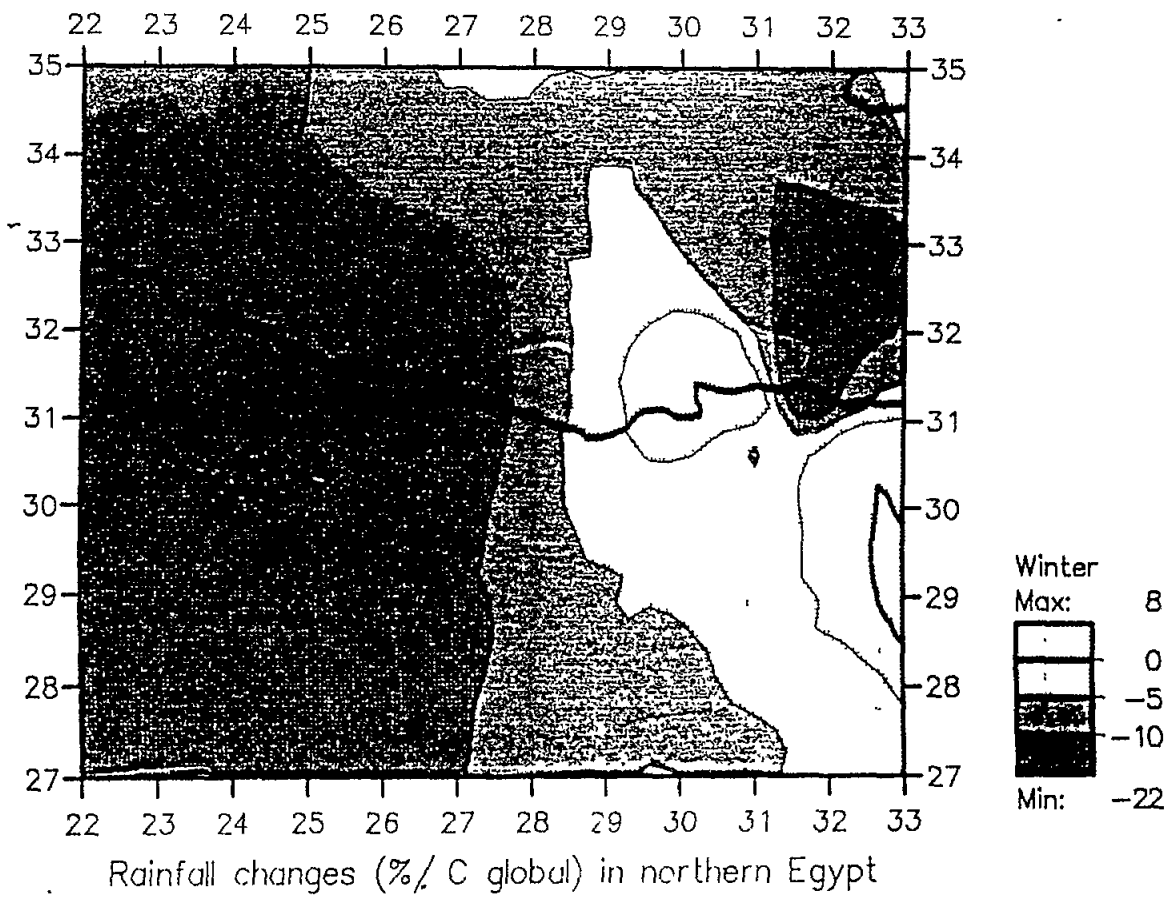
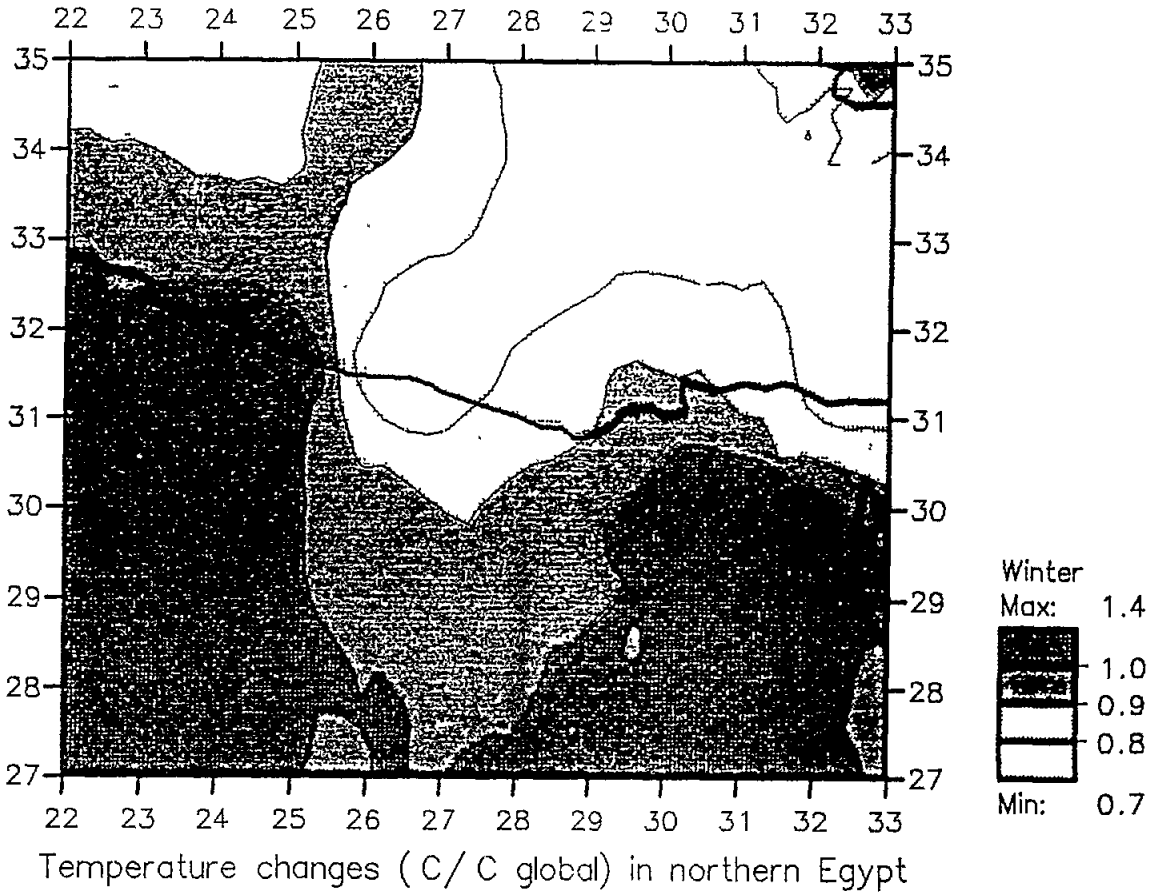


Fig. 3.7 Winter standardized model-average precipitation change per °C global change, shown with the upper (above) and lower (below) 90% confidence limits (mm)



## SYRIAN COAST

- a) Gradual acceleration in the next century of soil erosion and general modification of vegetation cover due to increased aridity.
- b) Increased salinisation (expected by 2030) of underground water due to increased evaporation during a longer dry season and to sea level rise.
- c) Erosion of beaches and significant damage to coastal structures and human settlements close to the shore will occur as a consequence of exceptional storm surges even if mean sea level rise is only of the order of 10 cm.

**ACTION: Problems of soil and coastal erosion and increased salinisation should be dealt with through integrated coastal zone management and planning. Such planning should include development of water management plans, monitoring programmes; and, establishment of a data bank on natural and cultivated vegetation.**

ANNEX VI

INTEGRATED PLANNING STUDY  
OF THE SYRIAN COASTAL REGION

# INTEGRATED COASTAL AREA MANAGEMENT IN SYRIA

## Period 1988-94

### *1 Tools and techniques*

- training on integrated coastal and marine areas management (ICAM)
- Geographical Information System (GIS)
- Environmental Impact Assessment (EIA)

### *2 ICAM actions*

- preliminary study
- coastal resources management plan

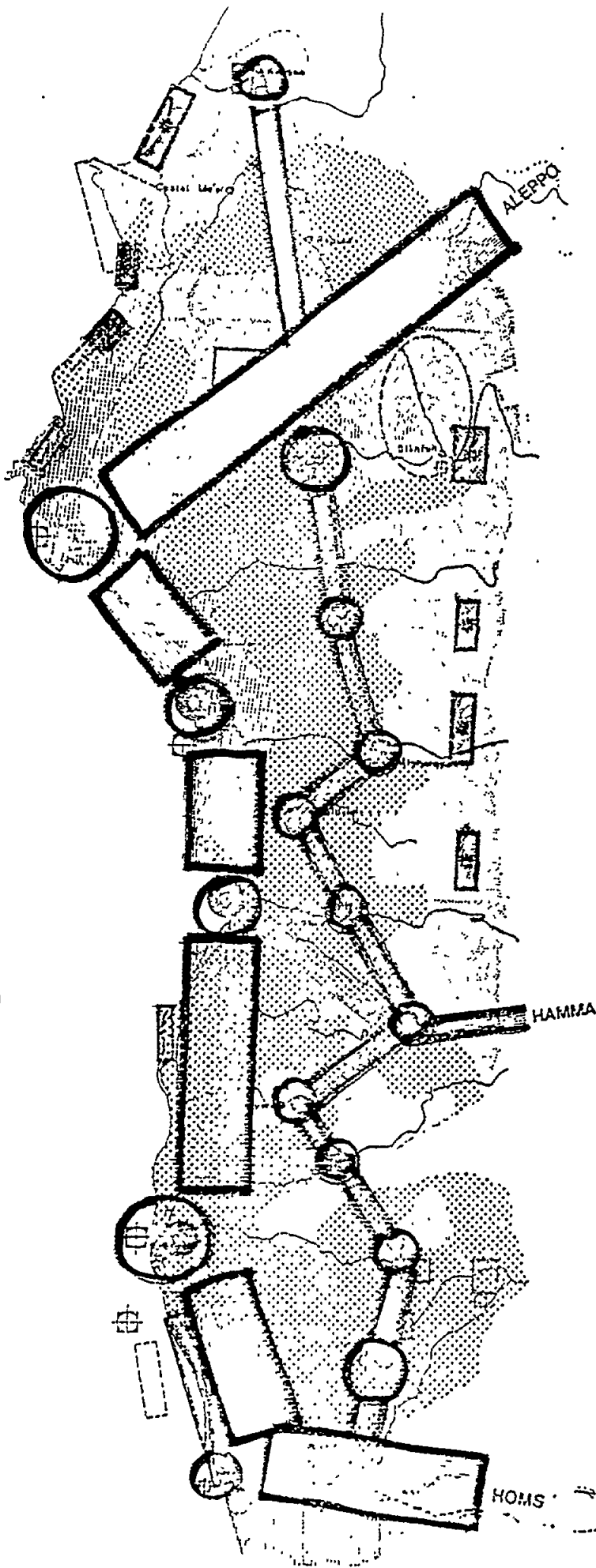
## WHAT IS PRELIMINARY STUDY
















A document whose objective is to address major development and environment issues in the Syrian Coastal Region. It has been prepared with limited human and financial resources and within a short period of time. These facts clearly define the scope and the extent of the study. Preliminary study is not a plan, but lays foundations for the establishment of the integrated coastal and marine areas management in the Syrian Coastal region.

## ACTIVITIES PERFORMED

- Training course on ICAM in Split (1988)
- Two preparatory missions in Syria (1988)
- Three multidisciplinary PAP missions in Syria →  
9 international and 16 Syrian experts (1989)
- Preparation of the draft report - meeting in Split (1989)
- Study distribution (after 1990)
- Actions implemented

SUGGESTED STRUCTURE OF DEVELOPMENT



-  Forest
-  Agriculture
-  Land Irrigated By Large System
-  Large Industrial Complexes and Services
-  Manufacturing and Services
-  Regional Centres
-  Subregional Centres
-  Intermediate Towns
-  Liquid Waste Treatment - Coastal
-  Liquid Waste Treatment - Inland
-  Main Infrastructure - Corridors
-  Main Hinterland Road
-  Tourism Development Area
-  Potential Tourism Area Need For Preliminary Environmental Assessment
-  Specially Protected Areas

الجمهورية العربية السورية وزارة الدولة لشؤون البيئة  
 على عمل البعثات الأبحاث التوسط لبرنامج الأعمال ذات الأولوية  
 برنامج الأمم المتحدة للبيئة

الدراسة الأولية للتخطيط المتكامل  
 للساحل السوري

SYRIAN ARAB REPUBLIC  
 MINISTRY OF STATE FOR ENVIRONMENT  
 MEDITERRANEAN ACTION PLAN  
 PRIORITY ACTIONS PROGRAMME  
 UNITED NATIONS ENVIRONMENT PROGRAMME

SYRIAN COASTAL REGION  
 PRELIMINARY STUDY OF THE  
 INTEGRATED PLAN



ANNEX VII

COASTAL RESOURCES MANAGEMENT PLAN  
(CRMP)

The Coastal Resources Management Plan (CRMP) is the result of co-operation of the Regional Activity Centre for the Priority Actions Programme (PAP/RAC) with the Syrian Ministry of the Environment, and other national institutions.

Basing itself on the principles of sustainable development and the criteria and procedure of integrated planning of coastal zones, the Plan recommends the management measures, particularly for land and sea use and the protection of the most valuable resources and areas of the Syrian coastal zone, aiming to contribute to the mitigation or elimination of environmental conflicts and to set path for a future development.

The immediate objectives of the CRMP were: (a) to train the national experts in applying the methodology of integrated planning and management; (b) to recommend the ways of implementing relevant legal instruments and existing institutional arrangements; (c) to contribute to the adoption of modern tools and techniques of coastal zone management.

The coastal zone covered by the CRMP is the entire coastal plain up to an altitude of 200 meters, the settlements on the hill sides, and the immediate gravity areas of the main coastal cities. The CRMP focuses on the protection and sustainable development of the coastal strip.

The main environmental problems of the coastal zone, mostly generated by heavy concentration of people (high natural growth and migration) and activities (intensive agriculture, heavy industry, transportation), are:

- pollution of water resources and the coastal sea,
- intrusion of saline water into aquifers;
- clearing of indigenous forests and the resulting soil erosion;
- extraction of sand from beaches (sand dunes) for construction;
- none-selective use of pesticides, herbicides and fertilizers;
- construction of dams which have arrested the replenishment of beaches with sand and gravel;
- sprawl of illegal housing in suburban areas, and devastation of the fertile agricultural land;
- ribbon development of bungalows along the beaches.

The following management policies recommended in the CRMP aim to control the development processes endangering the coastal environment, and to mitigate and, in some cases, eliminate the existing negative impacts :

#### **Coastal land**

- afforestation and recovery programmes should be established, particularly in regard to the remaining indigenous forest species;
- the prime agricultural land must be preserved as much as possible, and the coastal agriculture should be encouraged and controlled;
- mining and quarrying should not be allowed in environmentally sensitive areas nor in the areas of high scenic value;
- development priority should be given to the coast-dependent activities;

- an orderly and balanced development of settlements should be encouraged and achieved by the concentrating of new housing and services around the traditional and existing settlements;
- priority in development should be given to the neighbouring or satellite communities in order to avoid a sprawl of suburban areas in major cities,

### **Coastal strip**

- it is necessary to protect marine environment from harmful activities (eg. dynamite fishing);
- destruction of special ecosystems (river banks and small estuaries) to obtain more agricultural land, or for other uses, must be stopped;
- mining of sand dunes should be stopped immediately and the construction of dams, breakwaters, and other such structures that alter the natural shoreline should be permitted only when designed to maintain the shoreline sand systems (EIA studies);
- protection and conservation of the coast in sections of the highest natural value must be given top priority;
- priority has to be given to the development of coastal tourism provided it is in harmony with the resources it is based upon;
- in selecting suitable locations for tourism development, priority must be given to the areas where such development has already taken place,
- carrying capacity assessment should be made for each tourism activity;
- in designating the use of the coastal sections (particularly tourism development), a resource-based approach should be adopted;
- as regards the coastal landscape, new developments are proposed only if they respect the visual quality of natural or man-made areas.

The CRMP pays special attention to the vulnerability of water resources (surface and ground water), since the study area extends far beyond the coastal zone and corresponds to the catchment areas. Concrete measures have been proposed for the protection of aquifers and surface waters from activities which could have a harmful effect on the quality of water.

Proposals for the establishment of Specially Protected Areas are divided into three main categories:

- Areas of ecological importance (ten areas);
- Cultural landscapes (eight areas);
- Traditional rural areas (two settlements within the protected areas).

Proposals for the protection of historic monuments distinguished two main categories:

- Historic monuments of the world heritage (seven sites);
- Historic monuments of importance for the national heritage (seven sites, mainly traditional rural settlements).

The main part of the CRMP is dedicated to the proposal of concrete management measures to be taken for various coastal areas, which were longitudinally divided into units having similar physical or functional characteristics : four coastal sectors, each comprising 2-3 smaller units - segments, which were divided into yet smaller units - sections. For each of these units a specific management policy has been recommended (concerning, among others, land-use, development and protection measures) and additional studies have been suggested.

The CRMP also includes recommendations (general and technical) for its implementation.

## **COASTAL RESOURCES MANAGEMENT PLAN**

### **COASTAL ZONE - AN ENVIRONMENT IN TRANSITION**

- **the growing importance of the coast in the national economy (ports, transportation network, energy and basic industry);**
- **intensive agricultural exploitation by developing irrigation networks (transition of crops);**
- **development of tourism;**

### **CONSEQUENCES**

- **large portions of land are being used for the construction of industrial facilities and basic infrastructure;**
- **rapid growth of urban and suburban areas and loss of fertile land;**
- **sprawl of low-density housing development;**
- **uncontrolled ribbon development along the coastline;**

## **DEFINITION OF THE COASTAL ZONE (AREA COVERED BY THE PLAN)**

- **the entire coastal plain up to the altitude of 200 m above sea level;**
- **settlements on the hillsides encompassing the coastal plain;**
- **immediate gravity areas of the main coastal cities;**
- **all major longitudinal infrastructure corridors and industry areas.**

## **MAJOR OBJECTIVES AND POLICIES OF PLANNING AND MANAGEMENT**

- **unique part of the national territory - resource of the prime national importance;**
- **protection and preservation of the Coastal Zone resources along with the needed investments;**
- **integrate regulations governing the protection of natural resources within areas allocated for development;**
- **preserve the remaining natural areas and entities;**

## **MAIN ENVIRONMENTAL PROBLEMS AND ISSUES**

- **over exploitation or destruction of natural resources (wetlands, sand dunes);**
- **pollution of water resources and coastal sea;**
- **intrusion of saline water into the aquifers;**
- **some forest areas have been cleared provoking soil erosion processes;**
- **dams have been constructed arresting the replenishment of beaches with sand;**
- **pesticides, herbicides and fertilizers have been heavily and non-selectively used;**
- **sprawl of illegal housing in suburban areas and devastation of very fertile land agricultural land;**
- **new tourism development tends to disregard the environmental values;**

## **COASTAL LAND ENVIRONMENT - MAJOR LAND - USE POLICIES**

<b>DEVELOPMENT PROCESSES - CONTROLLED, NEGATIVE IMPACTS MITIGATED OR ELIMINATED</b>
---

- 1. Afforestation recovery programs - remnants of the indigenous forest;**
- 2. Mining and quarrying should not be allowed in environmentally sensitive and scenic areas;**
- 3. The prime agricultural land should be preserved as much as possible;**
- 4. The coastal agriculture should be encouraged, but controlled;**
- 5. Priority should be given to the coast - dependent activities;**
- 6. An orderly balanced development of settlements should be achieved by concentrating new housing and service activities around traditional settlements, built - up areas and environmentally less sensitive areas;**
- 7. In coastal cities areas priority should be given to the neighboring or satellite communities (Lattakia);**



## **MAJOR MANAGEMENT POLICIES FOR THE COASTAL STRIP**

- 1. urgent protection coastal waters from harmful activities (dynamite, sand dunes mining)**
- 2. protect the special ecosystems (river banks and mouths) from expanding agricultural or construction land;**
- 3. construction of dams and marine structures (seawalls, breakwaters) should be permitted only if designed to eliminate adverse impacts on shoreline sand system;**
- 4. protection and conservation of the shoreline (parts of the highest natural value);**
- 5. priority has to be given to the development of coastal tourism provided it is in harmony with the resources it is based upon - a resource based approach instead demand - based method;**
- 6. priority for tourism development has to be given to the areas where such or complementary activities have already taken place;**
- 7. a carrying capacity assessment should be made for each development area;**
- 8. preserve the visual quality of natural and manmade areas;**

**PROPOSALS FOR ESTABLISHING THE SPECIALLY PROTECTED AREAS****Areas of ecological importance**

1. Rasl'Bassit peninsula (approx. 25 sq.km).
2. Alfajar Plateau (approx. 5 sq.km).
3. The coast of Wadi Qandeel (approx. 10 sq.km) which does not include Umit'Tiur and stretches from the cliffs between Umit'Tiur and the Wadi Qandeel beach in the north and the **White Cliffs** in the south.

Items from 1 to 3, together with the protected cultural landscapes of the Wadi Qandeel valley and Umit'Tiur could make up a **Regional Park**.

4. The **Sand dunes beach of Lattakia** (approx. 15 sq.km) stretches from the mouth of the Nahr al Kabir Al Shemali) river in the north and the estuary of the Snoubar river in the south.
5. The Rouss River Coast (approx. 3 sq.km).
6. The **All-Seen river** (approx. 10 sq.km).
7. Marqab Castle (approx. 5 sq.km) including the castle hill and a short stretch of the seashore south of Banias.
8. The Margeia river valley (approx. 10 sq.km) including the river estuary.
9. The Hussain river valley (approx. 5 sq.km).
10. The **Arwad island** with two islets (approx. 15 sq.km of sea/land surface).

**Cultural landscapes**

1. Umit'Tiur.
2. Wadi Qandeel - the coastal part.
3. Wadi Qandeel - the inland valley.
4. The hinterland of Rasl'Fassouri (white cliffs).
5. The Nahr al-Rouss valley (south of the Jableh).
6. The Nahr al Ramla valley (north of Jableh).
7. The Nahr al-Marquaba valley (south of Banias).
8. The Nahr al-Hussain valley (north of Tartous).

These landscapes need to be spatially delineated, documented, analysed and put under an adequate regime of protection with regard to their visual appearance.

## PROTECTION OF HISTORIC MONUMENTS

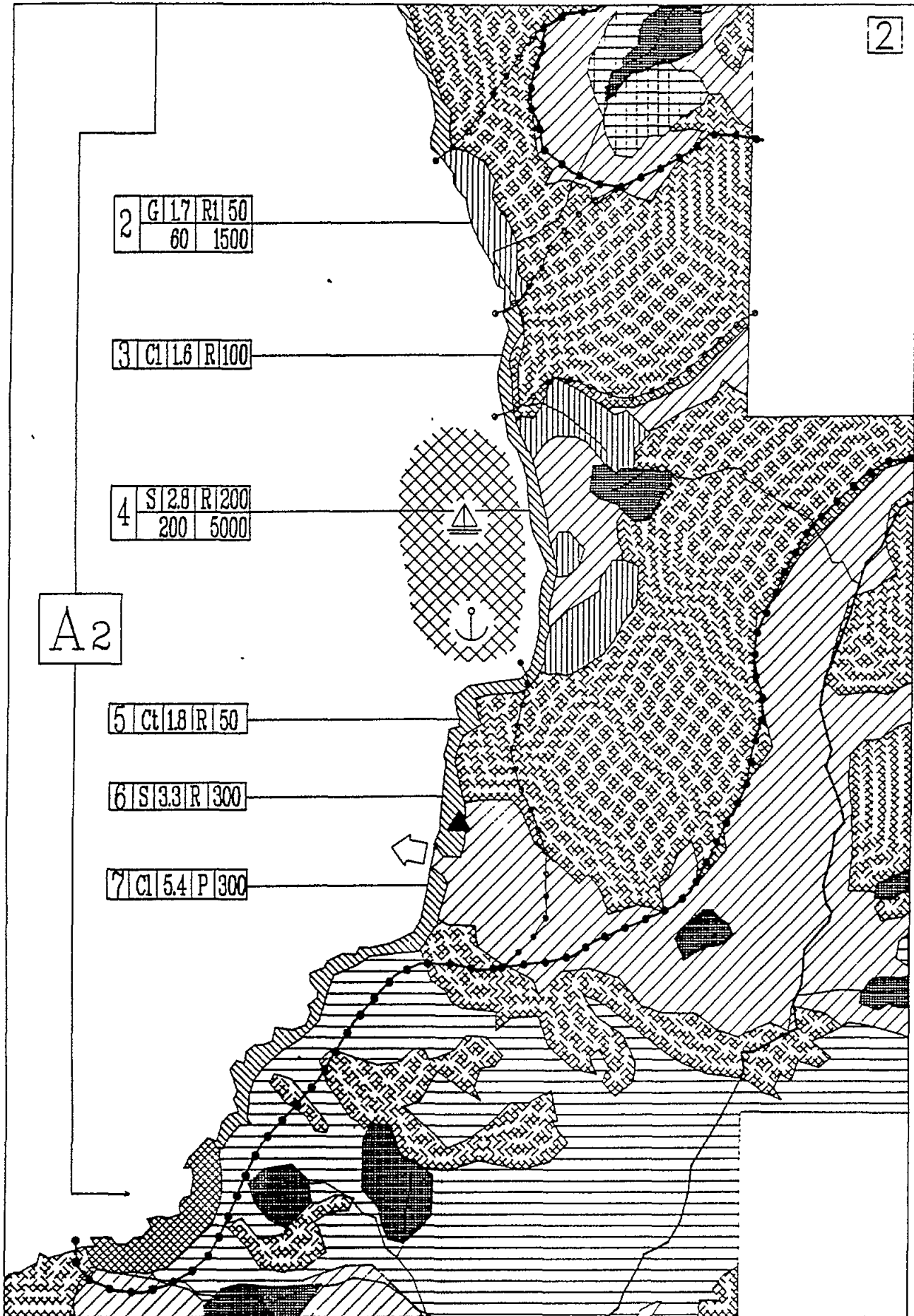
Taking into account the relevant criteria, the following might be described as sites of the highest touristic, educational and scientific interest:

- maintenance
  - evaluation studies, conservation plans, preservation
1. Ugarit (Ras Shamra)
  2. Amrit
  3. The Margab Castle
  4. The old town of Tartous (including the citadel, the cathedral and the palace)
  5. The Arwad island (including the castle, the fort and the village).

### Traditional settlements

1. Stemerkhon, a village 10 km east of Ras Ibn Hani
  2. Ibn Hani, a fishing village 2 km east of Ras Ibn Hani
  3. Jableh - Old town
  4. Hilltop village 12 km south of Banias
  5. Hilltop village 10 km north of Tartous
  6. Hilltop village 4 km east, then 3 km north of Tartous
  7. Arwad, an island-town.
- local population, natural setting, social organisation, cultural attitudes
- 

- buffer zones to review
- organisation and financing
- municipal and provincial auth. - larger role
- international help



Sector B

highly productive agricultural area - irrigation system

shoreline almost entirely preserved from secondary homes

sprawl of residences and secondary homes will continue to take away the precious agricultural as well as shore land unless strict protection measures are adopted.

Segment B1

- (1) construction of terraces or reclamation of shallow parts  
protection of marine life from deposited material
- (2) A rehabilitation and restoration project should be made for Al Aabdin, a historic suburban part of Lattakia.
- (3) consolidate the beach front and dunes - vegetation  
future maintenance programme
- (4) A tourist establishment

Development of Ashier, Al Hannadi, Fidyo and  
Ash'shilfatiyeh - encourage

Snoubar, Albas'sa and .... restrictions

Segment B2

suitable for small scale development

(1,2) natural form - green area of Jableh

(3) development of the Jableh - concentrated

rural landscape of the Jableh plain - cherished  
highway corridor - controlled and restricted

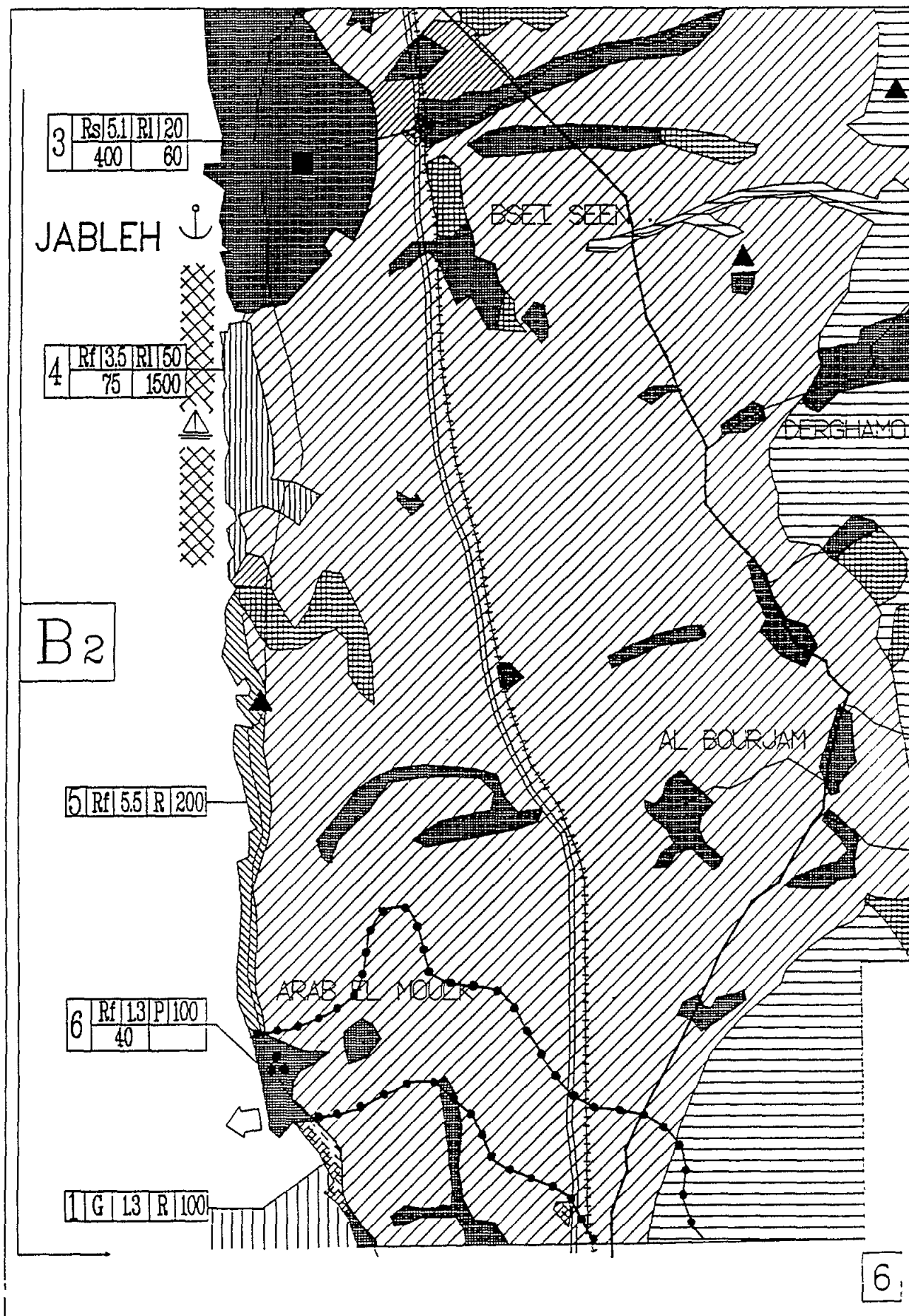
airport noise impact area - determined, restricted

(4) tourism settlement developement - dense layout.

(5) present state - recreation only

rural part - farm houses only

(6) SPA - detailed rehabilitation study



ANNEX VIII

ENVIRONMENTAL IMPACT ASSESSMENT  
OF AMRIT TOURIST COMPLEX

An EIA of the planned Amrit tourism project was envisaged within the framework of the CAMP "The Syrian Coast". Considered as a very important project on the coast, Amrit was selected jointly by the Ministry of State for Environmental Affairs and the Ministry of Tourism.

The site is located in the immediate vicinity of the remains of the ancient town of Amrit, some 7 kilometers south of Tartous which is the second largest coastal city in Syria. The surface area of the site is about 42 ha. Its average width is 600 m, while the length of the sandy coastline is approximately 800 m. According to project, the area was to contain close to 2.000 tourist beds in high-category hotels and villas.

A team of national experts (from Ministry of Tourism, Ministry of Environment, and University of Latakia) was put together with the assistance of a PAP consultant, with the task to make an EIA of this tourism project. In preparing the EIA, the team used the procedure which had been developed by PAP/RAC, in cooperation with OCA/PAC and MEDU, and which had been published as UNEP Regional Seas Reports and Studies No. 122.

The Environmental Impact Assessment was being made with the assistance of the PAP consultant who went on mission to Syria three times for that purpose. During the first mission, the team of national experts was explained the role and place of the EIA in the planning and decision-making process, as well as the proposed EIA procedure. Agreement was reached as to the mode of preparing the EIA, and data which had to be collected. During the second mission, the PAP consultant made an evaluation of the accomplished work and instructed the national team how to complete the EIA report. Evaluation and amendments of the EIA report were made during the third mission.

The activity ended in a training course on EIA addressed to various national experts who had not been involved in the preparation of the EIA. The trainees were informed of the role and place of EIA in the planning and decision-making process, explained the EIA procedure, presented the Amrit EIA document, together with other selected EIA documents which had been prepared in the framework of PAP activities.

In addition to the activities related to the preparation of EIA for the Amrit tourism project, the PAP consultant provided assistance to the experts of the Ministry of Environment in the resolution of many problems encountered in planning and dealing with various other projects, as well as helped them in the preparation of national regulations relative to the preparation of EIAs.

The realization of the Amrit project was discontinued shortly after the earthworks started, because some important remains of the ancient city had been discovered.



# WHAT IS EIA ?

## EIA IS

A PROCESS FOR THE ASSESSMENT OF EFFECTS ON THE ENVIRONMENT WHICH MIGHT BE CAUSED BY THE PROPOSAL OF THE APPLICANT, INCLUDING A PROGRAMME OF SUBSEQUENT MONITORING OF THESE EFFECTS AND A MECHANISM FOR REASSESSMENT OF CONDITIONS UNDER WHICH THE ISSUED AUTHORIZATION MAY HAVE TO BE MONITORED.

## EIA IS NOT

- ANALYSIS OF EFFECTS OF EXISTING INSTALLATIONS
- A MEANS OF CONTROLLING POLLUTION

## **OBJECTIVES OF THE ACTIVITY WITHIN THE CAMP 'THE SYRIAN COAST'**

- **ADOPTION OF A PRACTICAL PROCEDURE OF EIA AS AN IMPORTANT TOOL IN DEVELOPMENT ACTIVITIES**
- **TRAINING OF NATIONAL EXPERTS ON PRACTICAL EIA PROCEDURE**
- **PREPARATION OF EIA OF THE AMRIT TOURIST COMPLEX**

## **IMPLEMENTATION OF THE ACTIVITY**

### **1. INTRODUCTORY MISSION OF EXPERTS**

- **TO INFORM NATIONAL EXPERTS ON PLACE AND ROLE OF EIA IN THE PLANNING PROCESS**
- **TO INFORM NATIONAL EXPERTS ON EIA PROCEDURE PROPOSED BY UNEP-OCA/PAC, PAP/RAC, UNEP-MEDU**
- **TO ASSIST IN FORMATION OF A NATIONAL TEAM OF EXPERTS**
- **TO PREPARE SPECIFIC GUIDELINES FOR THE PREPARATION OF EIA FOR THE AMRIT TOURIST COMPLEX**
- **TO PROVIDE CONSULTATIONS TO NATIONAL EXPERTS ON THE PREPARATION OF THE EIA**

### **2. SECOND MISSION OF EXPERTS**

- **TO EVALUATE THE ACTIVITY OF THE WORKING TEAM IN PREPARATION OF THE EIA**
- **TO PROVIDE ASSISTANCE TO NATIONAL EXPERTS IN THE PREPARATION OF THE EIA**

### **3. THIRD MISSION OF EXPERTS**

- **TO EVALUATE THE FINAL VERSION OF THE EIA DOCUMENT**
- **TO ASSIST IN ORGANIZATION OF A TRAINING COURSE ON EIA**

### **4. EIA REPORT OF THE AMRIT TOURIST COMPLEX**

### **5. TRAINING COURSE ON EIA**

## EIA OF THE AMRIT TOURIST COMPLEX

### DESCRIPTION OF THE PROJECT

<b>AREA:</b>	42 ha
<b>TOTAL CAPACITY:</b>	2,000 beds
<b>THE CENTRAL HOTEL:</b>	400 beds
<b>TWO BLOCK APARTMENT HOTEL:</b>	800 beds
<b>THE CHALETS:</b>	311 chalets 1,200 beds
<b>CITADEL:</b>	SHOPS APPR. 1,500 m <sup>2</sup> CAFETERIA - 150 persons DISCOTHEQUE - 200 persons
<b>SPORTS CENTRE:</b>	TWO TENNIS COURTS VOLLEY BALL COURT MINI-GOLF
<b>THE FUN FAIR</b>	
<b>SEA-WATER SWIMMING POOL</b>	
<b>THE LAKE</b>	
<b>THE "LITTLE ARWAD" ISLAND:</b>	1,500 m <sup>2</sup>
<b>THE SANDY BEACH:</b>	800 m LONG 30 - 80 m WIDE
<b>SWIMMING POOL FOR RESIDENTS</b>	
<b>WATER SPORTS CENTRE</b>	
<b>TECHNICAL CENTRE</b>	

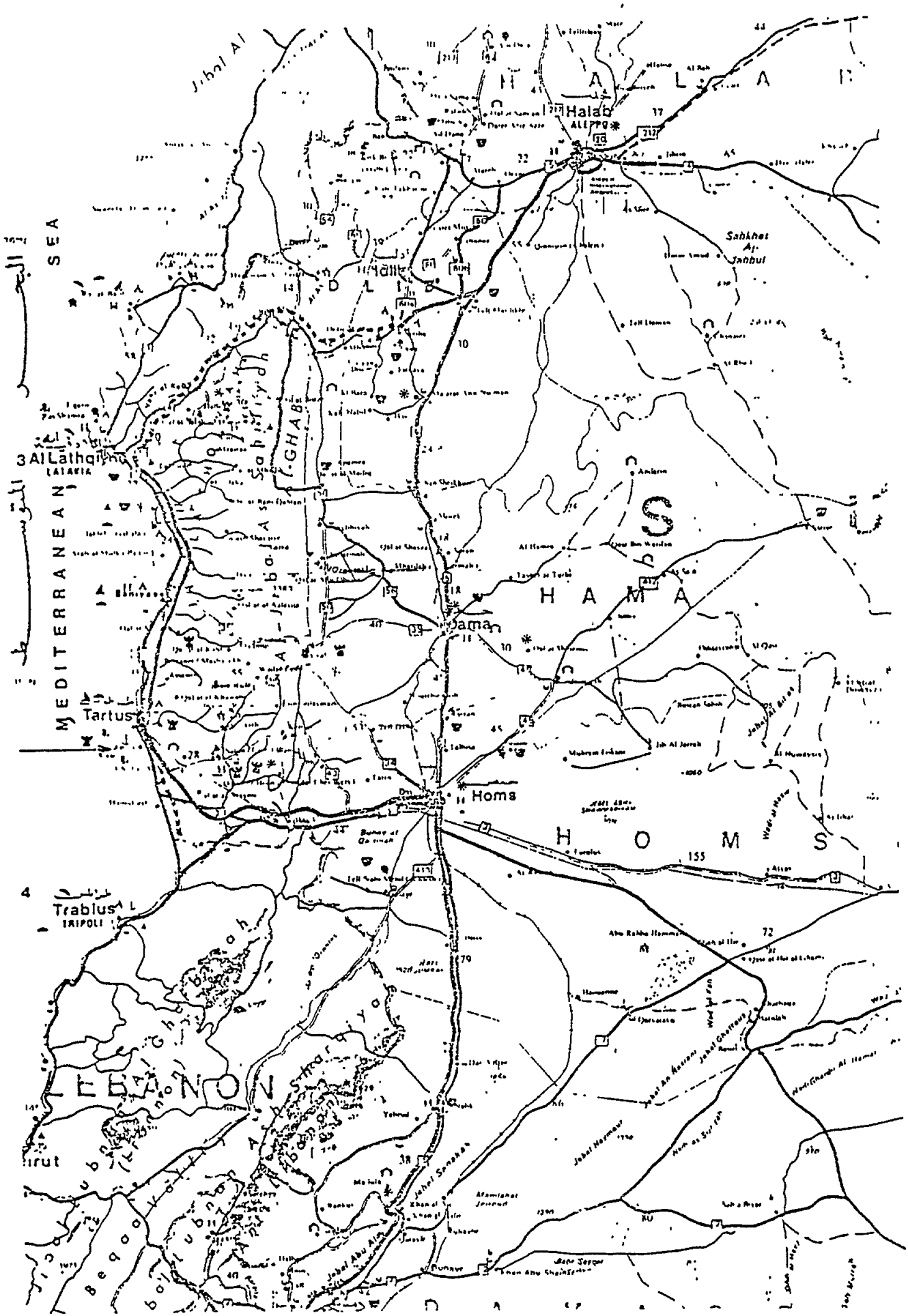


Fig. 2

- 1 HOTEL
- 2 APARTMENT HOTELS
- 3R RESIDENT VILLAGE
- 3G GUEST VILLAGE
- 4 CITADEL
- 5 SPORTS CENTRE
- 6 ENTERTAINMENT AREA
- 7 SEA-WATER SWIMMING POOL
- 8 THE LAKE
- 9 COMMUNITY CENTRE
- 10 BEACH PROMENADE
- 11 RESIDENTS' SWIMMING POOL
- 12 WATER SPORTS CENTRE
- 13 TECHNICAL CENTRE



**FRESH WATER CONSUMPTION: 2,500 m<sup>3</sup>/day**

**WASTE WATER: 1,600 m<sup>3</sup>/day**

**STORM WATER DRAINAGE NETWORK**

**SOLID WASTE DISPOSAL**

**ELECTRICITY SUPPLY**

**LANDSCAPING**

**STAGES OF CONSTRUCTION**

**STAGE ONE:**

**PREPARATORY WORKS**

**STAGE TWO:**

**ARCHITECTURAL,  
INFRASTRUCTURE AND  
LANDSCAPING WORK**

## DESCRIPTION OF THE ENVIRONMENT

### COASTAL PLAIN (THE AKKAR PLAIN)

**VEGETATION COVER:** 25 % CITRUSES  
75 % LOW VEGETATION AND GRASS

**WIND:** NORTHEASTERN TO EASTERN IN WINTER  
SOUTHWESTERN TO SOUTHERN - THE  
REST OF THE YEAR

**PRECIPITATION:** RAINY SEASON: SEPTEMBER-JUNE  
AVERAGE YEARLY PRECIPITATION:  
1,000 mm

**TEMPERATURE:** AVERAGE YEARLY: 10°C

**THE AMRIT ARCHEOLOGICAL SITE (600 BC.)**



## **POSSIBLE IMPACTS**

### **DURING CONSTRUCTION**

- **NOISE**
- **AIR POLLUTION**
- **SOIL, UNDERGROUND WATER AND BEACH POLLUTION**
- **ON NEARBY AGRICULTURAL LAND**

### **DURING OPERATION**

- **VISUAL IMPACTS**
- **LOSS OF AGRICULTURAL LAND**
- **RISK OF BEACH EROSION**
- **POLLUTION OF UNDERGROUND WATER**
- **SEA WATER POLLUTION**
- **POLLUTION OF THE ARTIFICIAL LAKE**
- **AIR POLLUTION**
- **OVER PUMPING OF UNDERGROUND WATER**
- **CHANGES OF THE EXISTING DRAINAGE PATTERNS**
- **IMPACTS ON THE NEARBY SETTLEMENTS**
- **IMPACT ON TRANSPORTATION**
- **IMPACTS ON THE PRESENT AND PLANNED LAND USE**

## **MEASURES TO AVOID, REDUCE AND MITIGATE THE NEGATIVE IMPACTS**

### **MEASURES DURING THE CONSTRUCTION**

- **NOISE REDUCTION**
- **AIR POLLUTION REDUCTION**
- **SOLID WASTE REDUCTION**
- **CONTROL MEASURES FOR WORKERS AND CONTRACTORS**

### **MEASURES DURING THE OPERATION PERIOD**

- **COASTAL EROSION**
- **REMOVAL OF OIL FROM DRAINAGE WATER**
- **WASTE WATER TREATMENT**
- **MEASURES TO REDUCE AIR POLLUTION**
- **PREVENTION OF OVER PUMPING**
- **RATIONAL USE OF FERTILIZERS**
- **MASTER PLAN OF THE WIDER AREA**

## **MONITORING PROGRAMME**

- **UNDERGROUND WATER TABLE LEVEL**
- **QUALITY OF UNDERGROUND WATER**
- **SEA WATER QUALITY**
- **RIVER WATER QUALITY**

ANNEX IX

DEVELOPMENT OF  
GEOGRAPHIC INFORMATION SYSTEM

The most comprehensive of all CAMP activities is the preparation of the Coastal Resources Management Plan (CRMP) since it envisages quite a few outputs and necessitates the collection of quite a number of data, and elaboration of the accompanying thematic documents. To be able to handle this large amount of information, a training programme on the computer-based Geographic Information System (GIS) was initiated. The activity started in September 1990, in an orientative course on GIS.

The training programme on GIS had the following main objectives :

- to install the appropriate hardware-software configuration;
- to implement the training programme for the local GIS team to introduce them to GIS technology and help them master the pcARC/INFO software;
- to create a realistic and manageable GIS database accommodating the modelling capabilities of pcARC/INFO; and
- to provide a basis for the application of GIS on the regional level in support to a part of planning activities within the Resources Management Plan of the Syrian Coastal Zone.

The training programme on GIS was implemented in four phases. The first phase included an orientative course for the organizers of GIS applications in Syria. The course was held in Split, in September 1990, and it lasted two weeks. It covered the basic concepts of GIS and introduced two software products: pcARC/INFO and IDRISI.

The second phase included a basic training course for the local GIS team in Damascus with the practical application of pcARC/INFO. The course was effectuated through two missions. The first mission had the task to install the pcARC/INFO software, release 3.3. These two missions were an introduction to the basic concepts and operations of pcARC/INFO providing the essentials required for a GIS beginner. The main task of the missions was to provide the trainees with basic GIS skills enabling them to conduct their own pilot project.

The third phase (effectuated through another two missions) was dedicated to the establishment of a regional GIS database for the Syrian coastal zone, and to the advanced capabilities of pcARC/INFO. The first of the two missions concentrated on the important aspects of GIS project design covering the basic steps for the creation of a workable GIS database, as well as on the explanation of the problems of data base automation and editing rules using pcARC/INFO. In addition to training, the objective was to develop the basis for a realistic and manageable GIS system for the regional-level planning using pcARC/INFO. The second mission included the installation and presentation of the new commands introduced in pcARC/INFO, release 3.4D, and an advanced training course on the capabilities of Simple Macro Language as a tool for interactive applications.

The fourth phase (the 10th mission) included advanced topics concerning the design and establishment of GIS data bases. This phase of work was effectuated with the support of GRID-Nairobi and was seen as the start of a GIS project for the city of Banyas.

The training of local GIS experts in Syria was performed on personal computers with the software support of the pcARC/INFO package (product of ESRI - Environmental Systems Research Institute, Redlands, USA), the Priority Actions Programme Regional Activity Centre (PAP/RAC) provided, in cooperation with UNEP-GRID and UNITAR-Geneva, the software for educational (non-commercial) purposes, while the Syrian Ministry of Environment and the General Organization for Remote Sensing (GORS) provided the appropriate hardware configuration and met other technical requirements.

The prepared GIS database was grounded on the perception of development environment problems as well as on data availability and quality. It should be noted that the framework for the development of this database was defined in close cooperation of PAP with the local planning team and the GIS team. It, thus, can be viewed as a computer-based geoinformation system designed specifically to meet the needs of planners in the site suitability assessment for coastal zone management and land use planning.

As a part of the training activity, but targeting on the support for the preparation of the Coastal Resources Management Plan, a GIS model was developed of attractiveness for urban/rural growth in the coastal region of Syria. The model contains all major GIS functions. Its application served as a basis for practicing the fundamental GIS spatial operations as well as an illustration of the models of attractiveness which were rather easy to conduct by pcARC/INFO.

Having evaluated the GIS training programmes, it was decided that the local GIS team understood and mastered the basic concepts and elements of pcARC/INFO from both technical and planners' points of view. It was also felt that the GIS activities should be continued aiming to support the preparation of the Integrated Planning Study for the City of Damascus and similar studies for tourist areas on the coast. Also, strengthening of the hardware equipment and properly placing the GIS group within the organizational scheme is considered of great importance.

The main results of the GIS training programme may be summarized as follows:

- A small GIS lab has been set up in the offices of the Ministry of State for Environment. PAP/RAC, in cooperation with GRID-Nairobi and UNITAR-Geneva provided the pcARC/INFO 3.4 software for educational purposes, while the Ministry of State for Environment and GORS provided an appropriate but low-budget hardware configuration and met other technical requirements. At the moment, the improved GIS lab at GORS is equipped with the two 80386-based microcomputers (a 80-Mb hard disk, co-processor, etc.), a small tablet (used as digitizer), a 4-pen plotter and a 24-dot matrix printer. The equipment is suitable for pcARC/INFO and limited GIS analyses, except the digitizer whose small format (A4) makes data input for the selected study area a very tedious work

- Taken as a whole, the GIS training programme enabled an introduction to many related but complex subjects which come together in GIS. The participants in the programme were presented the fundamental concepts in using pcARC/INFO, making possible an objective decision to be made on the system acquisition and implementation. During the training course, 12 trainees from various institutions were able to see the usefulness of the GIS technology for a range of planning applications including information retrieval and mapping, site selection and land suitability analysis involving a routine processing of spatially oriented data. Also they got to know the basic operation of pcARC/INFO and showed great enthusiasm to master them.
  
- Another benefit of the completed activities is related to the establishment of a realistic and manageable GIS database, and user-friendly interface for determining the urban growth attractiveness model. This supplemented the lecture topics on important aspects of a GIS project design and modelling capabilities of pcARC/INFO. It also provided a core of the information system for macro-level GIS applications in support of planning activities, such as those within the context of the Coastal Resources Management Plan

## **GIS DEFINITIONS**

- **A computer system capable of holding and using data describing places on the earth's surface.**
- **An organized collection of computer hardware, software, data and personnel designed to efficiently capture, store, update, manipulate, analyze and display all forms of geographically referenced data.**

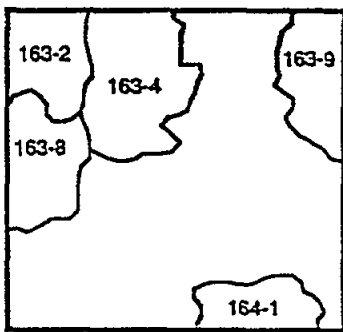
## **BENEFITS OF A GIS**

- **Improved quality of information;**
- **Greater and faster access to data and information;**
- **More efficient information processing;**
- **Informed decisions;**
- **Maps, graphics and reports.**



# what is a geographic information system?

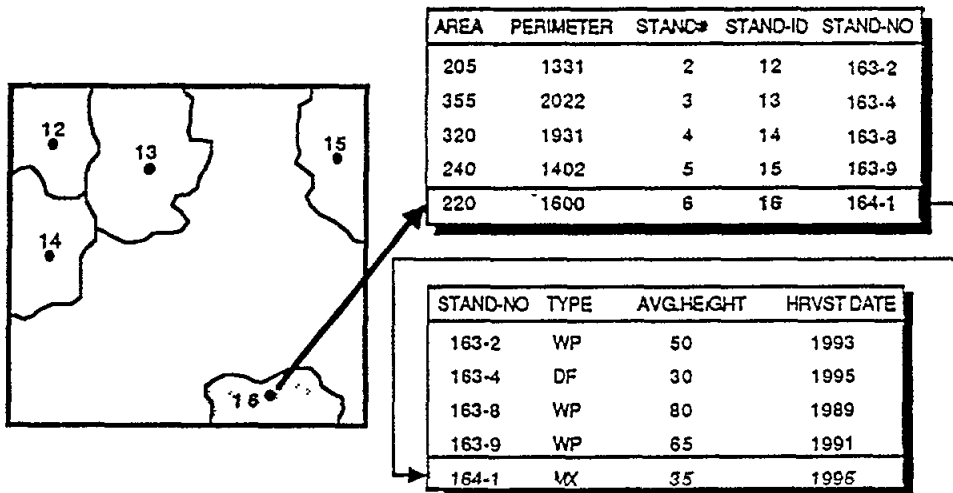
■ maps – graphic data



■ database – tabular data

STAND#	TYPE	AVG.HEIGHT	HRVST.DATE
163-2	WP	50	1993
163-4	DF	30	1995
163-8	WP	80	1989
163-9	WP	65	1991
164-1	MX	35	1996

■ graphic data / tabular data integration



## **four major GIS functions**

### **■ data capture**

- graphic data: digitized, converted from existing data
- attribute data: keyed in, loaded from existing data files

### **■ data storage and manipulation**

- file management
- editing

### **■ data analysis**

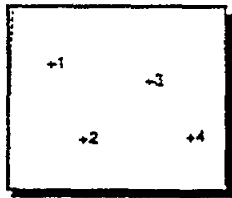
- database query
- spatial analysis
- modeling

### **■ data display**

- maps
- reports

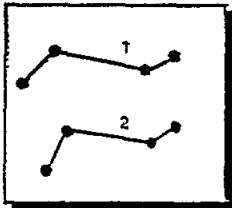
## three basic feature types

- geographic features too small to have area become points



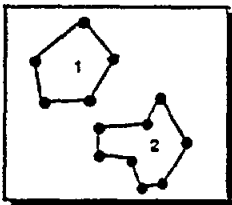
wells  
telephone poles  
archaeological sites

- geographic features having length but too narrow to have area become arcs



streams  
streets  
fault lines

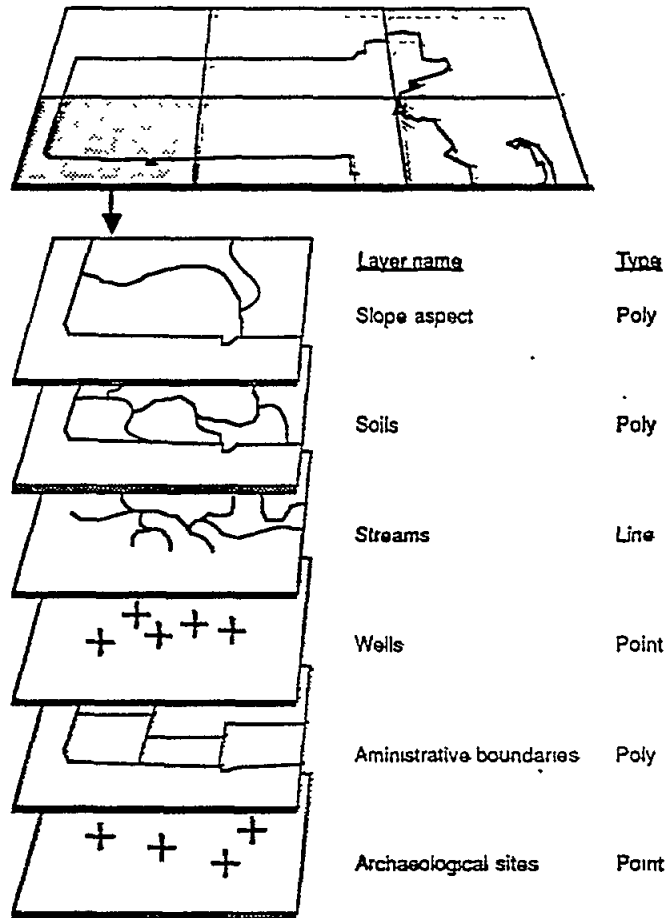
- geographic features having area become polygons



soils  
land use  
waterbodies  
administrative/political boundaries

- each feature is identified by a unique ID

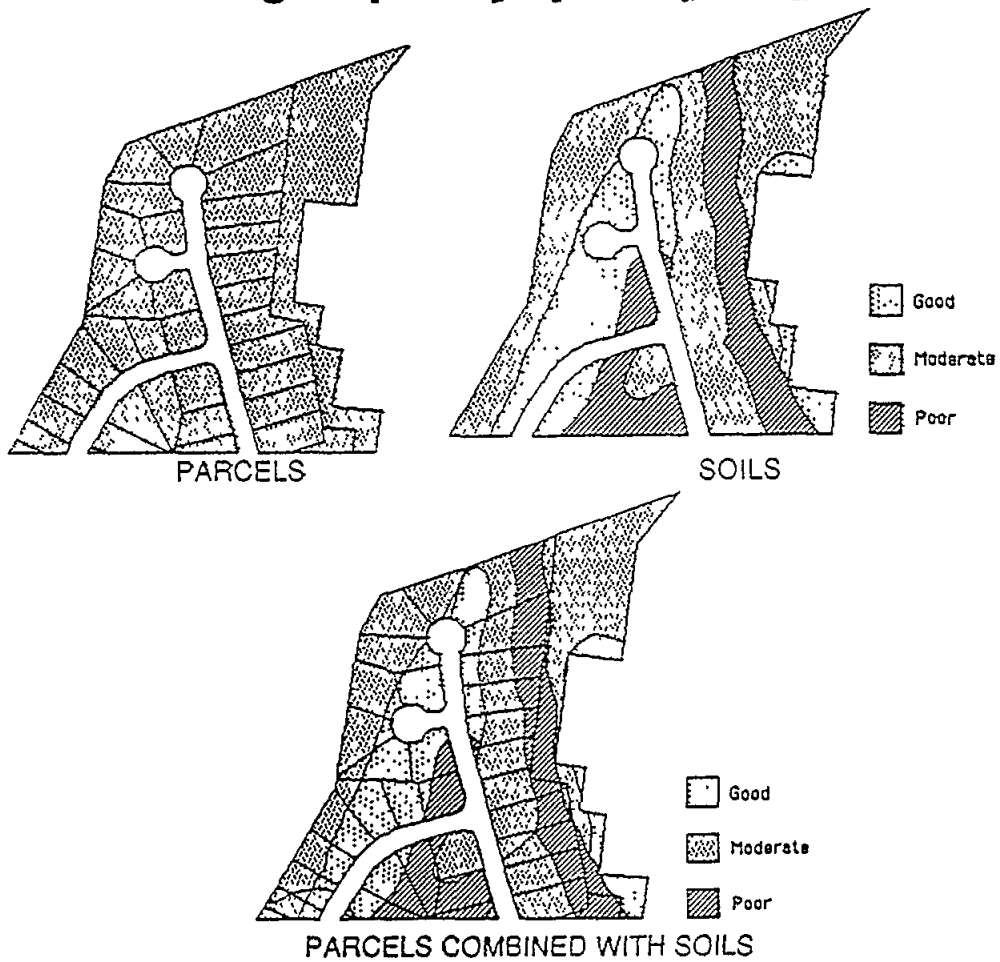
## the layer concept



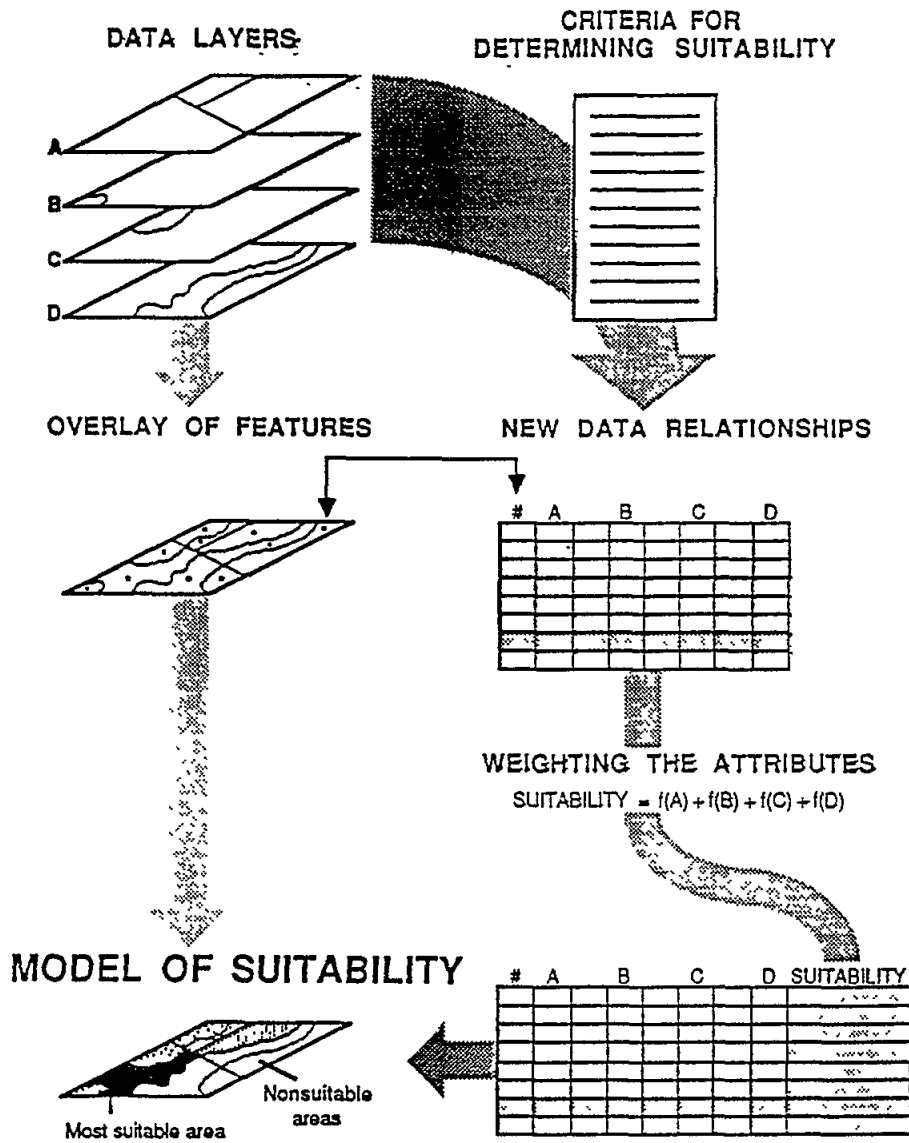
- each feature type for an area is stored in a separate coverage

## overlay maps

- determine relationships between separate coverages
- combine attribute information from two coverages spatially. primary usage: modeling



# modeling



## **STRATEGIES FOR SUCCESSFUL IMPLEMENTATION OF GIS**

- Strong leadership;
- Clear short- and long-term planning;
- Pilot study used;
- Realistic, problem-oriented applications;
- Dedicated and motivated personnel;
- Stable funding;
- Sufficient schedule.

## **GIS COSTS**

- Data - collection and conversion;
- Software - system and applications;
- Personnel - training;
- Hardware - initial and maintenance;

## **OBJECTIVES OF THE GIS TRAINING PROGRAMME**

- To implement the initial phase of training for all members of local GIS team;
- To create GIS database as an example of GIS project design and modelling capabilities of GIS;
- To create a GIS data base and user interface for the macro level GIS application in supporting Coastal Resources Management Plan of the Syrian Coastal Region.

## **ACTIVITIES**

- An orientative two-weeks training course for the organizers of GIS application (Split, 1990);
- First mission (December 1990): an introduction to GIS and PC ARC/INFO;
- Second mission (April 1991): spatial analysis, GIS modelling, definition of the pilot-project;
- Third mission (August 1991): the establishment of the regional GIS data base, a GIS for regional level planning, completion of the GIS data base;
- Fourth mission ( December 1991): advanced GIS and PC ARC/INFO topics, finalization of the GIS database.



## **OUTPUTS OF THE ACTIVITY**

- GIS lab;
- Well trained local GIS team;
- **Regional GIS database for the Syrian Coastal zone** (basemap data, transportation network data, area data, environmental data);
- Model of attractiveness for growth/development in the analyzed coastal zone of Syria;
- Applications, analyses;
- Maps and reports.

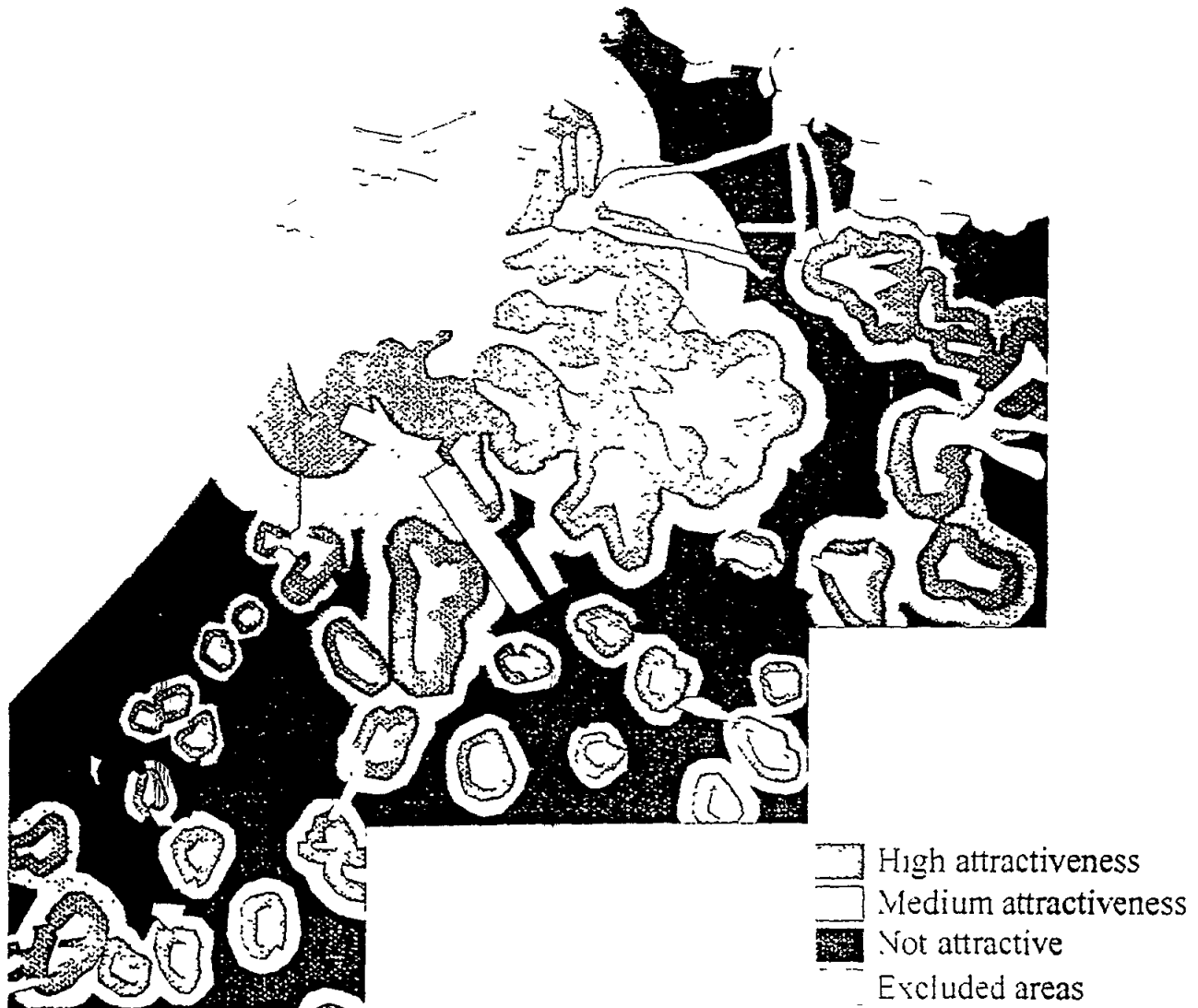
## **CONCLUSIONS AND RECOMMENDATIONS**

- **Local GIS team is well trained and ready for future autonomous work;**
- **The applications developed proved to be practical and applicable decision support tool;**
- **The contents and quality of the GIS databases were satisfactory basis for various applications developed as well as a resource inventory tool.**

## **FOLLOW UP ACTIVITIES**

- **Autonomous work of the local GIS team;**
- **Education in GIS (new experts, local team);**
- **GIS for urban planning (city of Banyas, city of Damascus);**
- **Further work on regional GIS database (environmental and planning applications)**

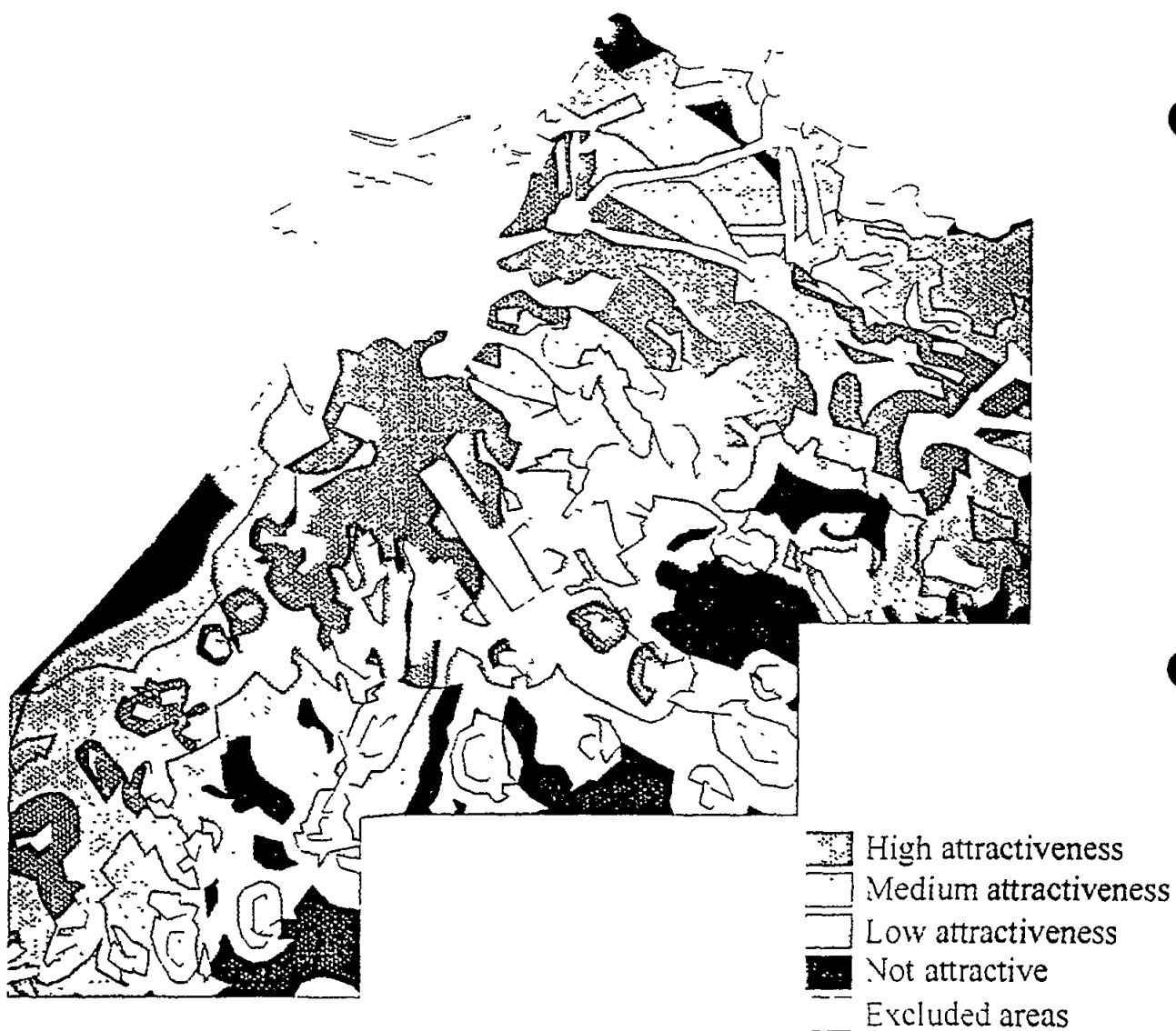
# MAP CAMP, "THE SYRIAN COAST" Model of attractiveness for urban/rural growth in Lattakia province



Distance from settlements

# MAP CAMP "THE SYRIAN COAST"

## Model of attractiveness for urban/rural growth in Lattakia province



Results of the model

ANNEX X

DEVELOPMENT/ENVIRONMENT, SYSTEMIC  
AND PROSPECTIVE APPROACH FOR THE  
SYRIAN COASTAL REGION

The Blue Plan systemic and prospective approach, including preparation of scenarios, intends to highlight the opportunities and conflicts which may arise between development and environmental protection on the Syrian coast in the future.

Its basic position is that future development of the Syrian coast is likely to cause significant environmental effects, if not carefully planned, which are likely to affect the development potential of the Region.

The Syrian Coastal Region has significant advantages at a national and possibly at an international level as well. The former relate to its favorable climate and rich water resources which render it suitable for agriculture and recreation/tourism. The latter stems from the strategic position of the Region as a gate of Syria (and adjacent Arab countries) to the Mediterranean and European markets.

There seem to be four major dimensions or axes of reflection concerning the future of the Syrian Coastal Region:

Geopolitics : As the world economy becomes increasingly interconnected and globalized each country seeks to maximize its linkages with the world markets. Comparative advantages play a significant role in this respect.

Economic growth : The macro-economic factors are important in this context. High growth rates of the past are not likely to continue as the world economy is hit by recession. The recent collapse of Syria's traditional market (Soviet economy) has worsened the situation.

Society : Population pressures are likely to be high although some indications exist suggesting lowering of fertility rates as the population becomes urbanized. Population growth is likely to bring forward unemployment problems.

Environmental quality . Environmental resources are not abundant in the Coastal Region. The beach areas are limited given the size of the country. If developed at the rates of the past decades they will soon become saturated and environmental quality will decline unless substantial investments and efforts would be directed to control urban development. Land resources are not abundant, particularly as agricultural areas should be protected as key national resource. Population pressures will result in urban development and further concentration in the narrow coastal strip or the intermediate hill areas. Water resources, although abundant at present, become increasingly threatened.

Three scenarios, or coherent combinations of options, have been identified. Each scenario has differential impacts on the environment but also in each scenario the environment holds a key role in the future of the Region :

In the case of the trend scenario, conflicts over the use of water and land resources are likely to be the major environmental problems. Particularly the concentration of development in the coastal zone will create significant functional problems (conflicts with agricultural production, congestion, lack of access, overload of infrastructures, etc.). In the intermediate zone development pressures are expected to be high from the expansion of agriculture. Such intensive development is likely to require significant

investments in infrastructure and in efforts -on the part of the administration- to overcome such problems. In view of the generally high pressures and meager resources -financial and other- associated with this scenario, environmental problems will worsen. Water resources could be threatened by sprawling development and overuse. Pollution problems could be worsened as a result of uncontrolled agricultural practice and urban waste.

Land for agriculture most probably will not be effectively protected and will be lost to other uses, Natural areas of interest could be threatened. However one of the most significant problems could be uncontrolled development, mainly on the coast. The degradation of the environment will be the result of unresolved conflicts of use and lack of control. A lower environmental quality is likely to affect in the medium and long term the economic prospects of the Region in agriculture and tourism, eroding its competitive edge.

In the case of the efficiency scenario conflicts over the use of land and water are also likely to be the major issues including pollution. Two areas are most likely to suffer the most, the coastal zone and the intermediate hill area. The anticipated expansion of agriculture and agn-industry, as well of other industries and services, will lead to concentration of population, employment opportunities and activities -all associated with urban development- along the major transport axes and around the large urban centres, in the coast zone and to a lesser extent the hill area. Significant irrigation and dam construction projects should be expected. Pollution and congestion should be expected. Pollution of sea water and drinking water could be serious. Streams could be polluted. Natural areas are likely to be threatened. In the agricultural areas of the coastal zone pressures will be strong for expansion of agriculture intensifying conflicts with other uses (i.e. urban development as discussed earlier). Water supply shortages could be possible, even. Overall significant problems of degradation of the environment are expected due to intensive development and conflicts. Significant efforts will be required to guide and control development, putting tremendous pressures on administrative, financial and social structures. The pace of development could exceed the capacity of local societies to adapt to change. Furthermore, the conflicts over the use of natural resources, the overexploitation of water and land resources and pollution could in the long-term threaten the development of agriculture and tourism and the quality of life in the coastal Region. Prospects for development could be also eroded significantly. In the case of the sustainable development scenario pressures on the environment are likely to be moderated by the slower pace of changes -and associated development- and by strong preventive action in environmental management. Pressures for development are likely to be not only lower but also diffused over geographic space. The coastal zone is expected to face the highest pressures for development, the hill area moderate pressures and the mountain area lower pressures. The rational use of water is likely to prevent excesses in dam construction and careless expansion of irrigation and water supply schemes. Urban development is likely to be contained if not fully controlled. Development could be guided to the urban centres of the coastal zone and the hill area while some development is also likely to be directed - and supported - in the mountain area. The coastal zone is likely to be protected better from encroachment and development. If significant effort is invested

at present in environmental protection and management future problems could be manageable although administrative structures need still to be strengthened.

In summary, environmental impacts are expected under any scenario. These can be mitigated through environmental policy. Significant steps have to be taken at present to anticipate and prevent the possible negative impacts in the future.

The comparative analysis of the scenarios for the Syrian Coast suggests that there are key issues which should be seriously considered at present in order to achieve long-term prosperity in the Region as defined from the perspective of a strategy towards sustainability.

Three issues seem to be of highest priority, a common priority in all scenarios:

- Water resources, mostly rationalizing the expectations through a careful assessment of supply and demand
- Natural habitat areas which are threatened, particularly on the coast through early protection measures
- Urbanization, particularly the uncontrolled sprawl of urban development on the coast, along the major transport axes and in agricultural areas near the large urban centres, through land-use and land development controls.

All these should be approached in a systemic and coherent way through planning and management. The institution of a coastal management programme seems inevitable if the coastal Region of Syria is to attain its potential without eroding its future.



## SYSTEMIC AND PROSPECTIVE ANALYSIS

### SYSTEMIC ANALYSIS BETWEEN:

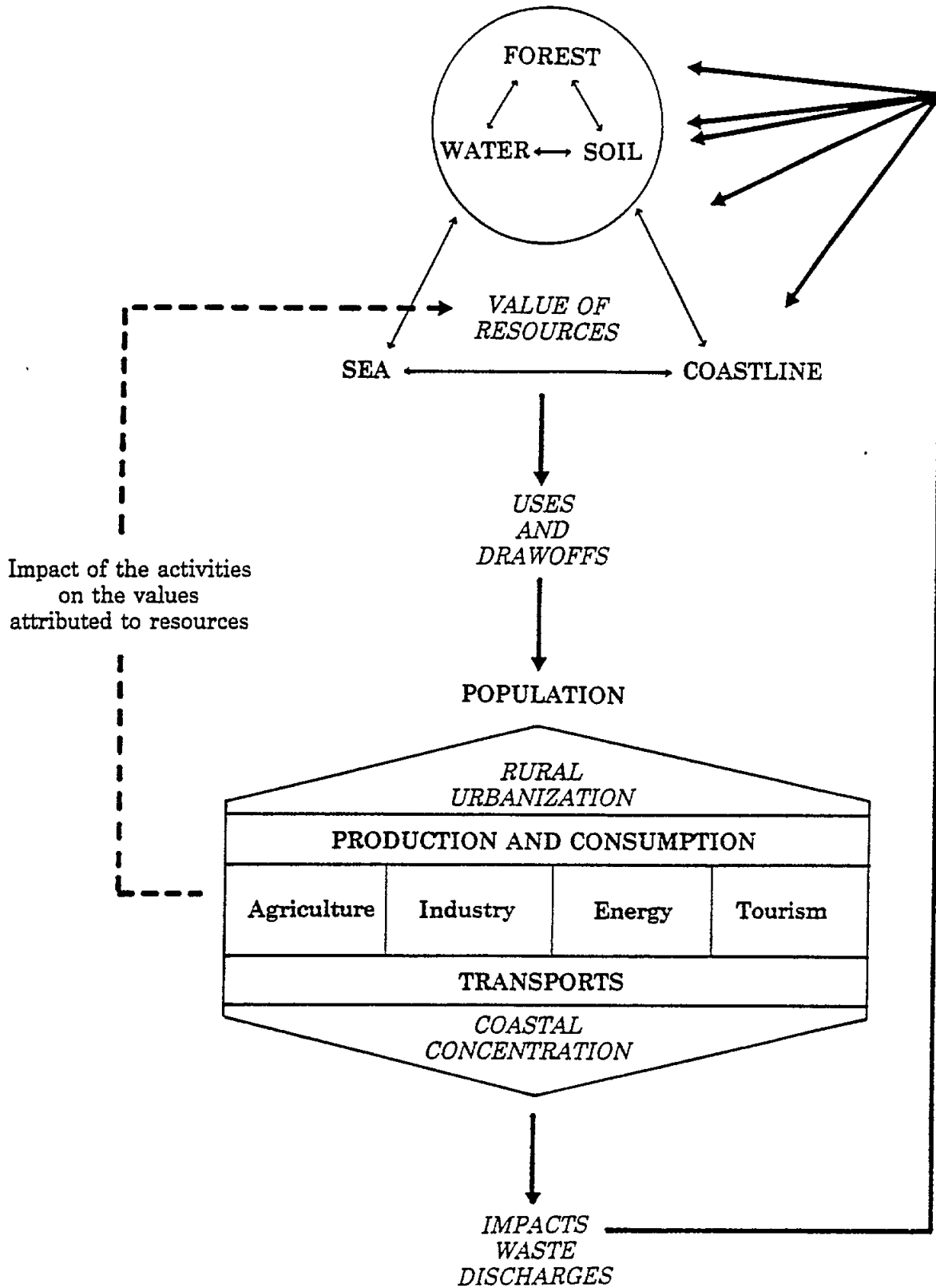
- ECONOMIC ACTIVITIES (AND THEIR IMPACTS ON ENVIRONMENT):

- AGRICULTURE
- INDUSTRY
- ENERGY
- TOURISM
- TRANSPORT
- "URBANISATION"

### AND

- USE AND CONSUMPTION OF ENVIRONMENTAL COMPONENTS (AND THEIR INPUTS ON ECONOMIC ACTIVITIES)

- FORESTS
- SOILS
- WATER RESOURCES
- COASTAL AREAS
- SEA



(Source - Blue Plan)

DIAGRAM OF RELATIONSHIPS BETWEEN ENVIRONMENTAL COMPONENTS AND DEVELOPMENT ACTIVITIES

**SYSTEM**

**AN INTELLECTUAL CONSTRUCTION  
FOR A GIVEN PURPOSE AND CONSTITUTED OF  
CHOSEN ELEMENTS IN  
DYNAMIC INTERACTION**

**IN RELATION WITH PURPOSE**

**( IN OUR CASE TO ANALYSE RELATIONSHIPS  
BETWEEN ECONOMIC DEVELOPMENT  
AND ENVIRONMENTAL IMPACTS )**

**RELEVANT ELEMENTS ARE SELECTED AS**

- KEY DIMENSIONS**
- MAJOR ECONOMIC SECTORS**
- MAIN ENVIRONMENT COMPONENTS**

# SCENARIOS

UNEP(OCA)/MED WG.88/3

Annex X

page 7

**STARTING POINT ( RESULT OF KNOWLEDGE OF SYSTEM )**

**ASSUMPTIONS ( CLEARLY STATED )**

**POSSIBLE PATHS ( WITH CRITICAL POINTS AND DECISIONS )**

**FINAL POSSIBLE IMAGES OR SITUATIONS**

**SCENARIOS MUST BE :**

**CLEAR / TRANSPARENT IN ORDER TO BE UNDERSTOOD BY ALL**

**PROBABLE WHICH DOES NOT EXCLUDE HAZARDS**

**CONSISTENT BOTH INTERNALLY AMONG THEMSELVES AND AT ALL LEVELS**

**RELEVANT IN TERMS OF THE DESIRED OBJECTIVES AND**

**ADEQUATE i.e. SUFFICIENTLY LARGE IN NUMBER TO COVER A WIDE RANGE OF POSSIBLE FUTURES (**

**A SET OF SCENARIOS ) BUT NOT SO MANY AS TO BE REDUNDANT OR PRODUCE MORE COMBINATIONS THAN CAN BE HANDLED.**

**SYSTEMIC AND PROSPECTIVE ANALYSIS-SCENARIOS ELABORATION**

**OBJECT: CLEAR, FOR WHOM - WHY**

**SYSTEM UNDERSTANDING**

**MAPPING - VARIABLES - ACTORS/DECISION MAKERS**

**CONSTRAINTS - TRENDS -PROCESSES**

**PROSPECTIVE**

**HYPOTHESIS**

**DEVELOPMENT PATHS**

**CONFLICT ZONES AND BREAKING POINTS**

**FUTURE IMAGES - SCENARIOS**

A SERIES OF HYPOTHESES (SOCIAL, ECONOMIC, POLITICAL) ARE REQUIRED FOR SCENARIOS PREPARATION. THEY ARE BASED ON SOME DIMENSIONS WHICH ARE:

- FOR THE MEDITERRANEAN BASIN:
  - INTERNATIONAL ECONOMIC SITUATION
  - DEMOGRAPHY AND MIGRATION
  - NATIONAL DEVELOPMENT STRATEGIES
  - LAND USE MANAGEMENT AND POLICY
  - ENVIRONMENTAL POLICY

AND

- FOR THE SYRIAN COASTAL REGION:
  - GEOPOLITICS
  - ECONOMIC GROWTH
  - DEMOGRAPHY AND SOCIETY
  - ENVIRONMENTAL POLICY

## SCENARIOS

### FOR THE MEDITERRANEAN:

#### TREND SCENARIOS:

- REFERENCE ONE (WITH CONTINUATION OF PRESENT TRENDS)
- DEVELOPMENT WITH WEAK ECONOMIC GROWTH
- DEVELOPMENT WITH RAPID GROWTH

#### ALTERNATIVE SCENARIOS:

BASED ON COOPERATION BETWEEN COUNTRIES AND MORE CONCERN ABOUT ENVIRONMENT

- REFERENCE ALTERNATIVE : NORTH-SOUTH COOPERATION
- INTEGRATION ALTERNATIVE : NORTH-SOUTH AND SOUTH-SOUTH COOPERATION

### FOR THE SYRIAN COAST:

#### TREND SCENARIOS:

- REFERENCE
- EFFICIENCY

#### ALTERNATIVE:

- SUSTAINABLE DEVELOPMENT

ANY SUSTAINABLE DEVELOPMENT SCENARIOS OR EVEN PLAN SHOULD TAKE CARE AND INTEGRATE THE FOLLOWING:

- WATER RESOURCES
- NATURAL HABITATS AND RESOURCES
- URBANIZATION
- L A S T B U T N O T L E A S T ,  
MULTIDISCIPLINARY WORK BETWEEN  
SECTORS, CENTRAL AND REGIONAL  
AUTHORITIES, SOCIAL, ECONOMIC AND  
POLITICAL DECISION MAKERS

THE SYSTEMIC AND PROSPECTIVE ANALYSIS IS A TOOL TO ASSIST CONCERNED PERSONS IN TAKING THE RIGHT DECISION TO BUILD UP A SUSTAINABLE DEVELOPMENT.



**CONSIDERED AS AN IMPORTANT DECISION MAKING TOOL, THE SYSTEMIC AND PROSPECTIVE APPROACH, WHEN APPLIED TO COASTAL REGIONS, IS MAINLY INTENDED TO ASSIST CONCERNED LEADERS IN:**

- ANALYSIS OF THE DEVELOPMENT/ENVIRONMENT RELATIONSHIPS;
- IDENTIFICATION OF KEY ACTORS/DECISION-MAKERS, ACTUAL AND POTENTIAL;
- IDENTIFICATION OF CONFLICTING ZONES, MAINLY THAT OF RESOURCE USE, AND BREAKING POINTS;
- IDENTIFICATION OF KEY INDICATORS SO AS TO DEFINE NATIONAL/LOCAL AND SECTORIAL EVOLUTION AND TRENDS; AND
- ELABORATION OF DEVELOPMENT/ENVIRONMENT SCENARIOS.

**THE USEFULNESS OF SUCH AN EXERCISE IS TO ENABLE, AND THEN TO GET DECISION-MAKERS USED TO:**

- THINKING IN A SYSTEMIC WAY AND WORK IN MULTIDISCIPLINARY TEAMS;
- CONSIDER AND ANALYSE THE KEY ACTORS' STRATEGIES;
- IDENTIFY FORESEEABLE OBSTACLES/DANGERS FOR A SUSTAINABLE DEVELOPMENT AND EXPLORE POSSIBLE COURSE OF ACTION;
- ESTABLISH LONG TERM TRENDS AND ALTERNATIVE EVOLUTION; AND
- ELABORATE FUTURE IMAGES AS STRATEGIC FRAMEWORKS FOR PLANNING.

ANNEX XI

CONCLUSIONS AND RECOMMENDATIONS

The work on the development and implementation of this CAMP has been extremely useful exercise. This work improved considerably capabilities of Syrian institutions responsible for various aspects of coastal zone management. Institutions which were involved are now capable of continuing the work on their own in the coastal region as well as in other regions of Syria.

Sustainable development necessitates the management of the natural resources to meet the immediate needs of the present population and the requirements of the future generations without in any way endangering the environment. Sustainable development is a continuous process which should be implemented within the international and national policies, and should be emphasised to secure the food, environmental and economic security.

There is a serious need for the environmental integrated planning which integrates between the environmental and the developmental issues. Thus planning has to be oriented towards the integration approach, rather than sectoral development.

For effective planning and development in the coastal regions, the required information should be complete and accurate. This will give a concrete base for the future integrated planning and will give the chance for the decision makers to arrive for suitable policies and measures

The establishment of the national research centres and the data-base bank is one of the major and essential steps towards the achievement of integrated and sustainable development and planning.

Mass education and public awareness are important tools which contribute in bringing up environmental care and education.

The international, regional and national cooperation and coordination in the sustainable development and integrated planning activities should be encouraged with the aim of environmental protection and natural resources conservation.

Controlling the land use, sea use and natural resources exploitation, and pollution monitoring along the sea shore are main strategies of the integrated planning and resources management in the coastal areas.

Use of the rapid development in technology (such as computers and information processing, remote sensing data, etc.) to support the sustainable development and integrated planning should be encouraged.

Expertise exchange, pilot projects, equipment and training of national specialists are essential issues in introducing the concept of the integrated environmental planning.