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SPECIAL ISSUE
TUNISIA DOSSIER



THE TENTH MEETING OF CONTRACTING PARTIES

- Special double issue:
- 3** From the Death of Cousteau to Rio + 5 and Tunis
- Preparing for the Tenth Ordinary meeting of Contracting Parties: all routes converge on Tunis**
- 4** **The Strategic Actions Programme Route:**
from Ischia (Italy) to Glyfada (Greece)
- 5** **The MED POL Route:**
the programme for phase III is examined
- 6** **The Biodiversity Route:**
the inventory criteria are reviewed in Athens
- 7** **The Legal Route:** liability and compensation for damage in Brijuni (Croatia)
- 8** **The MCS D Route:** from Palma de Majorca to Sophia Antipolis, the initial conclusions of the short-term thematic groups
- 10** **The Tenth Ordinary meeting of the Contracting Parties in La Marsa/Tunis**

MAP in brief:

- 13** **Echoes from the Regional Activity Centres**
- 14** **Echoes from the Coastal Areas Management Programmes**
- 15** **Publications**
MAP Publications
Books-Reviews

TUNISIA DOSSIER

- 17** **Tunisia:**
opting for openness and cooperation
- 18** **Interview with Mr. Mlika,**
Tunisian Minister for the Environment
- 20** **Country Profile**
- 21** **The Legal and Institutional Framework**
- 22** **The Coastline:** from degradation to restoration
- 24** **Combating Industrial Pollution**
- 25** **The Water Problem**
(the Blue Plan contribution)
- 26** **Combating Desertification**
- 27** **Curbing Non-regulated Housing in Tunisia**
- 28** **Protecting an outstanding site:**
Ichkeul National Park
- 29** **International Cooperation**
- 30** **Two contributions by NGOs:**
APNEK and Greenpeace
- 31** **Sources-References**

Meeting of government experts to examine and approve the SAP implementation project so that it can be forwarded for GEF financing

22-23 january 1998

Athens, Greece

Meeting of the MED Unit and Directors of the Regional Centres

3-4 february

Athens, Greece

Meeting of MCS D Task Managers

5 february 1998

Athens, Greece

Workshop on Caulerpa taxifolia

18-20 march 1998

Heraklion, Crete, Greece

Meeting of the Bureau of Contracting Parties

23-24 march 1998

Tunis

WHAT IS MAP ?

The Mediterranean Action Plan (MAP) strives to protect the environment and to foster development of the Mediterranean Basin. It was adopted in Barcelona (Spain) in 1975 by Mediterranean states and the EC, under the auspices of the United Nations Environment Programme (UNEP). Its legal framework is made up of the Barcelona Convention (1976, revised in 1995) and six Protocols covering certain specific aspects of environmental protection. The Action Plan is built up around an Athens-based Coordinating Unit, six Regional Activity Centres scattered around the whole of the Mediterranean, and a MED POL Programme on pollution monitoring and control. The Mediterranean states and the EU meet every two years to decide on MAP's budget and programme.

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To consult the MAP Homepage:

[Http://www.unep.org/unep/regoffs/medu/home.htm](http://www.unep.org/unep/regoffs/medu/home.htm)

Cover page: adaptation of a poster published by the Tunisian Ministry of the Environment sponsored by MAP/UNEP/UNDP



From the death of Cousteau to "Rio plus 5" and Tunis

This special double issue of Medwaves revives a practice first introduced after the Seventh meeting of Contracting Parties held in Cairo in 1991, under which a whole issue is devoted to the meeting's host country. Just as special editions were published for Egypt (no. 24) and Turkey (no. 29), this time round the reader will find an overview of the main environmental problems facing Tunisia, following the Tenth meeting held in La Marsa from 18-21 November 1997. Since these bumper editions necessarily cover two terms, this one also includes a run-down of the numerous meetings in which MAP was involved over this time as it prepared the ground for the Tenth ordinary meeting, beginning with the Strategic Actions Programme tackled in Ischia in May, and stretching as far as the third meeting of the MCSD in October in Sophia Antipolis. For the sake of clarity, activities have been split up into five headings: SAP, MED POL, legal issues, biodiversity and MCSD, all converging on the Tunis Tenth ordinary meeting. As one of MAP's two-yearly decision-taking instances, this meeting provided an opportunity to take stock of the past term, but also to turn a new page with the adoption of the draft budget for 1998-1999, the last term of themillennium.

Two symbolic events which created waves beyond the Mediterranean occurred within a short space of time during this period: on June 5th Jacques-Yves Cousteau passed away at 86 years of age; three weeks later the second Earth Summit opened in New York.. The first of these two events marks the end of an era which basically corresponded to the dawning of environmental awareness. It began quietly during the sixties, before being officially recognised at the Stockholm Conference of 1972 and finally being heralded in during the first Earth Summit held in Rio in 1992. The second event somehow seems to bear witness to our inability to actually express this consciousness in more practical form.

It has all been said about Cousteau. A naval officer who co-invented the aqualung in 1943, he will be remembered first and foremost as the author of 50 books and more than a hundred cinema and television films depicting the "silent world". The "chap in the red cap" was one of the first people to understand the power of fascination of the new media and the teaching channels which they opened up to disciplines such as oceanography and underwater archaeology, very quickly finding world-wide success which never waned in forty years. With Calypso and her crew he netted the ocean's secrets and brought them into our homes, gradually imbuing us with the idea of an Earth

of which we are the guardians for future generations. Although his media coups and his predictions (e.g. his "death certificate" for the Mediterranean) sometimes irked the scientific community, no-one would deny his place as one of the pioneers of the ecology movement- and how! This "Captain Planet" who was on first name terms with the heads of State and government at the Rio summit where he spearheaded the crusade for sustainable development was truly a "Mediterranean of the world".

It has apparently all been said about "Rio plus 5" too. "Let-down", "fiasco", a "spineless final declaration", this pitiless verdict was splashed over all the newspapers. Even the Chairman of the summit, Mr. Ismail Razali, stated bluntly: *"For five years we have done nothing more than simply lament our incompetence and our inability to actually do anything"*. Now, on careful reading the final declaration does include certain positive points which the press as a whole did not find worthy of mention. This, along with the success, albeit relative, of the Kyoto conference on climate change in December has helped to dispel a little of the reigning pessimism. When we assess the five years which separate us from Rio we also have a tendency to overlook many important if less spectacular aspects: the fact that virtually all the socio-economic operators have espoused the cause of sustainable development and the environment; the catching-on of eco-labelling and selective sorting; the fact that the place of the car in our towns and cities is now seriously being discussed; the promotion across-the-board of the precautionary principle; the success of regional parks and protected areas; and the acceptance of the major role played by the NGOs which is often recognised at institutional level. Maybe we also sometimes overlook the fact that new forms of solidarity - international, regional, or even national- cannot simply be laid down by law. Thus, this stage of disillusionment could provide the opportunity for an in-depth re-assessment. Many developed or developing countries are tied up with their economic policies which are often diametrically opposed, and which only leave them with limited room for manoeuvre, and for them direct domestic issues such as atmospheric pollution, waste disposal, and drinking water resources take precedence over more global concerns such as the hole in the ozone layer, the greenhouse effect or the fate of the world's forests. Only gradually, once they have solved their most pressing problems, will they be able to envisage more far-reaching forms of solidarity. Helping them to tackle these concerns- as is proposed, for example, by the strategic action programme recently adopted by the Mediterranean states in Tunis- will help them to step into the 21st century "which will be ecological or maybe not", as Cousteau used to say. ■

Medwaves

THE STRATEGIC ACTION PROGRAMME ROUTE:

FROM ISCHIA (ITALY) TO GLYFADA (GREECE)

FIRST MEETING
OF GOVERNMENT-DESIGNATED
EXPERTS:

THE STRATEGIC ACTION PROGRAMME GETS THE FINE TOOTH-COMB TREATMENT

Ischia, 15-18 June 1997

At the invitation of Italy, the second stage of the GEF project for which MAP is responsible (see last edition) was organised on the island of Ischia in the Bay of Naples. The Italian government entrusted an NGO, the Fondo Mediterraneo, with the organisation of the meeting, with the support of the Region of Campania, the Province of Naples and the Banco di Napoli. Seventeen Mediterranean countries and the EC were represented along with the WHO, UNIDO, the World Bank and 6 NGOs. On the menu was the examination of the various documents drawn up under the grant which GEF extended to MAP in 1996 on the basis of a well-substantiated proposal, aiming at speeding up the fight against pollution in the Mediterranean. Given the tight deadline set for the project (less than a year until the Conference of Donors), the MAP Secretariat wanted to have early consultations with governments in order to hear their "spontaneous impressions and comments".

A collection of documents was put to the delegates, of which four made up the project's "informative platform": a "Transboundary Diagnostic Analysis", summing-up all the pollution-related problems in the Mediterranean, a "Report on Pollution 'Hot Spots'", drawn up by WHO's office within the Athens Unit on the basis of the national reports which 19 countries submitted specifically for this purpose, draft "Guidelines for the Deve-

lopment of National Action Plans", and an "Investment Portfolio Framework", a preliminary and indicative assessment of the cost of pollution elimination measures for the attention of donors and decision-takers in the region. The fourth document, the "Strategic Action Programme" (SAP) was in a sense the "operational culmination" of the previous ones, establishing the practical action to be taken, as well as the timetable. It was to go before the Tunis inter-governmental meeting in November 1997 for adoption.

Participants therefore concentrated particularly on this document. Many comments and suggestions were aired: too much emphasis given to general and background information, the need to focus more clearly on priorities and concrete action, and for better coverage of agriculture and eutrophication, as well as the establishment at national level of pollutant and release transfer registers.

It was also made clear that the inter-action between the SAP and national programmes was an important aspect requiring clarification, and that precise dates and reduction targets should not be established in the absence of prior agreement on the baseline, and without taking account of the situation in each country. Concluding, the Secretariat of MAP said that the documents would be revised in the light of discussions.

SECOND MEETING OF EXPERTS:

THE SAP IS FINE-TUNED AND RECOMMENDED FOR ADOPTION AT THE TUNIS MEETING

*Glyfada (Athens),
12-13 October 1997*

The second meeting was held in

the presence of Mr. Pernetta, Programme Officer in the UNEP/GEF Co-ordinating Unit in Nairobi, who gave an introduction to the GEF and how it works. He made the point that before any GEF grant is approved, governments have to make certain commitments at national level: the GEF does not finance any project without the country's approval. The government experts thus gained a clearer insight into the conditions under which GEF will support the specific Mediterranean project under scrutiny, and in particular the links between the SAP and the TDA (Transboundary Diagnostic Analysis), with the latter in a sense serving to justify the former. It was, however, the bulk and scope of the TDA which proved problematic. It was drafted in record time- just a few months- and contained flaws and mistakes. The meeting therefore agreed that the TDA was in need of a serious overhaul, that it should be seen as an "evolving document" of "variable geometry" which need not be necessarily applied in full in each Mediterranean country, and which would be permanently up-dated. Since approval would be a gamble under these circumstances it was decided that a summary in the form of a single table showing the region's main problems with the proposed solutions would be added to the introductory part of the SAP. The actual document would then go to Tunis for information rather than adoption.

Apart from that, the delegates worked on improving SAP's wording, as witness the many points discussed by the experts and the Spanish consultant in charge of the document, Mr. Ross, and their lengthy semantic arguments, particularly on the equivalence of certain key environmental terms in English and French. They were keen to stress that the SAP should be seen as a follow-up to and consolidation of action taken within the MED POL context, that the list of toxic substances should be extended and that deadlines and financial indications for the different activities should remain in

...

the introduction. They did stress, however, that this was an unprecedented attempt, and one which was very useful in terms of providing a clear overview of what needed to be done in the region.

As Mr.Civili, the Officer responsible for the SAP project within MAP recalled in concluding the meeting, the project would be submitted to the Tunis meeting a month later for adoption on the basis of Articles 5, 6 and 7 of the LBS Protocol at present in force. Once the new revised Protocol came into force, the procedures for the adoption and implementation of the SAP under Article 15 of the revised Protocol would immediately be set in motion.

THE MED POL ROUTE:

THE MAIN LINES OF THE PROGRAMME FOR MONITORING AND CONTROL OF POLLUTION IN THE MEDITERRANEAN ARE APPROVED

Delphi (Greece), 20-23 May 1997

This meeting was of special significance for MAP's activities since it was the first time since the adoption of MAP II and the revision of the Dumping and LBS Protocols that National MED POL Coordinators were meeting to approve new activities and programmes corresponding to the wider objectives. As the Coordinator, Mr.L.Chabason, recalled on opening the meeting, MED POL was now called upon to focus on the aspect of "pollution control". The imposing site of Delphi- which in the past has faced, vigorously opposed and fought off the threat of industrial development- clearly conjured up in participants' minds an image of the Mediterranean which they must strive to preserve.

Implementation of Phase III

Mr.F.S.Civili, MED POL Coordinator within MAP, confirmed this approach when he introduced the priority lines of work proposed for Phase III, which were decided upon in the light of the bottlenecks and weaknesses encountered under Phase II. Emphasis is now being placed on action-oriented management, in other words, pollution control. To this end, two new forms of operational monitoring were proposed. Mr.Gabrielides, the Programme Officer, introduced the "Regional Site-Specific Temporal Trend Monitoring Programme" which will be implemented in a small number of stations using a common methodology based largely on statistical analysis. The "site-specific" aspect is important since it will make it possible to check the effectiveness of measures taken (such as the installation of a sewage treatment plant) in particular areas of the Mediterranean. The point was not, however, as some delegates feared, to force the finer details of the programme onto any old country. Everything would work on the basis of consultation. This is an unprecedented approach in the Mediterranean and one which should allow the Secretariat to ascertain whether its anti-pollution measures are really effective. As for "Compliance Monitoring", this was introduced by Mr.G.Kamizoulis, the WHO Senior Scientist in MAP. Its ultimate aim would be to carry out attainability analyses to help countries decide whether a water body was suitable for a particular use, evaluating the information collected from the water body survey. As this compliance monitoring progressed any gaps in national legislation would become clear and appropriate measures could be adopted.

Priority points

The Delphi discussions provided participants with an opportunity to assess and highlight the main tenets of MED POL: bio-monitoring for understanding the stress exerted on organisms and thereby improving knowledge of the health of the marine environment, monitoring of data quality, and targeted research (with one or more laboratories being chosen for each subject area, then put into contact with a corresponding laboratory in a more developed country to work in a longer term perspective). The importance of remote sensing was underscored by the representative of the European Community and also of the ERS/RAC in Palermo, who, as a complement to the discussions, explained the various types of satellite and showed their usefulness through citing concrete examples. With regard to inspection planned within the framework of compliance monitoring, many experts stressed the importance of a voluntary and gradual approach of the "eco-auditing" type such as the one set up by the European Union which has already been adopted by thousands of industrial companies: they undertake to inspect their entire production processes themselves, from the supply of raw materials to the finished product.

Finally, participants were able to look at the state of implementation of the different Protocols to the Convention which directly concern MED POL: "LBS", "Dumping", and "Hazardous Waste". At the end of the meeting a set of recommendations was adopted and annexed to the report. They were to be included in the draft budget to go before the Tenth Ordinary Meeting in Tunis in November 1997 for adoption by the Contracting Parties. ■

THE BIODIVERSITY: ROUTE

ELEMENTS OF BIOLOGICAL DIVERSITY
IN THE MEDITERRANEAN REGION:

THE CRITERIA FOR PREPARING INVENTORIES ARE REVIEWED

Athens, Greece,
8-10 September 1997:

Experts from 17 Mediterranean countries and the EEC met in the MAP premises in Athens to go through the draft criteria for preparing the inventories on elements of biological diversity. There were also observers from four inter-governmental organisations and four NGOs. Biodiversity, and more specifically these inventories, are mentioned by the two new instruments drawn-up under the revision of the Barcelona system: MAP II and the new Protocol on Specially Protected Areas (SPAs) and Biodiversity. Both of these were adopted in June 1995 in Barcelona, the

latter then being completed by three annexes adopted in Monaco in November 1996. The Tunis-based Regional Activity Centre for SPAs which is responsible for the implementation of the SPA Protocol played a key role in the preparation for this meeting, setting-up a working group to draft the criteria. It also acted as secretariat for the Athens meeting. Its Director, Mr.Saied, pointed out that the need for comparability and regional integration of data on biological diversity was what lay behind the need to work out criteria common to all countries. Participants looked at the inventories/lists of elements of biological biodiversity which already exist in the Mediterranean region, and the experts from the organisations gave a brief run-down of what initiatives they have taken in this field. The majority of participants felt that, to get priorities right, work should start on habitats and threatened species, before moving to other elements of biodiversity. Simplicity

should be the key, along with compatibility with other current activities, particularly the Natura 2000 and Emerald networks which have been set up by the European Union and the Bern Convention, respectively. An informal working party which was set up by the meeting to study the criteria to be used for site assessment proposed a re-worked version of the relevant document. As a result of discussions the draft criteria for preparation of national inventories of natural sites of conservation interest were revised. For the inventories of endangered or threatened species, the experts agreed to provisionally apply the criteria used as a basis for drawing up the lists of species annexed to the SPA Protocol, and to contact the IUCN to see how its criteria can be applied and, if necessary, adapted to the Mediterranean. The finished criteria were to be submitted to the Tunis intergovernmental meeting (November 1997) for examination and approval. ■

THE LEGAL ROUTE:

LIABILITY AND COMPENSATION:

TOWARDS A LEGAL INSTRUMENT APPLICABLE TO THE MEDITERRANEAN?

Brijuni, Croatia, 23-25 September 1996

Legal and technical experts representing 15 Mediterranean countries and the EEC met in Brijuni, Croatia, to look into the possibility of a new legal instrument to establish a procedure for determining liability and compensation for damage resulting from pollution of the marine and coastal environment in the Mediterranean. In a sense, this would be implementing the "polluter pays" principle stipulated by Article 10 of the Barcelona Convention.



The rostrum of the Brijuna meeting: from left to right, Mr.T.Kupusovic, Rapporteur (Bosnia and Herzegovina), Mr.E.Raftopoulos, MAP's legal advisor, Mr.T.Scovazzi, Chairman (Italy), Mrs.M.Markorcic Kostelac, vice chairperson (Croatia) and Mr.L.Chabason, MAP Coordinator.

This meeting can be seen as a first positive step on a particularly long and laborious path for MAP. Back in 1978, in other words at the very start of the Action Plan, the Mediterranean states and the EC, having perused a UNEP document on an "Inter-state Guarantee Fund for the Mediterranean and the question of Liability and Compensation for Damage resulting from Pollution", felt that, given the complexity of the questions raised, it would be better to put them to a committee of experts for a more in-depth examination. The

Cannes inter-governmental meeting in March 1981 confirmed this opinion. Finally, with two delegations having tabled reservations, the committee never came to anything and this important aspect of the Barcelona Convention (see inset) was shelved. In 1991 when he stepped down as MAP Coordinator, Mr.Aldo Manos admitted to Medwaves (No.22) that one of his greatest regrets was seeing the Mediterranean deadlock on this issue. It took another five years (Ninth meeting in Barcelona, 1995) before

Mediterranean states and the EC reopened this dossier and invited the Secretariat to call a meeting of experts.

The Brijuni meeting was called upon to examine a draft of "Appropriate Rules and Procedures for the Determination of Liability and Compensation resulting from Pollution of the Marine Environment in the Mediterranean Sea Area", which was drafted by the Secretariat with the assistance of MAP's legal adviser, Mr.E.Raftopoulos. As Mr.L.Chabason, MAP Coordinator, stressed on opening the meeting, it was first and foremost of an exploratory nature. Without going into the details of what was obviously a very technical legal discussion, during which diverging opinions were voiced, let it be said that the majority of participants favoured a new protocol (more binding) rather than an annex to the Convention, felt that duplication of other existing international provisions (such as those of the Lugano Convention) should be avoided, and that the planned system should not apply to the hazardous activities specifically listed. The content of the report would go to the Contracting Parties at their Tenth meeting in Tunis in November 1997: having noted the conclusions of the Brijuni meeting, they requested the Secretariat to continue to collect data on international level experience built up in this field and to hold a second technical and legal experts' meeting in order to identify pertinent innovative approaches to the formulation of rules and procedures which could be directly applicable to the region. We will, therefore, have to await the second meeting before we know whether or not the "polluter pays" principle has matured sufficiently for it to be actually applied at regional level. In any case, all the experts meeting in Brijuni felt that insurers and qualified NGOs should be involved in working out this new legal process. ■

What does the Barcelona convention stipulate?

Article 12 of the 1976 Barcelona Convention which is still in force stipulates that "The Contracting Parties undertake to cooperate as soon as possible in the formulation and adoption of appropriate procedures for the determination of liability and compensation for damage resulting from the pollution of the marine environment deriving from violations of the provisions of this Convention and applicable protocols." This provision, which has become Article 16 in the revised Convention of 1995 (not as yet in force) has been amended in two places. The words "as soon as possible" have been deleted, and rightly so: twenty years after the adoption of the Convention they had lost a lot of their "oomph"! The terms "deriving from violations of the provisions of this Convention and applicable protocols" have also disappeared, giving much broader scope to this commitment now free of legal restrictions. Taking Article 16 of the revised Convention (which is due to replace the 1976 Convention in the near future in any case) as the basis for its discussions, the Brijuni meeting favoured a stricter system based on "**strict liability**" under which - **unlike fault-based liability** - there is no requirement to prove that the person who caused the damage infringed the provisions in force. It is enough to show that his actions actually caused the damage, without getting into lengthy legal discussions and procedures.



The Brijuni archipelago

In the context of the Brijuni meeting:

CROATIA AND MAP

The Brijuni meeting was a "first" in the relations between this country and MAP since the break-up of ex-Yugoslavia, and recognition of the Republic of Croatia. Far from marking a starting point, however, it was rather the consecration of the very close ties which were created at the birth of the programme in 1975, and confirmed in 1978 with the founding of the **Regional Activity Centre for the Priority Actions Programme (PAP/RAC)** in Split. Nowadays the Split centre is renowned throughout the region and far beyond for its technical competence and ability to advise and assist on questions of integrated coastal management. Medwaves readers will be aware of the activities which have marked twenty years of cooperation in the region, particularly within the framework of the various **Coastal Areas Management Programmes** in which the centre has a key role to play. It works under a host country agreement which was signed between Croatia and UNEP during a visit paid by the MAP Coordinator to Zagreb in October 1997, according to which a clear distinction is drawn between its national and regional activities. MAP/UNEP cooperation has also given rise to the preparation of a scenario for the Cres-Losinj archipelago in the field of climate change, on active Croatian participation in the MED POL programme on pollution monitoring.

By choosing to hold the meeting on liability and compensation in the natural park of the Brijuni archipelago, the Croatian authorities wanted to provide a reminder of the fact that for many years they have been implementing a successful policy on site protection and the conservation of biodiversity. Almost 8% of the country is protected by legislation. The structure of the national parks and reserves illustrates the wealth and diversity of Croatia's natural heritage: four of them are islands on the Adriatic coast (Kornati, Brijuni, Mljet and Telašćica), two are water reserves (the Plitvice lakes and the Krka watercourse), five are mountainous (Velebit, Biokovo, and Medvednica), and two are wetlands (Kopacki and the Lonja plains). These sites are on either the UNESCO list of biosphere reserves or the Ramsar Convention's list.

The Brijuni archipelago national park is in the northern part of the Adriatic, off Pula. It is made up of 14 islands, covers 736 hectares and is separated from the mainland (Istra Region) by the Fazana channel which is three km wide. The archipelago is home to more than 680 indigenous and exotic plant species and 150 bird species which either live there or transit through. Veli Brijuni, the main island, boasts Neolithic and Illyrian remains, monuments from antiquity (a Roman villa) as well as Paleochristian, Byzantine (citadel) and medieval ones. The absence of cars, a visitor capacity limited to 400 beds in very few establishments (hotels and villas) make this an ideal spot for ecotourism (bicycle tours, observation of rare species). ■

THE MCSD ROUTE:

Palma de Majorca (Spain), 6-8 May 1997, and Sophia Antipolis (France), 28-30 October: mission accomplished for the two short-term thematic working groups on "Management of Water Demand" and "Sustainable Management of the Coastal Regions" which submitted their conclusions to the Tunis meeting in the form of recommendations. Mediterranean countries have thereby adopted a clear direction, but one which they must now genuinely apply if they really want the MCSD to live up to its name.

Once the MCSD was set up in Rabat in December 1996, and its work shared out between two short-term and six medium term thematic working groups, the activities of this new MAP advisory body within which, just as a reminder, grass-roots representatives cooperate on an equal footing with government ones, rapidly got up to cruising speed. The Commission held its second meeting in Palma de Majorca in May 1997 where it listened to the various progress and preliminary reports of the Task Managers for the eight groups. For the two short-term working groups on "Management of Water Demand" and "Sustainable Management of Coastal Regions" which were expected to produce recommendations for the Tunis meeting, two workshops in which practical proposals were discussed with the best Mediterranean brains on these questions provided for clear progress. Thus the Commission's

third meeting which was held in Sophia Antipolis from 28-31 October 1997 was in a position to go through the conclusions of these workshops and in the light of them to revise the recommendations to be submitted to the Contracting Parties. The French Minister for the Environment, Mrs. Dominique Voynet, was able to declare at the closing session: *"In bringing together the two banks of the Mediterranean, your Commission provides a practical example of dialogue between North and South....Your exemplary approach allows us to better understand one another, to work together, and to offer our countries a real opportunity to move forward along the path of true sustainable development which respects everyone's individuality"*.

The Frejus workshop

The Task Managers for the "Management of Water Demand" theme- Tunisia and Morocco-

benefited from the assistance of the members of the working group made up of eight countries, the EEC and five NGOs. The progress report presented in Palma by Mr. Mohammed Ennabli (Tunisia) was drawn up. The workshop which was held in Frejus on 12 and 13 September 1997 brought together experts and officials from 16 countries and 14 intergovernmental or non-governmental organisations, private firms and local authorities. The workshop provided an opportunity for in-depth discussion of the relative importance of the various defects of water use systems and the effectiveness of the tools used to remedy them.

The workshop had before it a number of working documents: the Framework document, "Problems of Water Demand Management in Mediterranean Countries", "Summary of Country Information Sheets", "Provisional Compendium 'Principal Criteria and Statistics relating to Water Demand in the Mediterranean'", and "Information Sheets for the three working groups" focusing on the various tools. The following recommendations, which were adopted by the Sophia Antipolis meeting, are therefore a summary of the thematic group's work and what was done in Frejus. For reasons of space we have only reproduced the essentials, but obviously each recommendation is duly backed up and explained:

THE RECOMMENDATIONS ON WATER DEMAND MANAGEMENT ADOPTED IN TUNIS

- **To incorporate water demand management effectively in national water strategies, development and environment policies.**
- **To develop among the public, economic actors, managers and decision-makers, an awareness of the importance of loss and waste of water, both in economic terms and in volume of water, and to incite a sense of responsibility among users with a view to better management of water demand.**
- **To improve knowledge and evaluation of the potential advantages to be gained from more economic management of water demand, laying emphasis on total transparency.**
- **To undertake practical demand control activities.**
- **To encourage cooperation among groups of countries facing the same demand management problems and future scarcity.**

"Another of the traits marking your Commission is a source of satisfaction for me: the important role which it gives to the public at large. 21 representatives of the riparian states sit on an equal footing alongside 15 representatives of environmental protection associations, economic circles and local authorities. I am convinced that this example, which is still unique in the world, will be followed." **Dominique Voynet** to the MCSD in Sophia Antipolis:

The Benidorm workshop

The Task Managers on the "Sustainable Management of Coastal Zones" theme were Morocco and MEDCITES. In Palma, the working group held two meetings to comment on the document presented by Mrs. Layachi and to formulate suggestions for its final editing. The workshop "Sustainable and Integrated Management of Mediterranean Coastal Zones" was held in Beni-

dorm (Spain) from 21- 23 September 1997. It was organised in the premises of the sponsor, the CAM (Caja de Ahorros del Mediterraneo) and was attended by 40 experts from the 10 countries, the EEC and the 6 NGOs and local authorities which make up the group. Just as with those on water demand management, the MCSD's recommendations on this theme summarise the group's work and the workshop's conclusions:

THE RECOMMENDATIONS ON SUSTAINABLE MANAGEMENT OF COASTAL ZONES ADOPTED IN TUNIS

- **To improve institutional mechanisms for the integrated management of coastal areas.**
- **To establish or strengthen and enforce legislative and regulatory instruments.**
- **To ensure access to information in order to raise awareness and training for the largest possible number of actors.**
- **To develop, with the support of relevant international organisations and the European Union, practical pilot projects and disseminate the results.**
- **The role of the public is very important within the context of sustainable development of coastal areas, according to the principle of joint responsibility.**

"The Mediterranean Commission on Sustainable Development is called upon to propose solutions to the decision-taking body of MAP, the meeting of Contracting Parties, with the aim of implementing a regional strategy of sustainable development. Therein lies the interest and the innovative nature of this body. MAP was already endowed with advisory bodies (the standing committees), a body for assessing problems related to environmental protection and development (the Blue Plan), and a body to shape concrete solutions for sustainable development (the Priority Actions Programme). However, it was lacking a body capable of interweaving these different approaches in order to create a regional strategy for sustainable development in the Mediterranean, and of standing up to the political side." Marie-Aude Tavoso.

MAP Technical Report no.117, UNEP/MAP 1997



The second meeting of the MCSD was held on Palma de Mallorca, 6-8 May 1997, on the invitation of the Spanish authorities and the autonomous community of the Balearic islands..

THE TENTH ORDINARY MEETING OF CONTRACTING PARTIES IN LA MARSA (TUNISIA): THE LAST TWO-YEAR EXERCISE BEFORE THE NEXT MILLENNIUM IS LAUNCHED

The culmination of some ten preparatory meetings, for which the ground was cleared at technical level by the focal points' meeting in Athens from 7-9 July, the Tenth ordinary meeting was held from 18-21 November 1997 in La Marsa, just outside Tunis. It brought together representatives of 18 countries and the EEC, including six ministers for the environment. The main points which it adopted were: the Strategic Actions Programme (SAP) which aims at combating pollution from land-based activity, a set of recommendations on legal aspects, biodiversity, MED POL, the activities of the six regional activity centres, and the draft 1998/99 budget, with a 2% increase in contributions. It also approved all the recommendations from the Mediterranean Commission on Sustainable Development on its two short-term themes. The new Bureau which was elected for a two year term is presided by Tunisia.

The new Bureau for 1998/99

Eighteen Mediterranean countries and the EEC, parties to the Barcelona Convention, met in La Marsa for their Tenth ordinary meeting. Four United Nations institutions (IAEA, IMO, WMO, WHO) and 23 intergovernmental and non-governmental organisations also sent observers. Six countries were represented at ministerial level (Greece, Libya, Morocco, Monaco, Tunisia and Turkey).

The meeting was opened by Mr. Lahoucine Tijani, the Moroccan Secretary of State for the Environment, in his capacity as President of the out-going Bureau. The meeting unanimously elected its new Bureau to be led by Mr. Medhi Mlika, the Tunisian Minister for the Environment, and made up of Croatia, Greece, Libya and Turkey as vice-presidents, with Monaco acting as rapporteur.

The general discussions

Introducing the progress report of the Executive Director of UNEP for the last two years, Mr. Lucien Chabason, MAP Coordinator, listed the sources of satisfaction - for example, the improvement in MAP's financial situation, the work on biodiversity undertaken by the SPA/RAC, the momentum gained by the MCSD, and of the importance to the implementation of the "LBS" Protocol of refocusing MED POL and possibly adopting a programme of strategic action. Amongst the causes for concern he mentioned relations between the MCSD and the other MAP structures, and questioned the efficiency of the integrated management of coastal zones undertaken within the CAMPs framework if no logical follow-up is provided. In the ensuing general debate delegations spoke of the environmental conditions in their respective countries and

what was being done to improve them, and expressed their appreciation for MAP's work, some of them also expressing concerns about the dispersed nature of activities and the unclear role allotted to the MCSD.

The adoption of the SAP: the high point of the meeting

During the examination and adoption of the different sets of recommendations on MAP structures, particularly the Regional Centres, with their corresponding budgets, participants made certain minor amendments to the texts which had been proposed by the Secretariat. During discussions on **the Strategic Action Programme (SAP)** which was introduced under the point on "Pollution Prevention and Control", several participants expressed their view that this was one of the best documents ever drawn up by MAP, and that the opportunity should not be wasted to launch a vast range...

What shape the SAP adopted in Tunis ?

In our last edition (Medwaves no.34) we commented on the general philosophy, construction, and the main technical aspects of this GEF project for which MAP is responsible, with its various different components: **the Transboundary Diagnostic Analysis, the report on pollution "hot spots" and sensitive areas, the Investment Portfolio, and finally the Strategic Action Programme** which is the keystone in this whole operation. It has just been adopted in Tunis following careful revision by two successive meetings of government experts. The 80 page SAP document starts by laying down the general objectives, principles and obligations to which the Parties commit themselves when they subscribe (the precautionary principle, the "polluter pays", integrated coastal management, the best available techniques, the best environmental practices, and public access to information, etc.). From this point of view, it picks up on and confirms the main commitments of both the revised "LBS" Protocol and the Washington Programme of which it is a Mediterranean-tailored synthesis. In its chapter entitled "Analysis of targets and activities" it lists the main areas and their problems, establishing **targets and activities at regional and national level** for all of them, along with a **timetable** (thresholds 2000, 2010 and 2015). For example, on industrial pollution, the SAP takes over 20 pages to specify in detail the main pollutants (POPs, heavy metals, organohalogenes, etc), once again establishing reduction or elimination targets for given deadlines. It then completes the general anti-pollution plan by laying down guidelines for drawing up national action plans and, **for the first time in the history of Mediterranean cooperation, it creates a country Investment Portfolio or assesses the cost of the proposed action**, based on information submitted by the countries on their hot spots and sensitive areas. It also proposes financial scenarios using the different possible sources. The SAP thus means that, **without having to wait for the revised "LBS" Protocol** adopted in Siracusa to come into force, in other words once at least six Parties have deposited their instruments of ratification, practical steps can be taken as of now, drawing on GEF's major financial contribution and the top-up amount which donors will be asked to provide, thus preparing for and facilitating the Protocol's future implementation. SAP's adoption in a sense makes it possible to pre-empt or short-circuit the necessarily lengthy legal procedures, a time-saving which is essential for the success of the region's fight against pollution. ■

of practical activities, with figures and dates attached, thus respecting the objectives of the revised "LBS" Protocol. Certain delegates had reservations on its "information basis" alone, the Transboundary Diagnostic Analysis (TDA), pointing out some errors and gaps. The meeting therefore decided to delete all reference to the TDA in the SAP and to delay its distribution until such time as it had been revised and improved. Adoption of the SAP was undoubtedly the high point of the Tunis meeting because of the horizons it opens up for pollution elimination in the region, and the financial contribution from the Global Environment Fund (GEF) (see inset on "What shape the SAP?"). In this respect, Mr. Civili, the project's Officer within MAP, pointed out that with the adoption of the SAP the GEF would be open to financing a much broader project which would be formulated in full consultation with the Contracting Parties. The project could cover the next stage of activities to a tune of between 4 and 6 million U.S. dollars (i.e. more than MAP's normal annual budget), with the proviso that a certain percentage of this amount (at least 20 to 25%) would come from other donors.

The MCS D is invited to follow-up its recommendations

Under the point on "Integrating Environment and Development: Sustainable Management of Coastal Zones", participants were presented with a collection of MCS D recommendations taken from the conclusions of the two short-term thematic working groups: "Water Demand Management" and "Integrated and Sustainable Management of the Coastal Areas". Participants commended the

...



The rostrum of the Tunis meeting, from left to right: Mr.I.Dharat (MAP), Mr.L.Chabason, MAP Coordinator, Mr. M. Mlika, Tunisian Minister for the Environment, Mrs.A.Benzarti, Director of the Tunisian Ministry of the Environment, Mrs.Van Klaveren (Monaco), rapporteur, Mr.J.C.Sainlos (REMPEC).

work done, but most of them felt that the two groups had not arrived at the end of the line and that the Commission should ensure a follow-up to its recommendations. To provide this follow-up it was decided that a working group be set up in which seven countries, the BP/RAC and the PAP/RAC participated, and whose recommendations were added to the initial ones. The Contracting Parties were thus invited to put the MCSD's strategic approach into practice on the basis of a clear calendar. The meeting also adopted the rules of procedure, changing the name of the Bureau to that of Steering Committee in order to avoid any possible confusion or competition with the Bureau of Contracting Parties, with the latter's President being an ex officio member of the Committee in order to foster a strong link between the two bodies.

The Eleventh Meeting in Malta, 1999

During the closing session, Mrs. Elizabeth Dowdeswell, Exe-

cutive Director of UNEP, made a statement inviting Mediterranean countries to ensure the success of the Washington Global Programme of Action. Participants accepted Malta's invitation to host the Eleventh ordinary meeting in October 1999. In line with a decision of the Ninth meeting in Barcelona in 1995, a short ceremony took place during which Mrs. Dowdeswell and the President of the meeting presented Mr. Serge Antoine with a medal. Presently representing France in the MCSD, and a former special adviser to Maurice Strong for the Rio Summit, between 1972 and 1975 Mr.S.Antoine made a major contribution to the creation of MAP and the signing of the Barcelona Convention, and he helped father the Blue Plan. At the same time, Mr.Mlika, in the name of his government, presented the medal for "Best Environmental Project" to Mrs.Dowdeswell, Mr.Antoine and Msrs.Batise, president of the Blue Plan, L.Chabason, MAP Coordinator, and I.Dharat, MAP Programme Officer. ■

WHAT THEY SAID IN TUNIS:

• **Elizabeth Dowdeswell,**
Executive Director of UNEP:

"It should be remembered that the Mediterranean Action Plan has been constituted as an on-going process....It is therefore essential that the legal imperatives underpinning this Convention continue to proliferate in the future into emerging areas of environmental concern such as the responsibility and the restoration of the consequences of pollution as well as the sustainable management of coastal areas."

• **Lahoucine Tijani,**
Moroccan Secretary of State for the Environment and President of the out-going Bureau:

" We should note the absence of a proper instrument panel to measure the progress that has been achieved or the damage that has been caused by the various measures and options which have been adopted in the process of implementing the Programme of Action for the Mediterranean. This instrument panel would be the appropriate tool for quantifying the global impact on the Mediterranean and the best means of assessing the relevance of treatment and prevention activities, while at the same time allowing adjustments to be made as and when required...."

• **Mohamed Medhi Mlika,**
Tunisian Minister for the Environment and President of the new Bureau:

" Tunisia considers sustainable development in all its facets as the way to move forward....We are trying to make our country competitive in this globalised environment. It is a long-term effort which needs cooperation and partnership based on solidarity. We must all work to make this partnership successful...."

• **Lucien Chabason,**
MAP Coordinator:

" Under the guidance of the Bureau, the Coordinating Unit and the RACs have been able to involve the NGOs even more actively in activities relating to public awareness, participation in programme management, and education and training activities in the region. All of these activities that we carried out have progressively led to making the Mediterranean Action Plan even more credible and visible in the region...."

ECHOES FROM THE REGIONAL ACTIVITY CENTRES AND THE PROGRAMMES

MED POL Programme

(Pollution monitoring and control)

● At their Delphi meeting (see earlier under the MED POL Route), the National Coordinators for MED POL agreed that, in order to make better use of the limited funds available, the assistance programme would concentrate every year on a limited number of countries thus expecting to cover the most needy countries in a period of 4-5 years. Basic assistance related to the participation in intercalibration exercises, design of proper trend and compliance monitoring and analysis of results would, however, continue to be provided every year to all countries. As a result, in September 1997, when funds were made available, seven countries were selected for the formulation of a detailed capacity building programme which will be the basis for the provision of direct assistance according to the availability of funds. Other countries will be selected in 1998. The National Coordinators of Albania, Algeria, Egypt, Libya, Morocco, Tunisia and Turkey were therefore contacted and asked to provide the list of the laboratories designated to participate in the MED POL Phase III Programme. As a follow up, experts will soon visit the countries selected in 1997 and, in close consultation with the National Coordinators and the national scientists, will prepare detailed capacity building programmes related to their possible participation in all aspects of MED POL Phase III. Financial assistance will be provided according to the needs and the availability of funds.

● A Meeting of Experts was organised in Malta from 29 September-1 October 1997, to review the MED POL Biomonitoring Programme. The experts reviewed the results of the 1996

pilot biomonitoring programme and agreed on a common set of biomarkers and species. They also examined a draft manual on the recommended biological effects techniques. They recommended that every support be given to this new activity in view of the fact that biomonitoring provides fundamental data useful for risk assessment and for an early warning system which will enable timely formulation of governmental strategies to prevent irreversible alterations in Mediterranean coastal systems and human health.

The Blue Plan

(BP/RAC, SOPHIA ANTIPOLIS)

● Preparatory activities (framework, programme, components, consultants) are going on for the elaboration of a "Blue Plan 2000" to be published within three years, which will be a kind of updated version of the Blue Plan's former main report: "The Future of the Mediterranean Basin", and will build on all activities carried out in the coastal regions. Does anyone need reminding that for the last ten years the Blue Plan's report has been THE unavoidable reference for any Mediterranean-based study concerning prospective analysis?

● Closely associated with METAP III preparatory activities and partners' meetings, Blue Plan was asked to conduct the PPM (Project Performance Monitoring) regional programme with financial support from METAP (World Bank).

● As a direct support centre for four of the selected priority subjects to be studied in the short and medium terms (Management of Water Demand, Sustainable Development Indicators, Sustainable Tourism and Management of Urban/Rural Development), Blue Plan has provided the respective Task Managers with

preliminary analytical reports. As "Water Demand" is a short term activity, a more consistent report was prepared, in close cooperation with the Tunisian Task Manager, Mr. Ennabi and the expertise of Mr. J. Margat.

News Flash

As was unofficially announced at the Tunis meeting, Mr. Guillaume Benoit has been appointed Director of the Blue Plan, replacing Mr. Bernard Glass. Mr. Benoit took up his position in January 1998, and is also on secondment from the French government. More detail on this important change in our next edition.

Priority actions programme

(PAP/RAC, Split)

● The Deputy Director of PAP/RAC participated in the meeting of coastal experts organised by the Council of Europe and UNEP (Strasbourg, 26-27 June and Helsinki, 15-17 September 1997). The objective of these meetings was to discuss a draft model of coastal law, and the draft Coastal Code of Conduct. He was elected chairman of the editorial committee for the Code of Conduct.

● An expert meeting to discuss, amend and adopt Guidelines for Integrated Waste Resources Management, Development and Use of Coastal Water Resources was held in Split on May 12-14, 1997. The final version of the Guidelines is expected to help local and national authorities in the Mediterranean to manage water resources efficiently. The Guidelines are being translated into Croatian.

● The Executive Board of PAP/RAC released Mr. Petar Reic from his duty as the Director of PAP/RAC on 3 September 1997. Mr. Ivica Trumbic, ad interim Director, was officially appointed as Director in December 1997.

Specially protected areas

(SPA/RAC, Tunis)

● As we announced in our last edition, the SPA/RAC carried out a survey of potential marine turtle nesting beaches along the southern coast of Croatia in July/August 1997, under an agreement between SPA/RAC and the Croatian Natural History Museum.

● The Centre provided technical and financial support to the Tunisian Ministry for the Environment and Land Planning for the establishment of a seasonal station to monitor the nesting activity of the *Caretta caretta* turtle on the Kuriat islands. Researchers, students and volunteers participated in the project which ran over two months (from 15 June-15 August 1997).

● The Centre sponsored the participation of three trainees from Lebanon, Tunisia, and Medasset in two training sessions on turtle conservation which were held at Lara Station, Cyprus, between 24 July and 4 August, and 4-14 August 1997.

Marine pollution emergency response

(REMPEC, Malta)

● The Director of the Centre visited Lebanon (25-27 November 1997) where he discussed with the Lebanese authorities the follow-up to the recommendations regarding the development of a national system for preparedness and response which were contained in the report of the consultant who visited Lebanon in 1995.

● The project for the preparation of sensitivity maps for the Sfax region is now in its final stage. It was conducted in cooperation with the Ecole des Mines in Paris, IFREMER, CEDRE and the Ecole National d'ingénieurs in Sfax.

● Following a meeting which took place in Slovenia in June 1997 REMPEC prepared a draft project on "Role assessment and associated capacity building for preparedness and response to maritime related accidents involving liquid chemicals in bulk for the port of Koper" (Slovenia). This draft project should be finalised soon.

● The French authorities organised a major pollution response exercise the 16 and 17 September 1997 off Toulon (ANTIPOL 97). Observers from western Mediterranean countries were invited through REMPEC. International communications and assistance were tested. The RAMOGE Plan was activated with satisfactory results.

Environment remote sensing

(ERS/RAC, Palermo)

● In the framework of the MEDA programme focused on cooperation between Europe and southern Mediterranean countries, a two-day workshop was organised (26-27 May 1997) in Cairo by the European Commission in cooperation with the European Space Agency and with the Arab Institute of Navigation. A specific project in the field of agriculture aimed at developing an advanced agricultural information system for crop state monitoring and yield forecasting in Mediterranean countries has been identified and is being discussed by a partnership of EU and southern Mediterranean countries, including the ERS/RAC.

Cleaner Production

(CPI/RAC, Barcelona)

● The first meeting of CP/RAC National Focal Points was held in Barcelona on 9 and 10 June 1997. The most important objectives of this meeting according to the priorities of the Contracting Parties were to set up a network between all the NFP and to establish its working mechanisms. Representatives from 13 Mediter-

anean countries explained the present situation of clean production in their countries and the EEC representative that of the EU as a whole, and stated what they expected from this recently created network.

Echoes from the coastal areas management programmes (CAMP's):

● **Fuka-Matrouh CAMP:** The PAP/RAC carried out a first mission on Integrated Management of Coastal Areas and a second mission on carrying capacity assessment (CCA) in Alexandria and Marsa-Matrouh from 16-23 May 1997.

● **Sfax CAMP:** PAP experts conducted a mission to Tunis and Sfax (1-5 June 1997) concerning "Integrated Planning of Water Resources". Remarks on and amendments to documents on water resources management were explained in detail to the Tunisian expert team. A meeting was held, on the same occasion, with the ANPE to ensure the timely completion of all activities planned under the Sfax CAMP.

● **CAMP Israel:** A further ERS/RAC mission got remote sensing activities off the ground. During the mission it was agreed with the Planning Department of the Israeli Ministry of the Environment to entrust local experts with the analysis of completed and on-going satellite remote sensing applications at national and local levels.

● **CAMP Algeria:** A preliminary draft of the feasibility study for this CAMP was submitted in August 1997 and provides an in-depth analysis of the selected region, with basic information. It will prepare the ground for the Algeria-MAP Agreement.

● **CAMP Slovenia:** To prepare for the launch of this CAMP, which was decided on by the Contracting Parties during their Montpellier meeting in 1996, the Secretariat has initiated some contacts with the Slovenian authorities.

MAP SERIES OF TECHNICAL REPORTS

This series collects and circulates some of the scientific reports drawn up within the framework of MAP activities, particularly MED POL and the regional activity centres.

IAEA/UNEP: **Data Quality Review for Med Pol (1994-1995)**. This volume deals with the evaluation of the analytical performance of MED POL laboratories in 1994-1995 during IAEA/UNEP laboratory performance studies (Monaco laboratory) for the determination of trace elements in marine sediment and a fish homogenate, and of trace organic contaminants in a mussel homogenate. 37 Mediterranean laboratories submitted data for the trace metals, and 32 for the trace organic contaminants, in other words the biggest "turn out" since these tests began in the region more than 20 years ago. The results are very encouraging and give an idea of the degree of variability of data within MED POL monitoring in 1994/5, showing in which areas technical assistance is required (No.116, Athens, 1997, 126 pages, only in English).

UNEP/MAP: **La Convention de Barcelone pour la protection de la mer Méditerranée contre la pollution et le développement durable, (The Barcelona Convention for the Protection of the Mediterranean Sea against Pollution and Sustainable Development)**, by Marie-Aude Tavoso. The Barcelona Convention and Mediterranean cooperation, whose background she traces, have already been the subject of countless books and legal articles (Dejeant-Pons, Graf Vitzhum, Flory, Raftopoulos, etc.). This analysis stands out because for the first time it provides a comparative study of the pre-1995 Barcelona system and its achievements over 20 years, and the later revised system, with an amended Convention and Protocols and the adoption of new Protocols in order to take on board the new concepts and principles developed in Rio. According to the author, this revision "is not simply an adaptation of a universal model to a system of regional cooperation; the regional approach can also contribute to universal action". In other words, the Barcelona approach is original and in many respects ideally suited to the specific geo-political characteristics of the region. In this sense it stands as an example. Although the institutional reform strikes her as being a little over-cautious ("the wish of certain States to see the responsibilities of the different MAP bodies more clearly defined has not been respected"), the writer all the same stresses the innovative nature of the MCSD and, far from seeing it as a purely decorative element

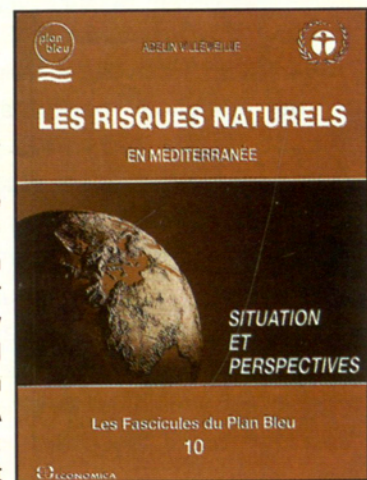
tacked on to the new system, she feels that it "should be a way to coordinate the different regional and international activity for the protection of the environment and sustainable development in the Mediterranean. This opens up vast perspectives". Overall, the revision which has come about since 1995 is seen as positive from a purely legal point of view. It remains to be seen whether or not States will actually implement it: "We must, I feel, give a tentatively optimistic answer to this question which has dogged us throughout this study", concludes Marie-Aude Tavoso. Let us hope that the States will confirm her cautious prediction and, in the meantime, we would recommend the reading of this text which is highly accessible, even to the layman in matters of environmental law, since it uses simple, down-to-earth language to explain all the issues which MAP will be called upon to tackle over coming years (No.117, Athens, 1997, 102 pages, only in French)

UNEP/MAP/WMO: **The Input of Anthropogenic Airborne Nitrogen to the Mediterranean Sea through its Watershed**. This study deals with pollution of the Mediterranean Sea by nitrogen compounds of atmospheric origin entering the sea either through direct deposition or through riverine and groundwater runoff. This work was carried out by the MSC-E of the Cooperative Programme for the Monitoring and Evaluation of Long-range Transmission of Air Pollutants in Europe (EMEP) of the UN ECE Convention on Long-range Air Pollution under a contract with the World Meteorological Organisation (WMO) for the MED POL programme. MAP provided financial support. It is made up of five parts, of which two were written by the Institute of Soil Science and Photosynthesis of the Russian Academy of Sciences (ISSP RAS): a short description of the Mediterranean watershed, and modelling of deposition nitrogen run-off, two by the ISSP RAS in cooperation with the MSC-E: the introduction and the comparison of atmospheric nitrogen deposition run-off with direct deposition on the Mediterranean sea, and the last one by the MSC-E alone: Nitrogen deposition on the Mediterranean Sea and its Watershed. This is an important contribution towards better understanding of long-distance atmospheric pollution of the Mediterranean (No.118, Athens 1997, 95 pages, only in English)

PUBLICATIONS BY THE REGIONAL CENTRES

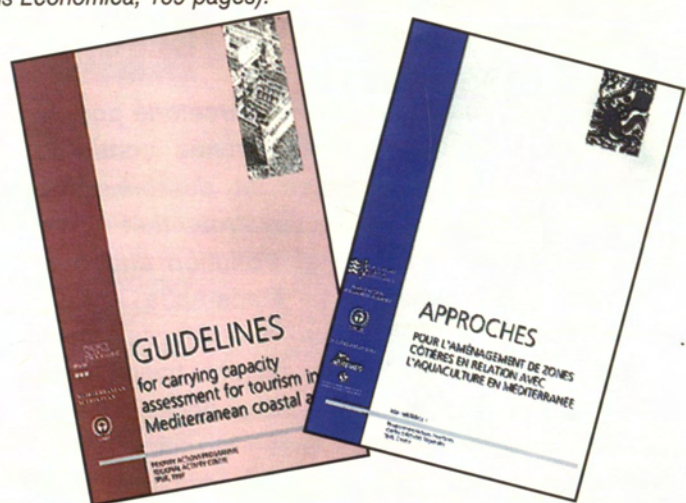
Blue Plan :

Les risques naturels en Méditerranée (Natural Risks in the Mediterranean), by Adelin Villevielle. This, the tenth Blue Plan fascicle, deals with a subject which regularly rears its head to a greater or lesser degree, depending on the nature of the risk and the geographical position of the country or region concerned. Earthquakes, eruptions, torrential rains and floods, landslides, forest fires, or, more simply, soil degradation.... natural risks have always existed and have marked the passage of civilisations, even causing their downfall in certain cases, such as that of Minoan Crete which was swept by a mighty tidal wave caused by the volcanic eruption in Santorini. Some of these risks may seem unavoidable, but research and technology can provide answers, as in the case of earthquakes, where compliance with strict building standards should become the norm, and where forecasting is no longer utopic, despite the scientific controversy which still surrounds the methods put forward by geo-physicsts and physicists. Other risks, on the other hand, are aggravated by poor spatial management, as witness the case of hydrometeorological risks, where the scale of certain catastrophies of recent years is known to be linked to intensive, unregulated urbanisation. A Mediterranean strategy against natural risk is based on a very simple line of reasoning: "Understand in order to predict, predict in order to control". This is definitely the most instructive part in A. Villevielle's book since she homes in on possible future answers and the interest of international and regional cooperation in the Mediterranean, with the setting up of networks and observatories (Blue Plan/Editions Economica, 49 rue Hericart, 750 15 Paris, 160 pages, preface by Mr.Batisse). Note **the new edition of the Blue Plan's third fascicle "Conservation of Mediterranean Ecosystems"**, by Francois Ramade, which has been considerably fleshed out and updated by contributions from experts from all Mediterranean countries (Blue Plan/Editions Economica, 189 pages).



Priority Actions Programme

Guidelines for Carrying Capacity Assessment for Tourism in Mediterranean Coastal Areas. The tourist CCA has become a major Mediterranean land planning tool, and the Split Centre had an opportunity to develop and test this methodology in MAP's Coastal Areas Management Programmes. The draft guidelines were examined and amended during an experts' meeting in Split in June 1995, and subsequently adopted during a regional workshop also held in Split in January 1997 (Priority Actions Programme Regional Activity Centre, Split, Croatia, 1997, PAP-9/1997/G.1, 51 pages, in English).



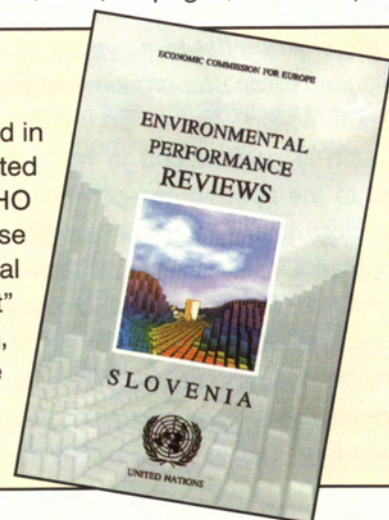
Approches pour l'aménagement de zones côtières en relation avec l'aquaculture en Méditerranée (Approches to Coastal Area Management and Aquaculture in the Mediterranean). This document was written within the framework of the network on "Environmental Aspects of Aquaculture

Management in the Mediterranean". It aims at providing an effective tool to help bring about sustainable development in the aquacultural industry whilst keeping clashes between the various users of coastal resources to a minimum. (PAP/RAC, Split, Croatia, 1996, PAP-10/EAM/GL.1, 38 pages, in French).

Books-Reviews

Environmental Performance Reviews: Slovenia. This study was launched in January 1996 by the Committee for Environmental Policy of the United Nations' Economic Commission for Europe (ECE) with a WHO contribution on the health-related aspects. It was carried out in close cooperation with the Slovenian authorities by a team of international experts. So it is a very comprehensive "State of the Environment" complete with a set of specific recommendations for this young, dynamic State which joined the MAP family in 1992 and is a candidate for accession to the European Union.

(United Nations, New York and Geneva, 1997, 182 pages, in English).



TUNISIA: OPTING FOR OPENNESS AND CO-OPERATION

The dossier on Tunisia, its environment and development which kicks off here with the interview granted us by Mr. Mlika provides insight into some of the problems which the country is now facing. It should allow the reader to grasp their scale and to understand the solutions which are being applied. Other factors which are part and parcel of a country undergoing full-scale development, such as tourism, conservation of a particularly rich historical and cultural heritage, fisheries, forests and biodiversity, are only mentioned in passing in relation to other matters. This overview should be seen against the broader economic backdrop of the country over the last few years since this, the smallest of the Maghreb states, can boast a good performance in this field: a per capita GNP of above \$2000, an average annual growth rate of around 3.5% over the last decade (5.1% in 1997), exports growing by 6% per year, a budget deficit which has been brought down from 5 to 3%, and inflation from 9 to 4%. The buzzword these days in Tunisia is "moving up" (*mise à niveau*): this boils down to the vast programme of structural reforms which should gain access for the country and its businesses to the free trade zone with the European Union which, in line with the 1995 agreement, should come fully into force in 2008. But Tunisia is striving to face up to the huge challenge of liberalisation and globalisation whilst respecting the natural balance. This means, essentially, protecting the environment which became a priority in the VIIIth Plan for economic and social development (1992-1996).

Tunisia was one of the first developing countries to draw up a National Action Programme for the Environment (PANE), which was drafted by the ANPE (National Agency for the Protection of the

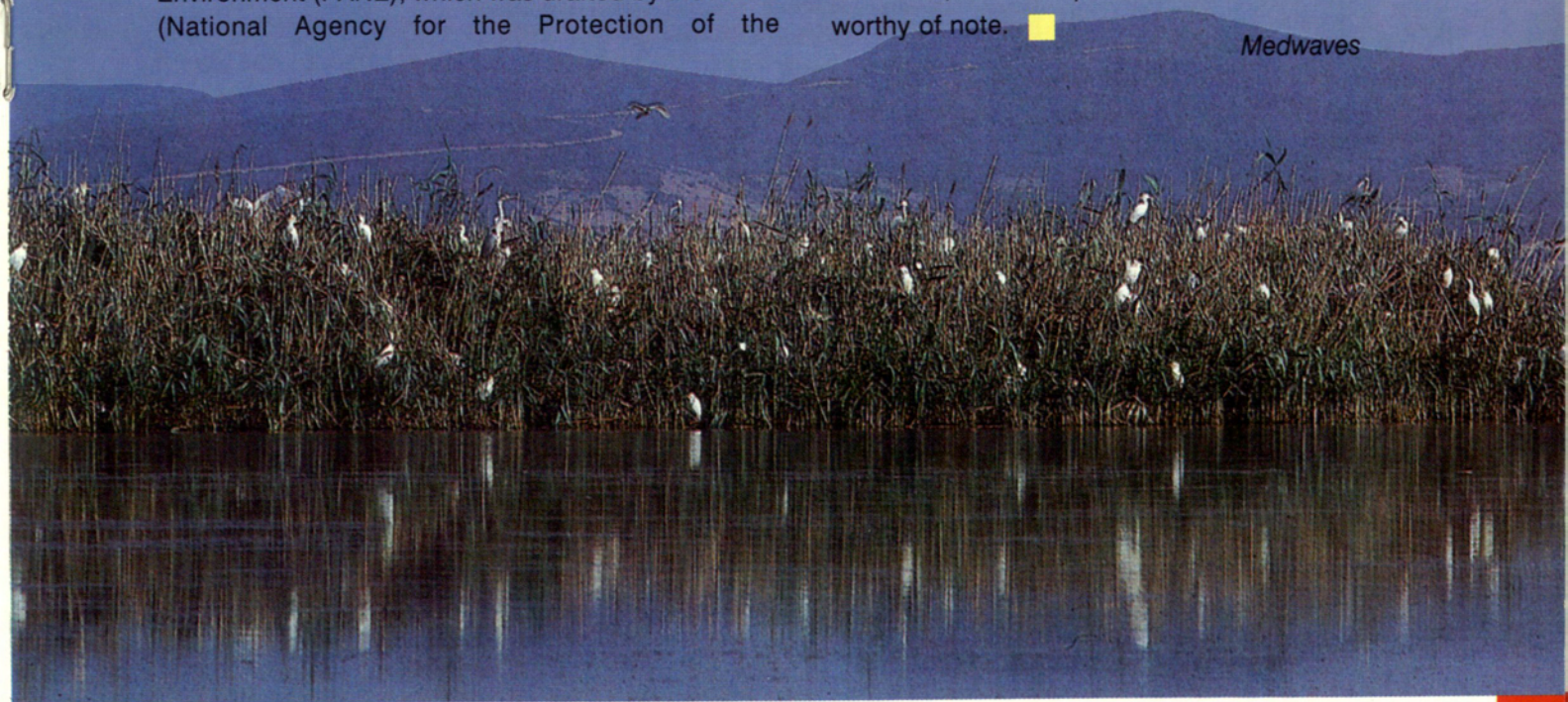
Environment) in consultation with the various different administrations with a finger in the pie. Post Rio, she refocused her policy on the concept of sustainable development by concentrating in particular on two principles which many other countries have also adopted: pollution prevention which has involved the carrying out of compulsory impact assessments before any project can be implemented, and the "polluter pays" principle which has been particularly applied in the water field.

Tunisia has, however, also worked to get this new dimension across on the regional level- remember the key role she played in the drafting of the Agenda MED 21 programme adopted in Tunis in 1994, as well as in the creation of the Mediterranean Commission on Sustainable Development which came into being in Rabat in 1996.

For most of the topics covered in this dossier the data and information mainly comes from the plentiful documentation published by the Tunisian Ministry of the Environment. Even though the various associations and the media are playing an increasing role in informing the public about the environment and sustainable development, it should be pointed out that the Tunisian authorities themselves publicly stress the most pressing problems and shy away from bragging when they publicise their activities and results.

Thus, thanks to her solid attempts to inform by using scientifically based information adapted to different target groups (such as young people, even very young children), and her awareness-raising campaigns on the environment and sustainability on all fronts, Tunisia provides us with an example worthy of note. ■

Medwaves



TUNISIA'S PRIORITIES AND THE MAIN LINES OF MAP

An interview with Mr. Mohamed Medhi Mlika, Minister for the Environment and Land Planning, President of the new Bureau of Contracting Parties in Tunis.

As we open this dossier on the environment in your country let us switch things around somewhat. We usually tend to begin with the more positive side of things, and the reader will certainly realise that as you celebrate the tenth anniversary of "the change" , that side is far from lacking. In fact, some of Tunisia's achievements make her stand out from other countries on the African continent, and sometimes even when compared with countries on the northern rim, for example in the field of waste water treatment.*

So, to put it rather bluntly, what is not going well within your field of competence?

I'm even more ready to buckle down to the task since my Ministry tends to give priority to the trickier dossiers -"the black spots" -which demand particular thought and energy. And of course the first which springs to mind is desertification. As you are no doubt aware, Tunisia is a semi-arid country, and each year we lose 20,000 hectares of arable land.

Is that affecting the south in particular?

Not exclusively. Let's just say that the phenomenon is more aggressive in the south than in the centre of the country, although it is widespread. But we shouldn't equate desertification with the simplistic notion of "desert encroachment". It is essentially defined these days as a socio-economic phenomenon where soil resources deteriorate as a

*"Change" in Tunisia means the new political age which began with the "gentle" dismissal of President Habib Bourguiba for "reasons of incapacity" on 7 November 1987, when he was replaced by his Prime Minister Mr. Zine-El-Abidine Ben Ali, who has since been twice reelected President of the Tunisian Republic.

result of population pressure and non-sustainable settlement practices, coinciding with factors such as wind and water erosion and salinisation of the soil. Obviously this phenomenon affects our African neighbours, but it is also affecting areas on the northern banks, such as Spain and the south of France. In my country, desertification has often been blamed on poor land management.



So habits and mentalities need to change?

Amongst other things, bearing in mind that this is an emergency situation, since more often than not soil erosion is irreversible. The public authorities have not been idle, though. To mention just a few examples, we have our water and soil conservation codes, the forestry code, the programme against desertification (Tunisia was one of the first countries to ratify the international Convention which bears the same name), and checks on salinity levels.

These measures all cost money, I presume?

Our programme- we call it "The Yellow Hand"- represents an annual investment of 100 million dollars. But we face certain constraints: very few people as yet are aware of the importance of soil, farms are excessively "fragmentalised", and, in spite of the figure I have just mentioned, we are still not able to fund all the necessary protective measures. Shall we say that we are "stretched to the limit". Which brings me to the second black spot, the problem of industrial sites.

For which, as we will see in the dossier, you have adopted a whole series of legal and institutional measures, such as the creation of the FODEP, compulsory impact assessment.....

These measures are now fully applicable to new projects, since we only set up new industrial zones once an impact assessment has been carried out, and on the basis of strict criteria. These zones must be well equipped and have waste treatment and purification facilities.

Our problem is that we have inherited some industrial sites, huge ones, which in certain cases are very old and very polluting, and which are not covered by the new legal and institutional framework. Look at the Gabes complex which processes enriched phosphate, causing two types of pollution- air pollution in the actual town by the toxic gas which is

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produced, and sea pollution in the Gulf of Gabes through the large amounts of phosphogypsum which are dumped into the sea. Clean-up operations are very expensive- 150 million dollars for this site alone. We have already spent 60 million and have achieved clear results on the reduction of gas emissions, but we are still left with the phosphogypsum problem which we intend to tackle by setting up a controlled discharge point 30 km from the phosphate plants.

As even this solution will have to be reviewed twenty years from now, we are looking for funding in order to solve the problem once and for all. I could also mention Sfax, where there is a similar situation, Kasserine with its paper industry and mercury waste, etc. Which brings me to the third major black spot, the coastline.

But your clean up policy and coverage rate for sewage works are quoted as examples....

Yes, but I'm not talking about marine pollution and our efforts to combat it, where there is no doubt that we are doing well. I'm talking about the erosion of our coasts, which are very vulnerable. The coastline is retreating, and the dunes which are an essential element in any beach ecosystem are disappearing at Jerba, the Kerkenna islands, Hammamet and many other sites known for their natural beauty, as a result of urbanisation and tourism. Basically, those are our three priority areas where we are trying to preserve the future using instruments and institutions called the national Agenda 21, the ANPE, the coastline agency, and various action plans which are already up and running. I imagine you will be mentioning all of these.

Let's step back, or rather up, from the purely Tunisian level. The Tenth meeting of Contracting Parties has just come to a close. You were elected President of the new Bureau for the next two years. How do you intend to shape MAP activity?

To begin with, we will strive for continuity- and having said that I would like to pay tribute to the Moroccan presidency of the last two years. I am also delighted that the baton has been passed to another Maghreb country, a very good sign for our region.

Since we have not as yet met as a Bureau, at this stage I can only speak for myself. We have a framework to work in, provided by the recommendations made by the Contracting Parties. It is, therefore, not really a question of providing guidance so much as actively working together along with the Secretariat to ensure that these recommendations are fully implemented, that all the new or revised Protocols are ratified by a sufficient number of countries for them to come into force, and that the new activities of MEDPOL and the Regional Centres actually materialise into something. There are also improvements to be made further upstream.

What do you mean by that?

Let me be very frank. As we saw during the Tenth meeting, there are flaws in certain documents, and we often end up wasting a lot of time discussing confused minor points instead of concentrating on the essentials.

I make this criticism all the more openly since it is not directed at the Secretariat, but rather at certain procedures used in international organisations according to which documents, for example, have to be drafted in record time for a project to be

eligible for financing, with the inevitable result that they are just cobbled together.

In this multi-faceted MAP programme are you going to highlight anything in particular?

I must admit I have a soft spot for the Mediterranean Commission on Sustainable Development. To begin with, Tunisia does in a way have a claim to parenthood of this new baby, as you well know, since we hosted the 1994 Ministerial Conference on the Agenda MED 21 programme which launched the whole process. So we- and I am talking here of all the riparian states- are going to try to provide both concrete and financial assistance to this new Commission which in turn provides backing and both practical and conceptual input to MAP's activity.

At Rio +5 it was said at the very highest level that these commissions were often just "gimmicks". Would you share that scepticism?

No way! At least not as far as our region is concerned! The Mediterraneans are accused of many things, individualism, a tendency to talk too much etc. But I think they have a capacity to emulate and invent, and a lively mind which allows them to find new and original solutions to tricky problems. This has been shown throughout their history where their successive civilisations intermingled and interwove to form a mosaic which today illustrates all the major steps forward which humanity has taken. I have great faith in the Mediterranean spirit which is far from having run out of steam. ■

COUNTRY PROFILE

Official name:	Republic of Tunisia
Capital:	Tunis
Type of regime:	Presidential
Executive power:	President of the Republic elected by universal suffrage for a 5 year term which may be renewed twice
Legislative power:	National Assembly of 163 members elected by universal suffrage for 5 years.



Languages: **Arabic** (official),
French (spoken)

Currency: **Dinar.**

Geography:

Total surface area: 163,000km²- length of coastline (including islands): 1298 km- moderate relief, mountains mainly limited to the north-western part- average altitude: 300m (compared with 900 for Algeria and 800 for Morocco)- four natural regions: **the Tell** in the north, the most wealthy in agricultural terms due to the fertility of the soil and its rainfall, with the country's only constant watercourse, the oued Medjerda; **the central steppes** with a semi-arid climate and limited agriculture; **the Sahel**, a coastal region in the east of the country between the gulfs of Tunis and Gabes, with a mild climate, fruit orchards and market gardening to the north and extensive olive groves in the south; and finally **the Sahara**, a huge desert plain which extends as far as the Libyan and Algerian borders, with several oases (date palms). Chotts or sebkhass: enclosed depressions which are covered by a film of water during the cold season and which dry out during the summer to form salt flats. Average temperature: Tunis 11/26 (winter/summer); Jerba 12/28.

Population:

9,250,000 inhabitants (estimated); forecast 2000: 9,750,000; forecast 2025: 13 million (1911: 1,904,000; 1956 at time of independence: 3,500,000)- density: 54.5 inhabitants per km²- annual growth rate: 1984-1994: 2.3%; presently: 2.1%; forecast 2001: 1.7%- Tunis: 700,000 inhabitants; Greater Tunis: 1,800,000; Sfax: 250,000; Sousse: 140,000- 80% of urban population concentrated in the governates on the east coast which only represent 25% of the country's surface area- Tunisians abroad: around 500,000 (mainly in the EU, half of them in France); life expectancy: male 68 years, female 71.3 years- population breakdown: urban 62%, rural 38%- 37% of the population below 15 years of age - child mortality rate: 30 per thousand births (200 in 1952, 120 in 1975, 60 in 1986)- family allowance limited to 3 children in 1989, contraception since 1961 (54.5% of Tunisian women in 1992)- literacy rate: 34%- UNDP ranking for human development: Tunisia has risen from 75th place in 1994 to 44th place in 1996..

Economy:

GNP: 18 billion dollars- GNP structure: services 50%, industry 24%, agriculture 18%, mines 8%- indebtedness (as % of GNP): 51.4% 1996 (1986: 59.5%)- growth rate 1997: 5.1%- inflation rate 1997: 3.9%- unemployment: 15%- exports of goods and services: 8.2 billion dollars- main export products: textiles and leather (49.9%), energy (8.4%), foodstuffs (7.4%), phosphates (5th in world rankings) and fertilisers- main customers: France (28.1%), Italy (18.7%), Belgium (6.5%), Germany (5.5%)- rate of coverage of imports by exports: 97% (1986, 81%)- self-sufficiency in food: 60%- total health spending: 5.8% of GDP. ■



THE INSTITUTIONAL AND LEGAL FRAMEWORK

The dawning of an environmental consciousness at national level prompted the Tunisian authorities to set up the **National Environment Commission (CNE)** in 1978, which was responsible for shaping and co-ordinating environmental policy within the country's development plans. Ten years later, in 1988, it was the CNE's turn to spawn the **National Agency for the Protection of the Environment (ANPE)**, the first body to be autonomous in terms of overall environmental policy. The decisive administrative move was made in 1991, however, with the setting up of the **Ministry for the Environment and Land Planning (MEAT)**, the role and organisation of which were laid down by decree in February 1993. MEAT is made up of a General Directorate for the environment and quality of life, a General Directorate for land planning, and a Directorate for international co-operation. Three public bodies were put under the ministry's supervision. The first of these is the ANPE which has already been mentioned. Being of both an industrial and commercial nature it is flexible in terms of administrative and financial management. Its role has been redefined and it now deals with monitoring, control, the launch and follow-up of projects, and general awareness-raising, particularly in controlling all forms of pollution and contamination. The **Tunisian Observatory for the Environment and Development** has been set up within the ANPE, with the assistance of UNDP and the Blue Plan. The ANPE is also responsible for evaluating impact assessments which must be submitted to it for any project likely to affect the environment, as well as for examining requests for financial backing from the **FODEP** (Pollution Elimination Fund). This is a financial instrument which was brought

into being in 1993 to help industrial companies to reduce or eliminate the pollution they caused. The second public body which falls under MEAT's aegis is the **ONAS** or **National Sanitation Office** which was set up in 1974 and deals more specifically with domestic and industrial waste water disposal and solid waste. Last but not least comes the **Agency for Coastal Planning and Protection (APAL)** which was created in 1994 as a coastal observatory and conservatory. In 1996 two new bodies came into being: The **International Centre for Environmental Technology**, responsible for training and research, and adapting technology to the national environmental context, and the **National Commission for the Prevention and Control of**

Health which has a Directorate for environmental hygiene, and the Ministry of Tourism. At local level environmental management is still in the hands of the communes as far as the municipal police, hygiene and public safety are concerned.

The role of the **International Centre for Environmental Technology** or **CITET** is to promote this technology at national level and to transfer it from the Northern to the Southern countries. This innovative instrument works with 4000 employees to assist industrial companies in managing their pollution, and has a dual aim: the transfer, research and development of environment-friendly technology; and the training of specialists to boost national levels of expertise on all these fronts. Based in La



Marine Pollution, with its national contingency plan for emergencies.

In the same year a department for solid waste was set up within the ANPE. Other ministries apart from the MEAT also play an important role on environmental issues within their direct remit, as, for example, the Ministry of Agriculture which has Directorates General for Forests, Water Resources and Soil, the Ministry for Amenities and Settlement with its DG for town planning, the Ministry of Public

Charge next to Tunis-Carthage airport (on the site of a former tip), the Centre also boasts a real technology park and later on will be part of an "environment city" which apart from the actual Centre will also have a training centre for sanitation experts, maintenance workshops, ONAS repair areas, a Museum of the Environment, pilot plants for waste water treatment, an exhibition centre, and units specialised in non-polluting industries.

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This simple overview shows how, as an awareness of the environment and the ways in which to protect and improve it spread and diversified, the Tunisian authorities were careful to bring their institutions into line with the new situation. The same happened on the legislative/regulatory front (codes on water, forests, town planning, regulation of dumping in the environment, laws on hazardous plants, the protection of agricultural land, sand pits, etc.) Several of the issues dealt with in this dossier do actually provide an opportunity to delve in greater depth into some of these questions. As the Blue Plan pointed out in 1994 (*"A Profile of Tunisia"*) the administrative structure related to the environment is, overall, becoming increasingly complex, with new emergencies constantly having to be faced. Legislative and regulatory documents on the subject are, however, tending to become more vague, showing loopholes, contradictions and duplication. Moreover, in 1997, the MEAT itself in its "State of the Environment 1996" comments in the introduction: *"We still have a long way to go to complete and improve the legal framework on environmental protection, both in terms of covering all those aspects which are still left out in the cold, and in terms of reorganising and adjusting the instruments and protective mechanisms which already exist, but which are no longer in line with the new rules and concepts which have stemmed from changes in the principles of action, techniques of intervention, and systems of protecting natural resources and the environment, generated by the need to achieve a model of sustainable development and a quality environment"*. MEAT's present efforts, therefore, aim at increasing the coherence and integration of the institutional and legal framework. ■

THE COASTLINE: FROM DEGRADATION TO RESTORATION

The 1,300km of Tunisian coastline are one of the natural assets which, since the dawn of civilisation, thanks to their geographical situation in terms of Europe and Africa (Tunis is more or less at the centre of an isocetes triangle made up of Algiers, Rome and Tripoli), their natural beauty and their access to fertile plains, have made this country the "gateway to the Maghreb", open to the successive civilisations which dominated the Mediterranean world. These assets, further enhanced by the existence of islands which Tunisia is alone amongst the countries on the Mediterranean's southern rim in possessing, are today the reason behind the country's tourist vocation. Whilst being a source of hard currency (amounting to virtually a quarter of exported goods and services), tourism is, however, at the same time also a threat to the balance of the coastal ecosystems, due to urbanisation, population growth and the seasonal in-flow of visitors, even though the situation is far from being as critical as in other parts of the basin.

The northern coast is characterised by a contorted coastline, made up of a succession of headlands, gulfs, bays and inlets. High cliffs often drop steeply down to the sea. There is quite a dense hydrographic network, carrying sediment which helps in the formation of beaches, and lovely vegetation.

On the eastern coast, however, contours are rather flat. Cliffs are few and far between, land tends to be low-lying, and there is a vast expanse of beaches, sebkhas and lagoons. South of Chebba there are also sea-marshes, encouraged by strong tides which are what single out the Gulf of Gabes.

A coastal ecosystem under threat

The various forms of erosion are easily recognisable on the different stretches of the Tunisian coastline,

where the retreat is often visible, sometimes accelerated, and the fact that the beaches which are made up of an accumulation of sediment are also now being affected would indicate a reversal of the process. Recent studies have in fact shown that the coasts are suffering from a lack of sedimentation, coupled with the fact that sea-levels are rising (borne out by comparisons with archaeological remains). This rise, which is set to increase as a result of global warming caused by the greenhouse effect, is compounded by the effects of active land subsidence. The coastline could possibly adapt to this new state of affairs by the beaches gradually moving further inland as levels rise, but man-made obstacles (buildings, roads, ports and marinas) are an obstacle to this in those areas affected by intensive tourism and urbanisation.

Moreover, for centuries the Tunisian beaches and their dunes have acted as sand-pits for building requirements. With the take-off of tourism and the building of infrastructure this phenomenon has obviously intensified. Thus, 15,000 m³ of sand were removed from Bizerte beach alone, for the construction of the movable bridge. Although this practice is now illegal, the law is often disregarded. Finally, tourist activity which is undergoing such rapid expansion (the 4,000 beds and 50,000 visitors of 1992 have become almost 200,000 beds and 5 million visitors today), is largely concentrated on the west coast, in the areas of Nabeul-Hammamet, Sousse-Monastir and Jerba-Zarzis. The resulting pressure, along with urbanisation, over-use (the dunes are trampled and thereby stripped of their plant cover), and the multifarious refuse which is left during the summer high-season is getting worse. Two additional factors have further impoverished the sediment situation of the beaches: the building of dams (sediment traps), and pollution, which wipes out the fauna and flora,

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the fragments of which produce beach-making material. Particularly affected here are the Posidonia meadows, which tempered the



erosive power of the sea swell (this negative effect is clearly visible in the Gulf of Gabes). As for the construction of port facilities in Tunisia, this has almost invariably caused a major sedimentary and morphological imbalance, as witness the commercial port of Bizerte, the fishing ports of Ghar el Mehl, Soukrine, Dimass and Zarsis, and the pleasure port of Sidi Bou Said. Finally, the measures applied in an attempt to counter the effects of marine erosion (support walls, boulder outcrops, spurs and breakwaters) have often achieved the exact opposite of what they were intended to do.

Although, contrary to what is widely believed, these forms of degradation were not unknown to the great civilisations of the past (the lake of Tunis first started to be affected some 3,000 years ago...), it is really only this century that problems have become much worse, firstly with the construction work which came with French colonisation (the lake of Bizerte), then in the post-independence period with rather wildcat development. On the coast near the main towns, particularly next to the large industrial sites, the state of the sea-water has seriously deteriorated: of the 10,000 classified plants which make up the country's industrial

fabric, 1,200 are seen as polluting and are to be found mainly in Bizerte, Tunis, Sousse, Sfax and Gabes. It is, however, only in the

Gulf of Gabes that the problem has reached critical proportions where activities linked to phosphate processing have caused "marine desertification", particularly around the Ghannouche complex. This has led to a major shrinkage of the Posidonia meadows, exacerbated by fishing activity: resources have been over-fished as the fleet has become bigger and better equipped, leading to a drop in production, poorly adapted, illegal or damaging techniques have been applied (such as trawling which rakes the sea-bed in shallow waters and destroys the meadows), and species with a high market value have been targeted, with the result that they have now become rare (e.g. the King prawn and the sea-bream).

"The blue hand"

It was not really until the start of last decade that people began to awaken to the seriousness of the situation. The first major improvement projects to build sewage systems and treatment plants were entrusted to the ONAS and achieved tangible results. The number of people connected to the system grew on average at an annual rate above that of the growth in total urban population and the number of treatment plants more-or-less doubled between 1986 and 1996;

50 are now in service, 35 of which service the coastal area alone, since priority was initially given to the areas which house almost half the Tunisian population, the major industrial zones and the bathing areas requiring protection, with treated water being reused (e.g. in certain cases recycled water from hotels is used to water golf courses). Efforts were also made to tackle waste tips and the treatment of solid waste. The Ministry of the Environment, working in international co-operation, has started to draw up a Plan of Action for coastal planning and management ("The Blue Hand") which aims at assessing land use trends and the degree of degradation, analysing the causes and the impact on the environment, making proposals for both preventive and curative measures, and encouraging consultation between all parties concerned (particularly those working in industry, tourism, and infrastructure). The second stage involved drawing up a "Coastal Charter" which establishes the main principles and rules for coastal planning and management so that the conditions are right for sustainable development and thus regeneration of resources. As for actual pollution reducing measures, they really took off in 1991 when large amounts of fun-



ding were injected in order to reduce sea and air pollution in the Gulf of Gabes, whilst in Sfax one of the "dirtiest" factories, the NPK, was shut down. Other major new projects aim at cleaning up the southern Tunis lake, whilst the Taparura project plans to reconcile the town of Sfax with its coastal environment. ■

COMBATING INDUSTRIAL POLLUTION

The Tunisian industrial landscape is still contained in certain specific regions in spite of a mushrooming of companies and economic growth which has remained constant over the last ten years within a policy context of liberalisation, privatisation and export promotion. Something like 25% of this activity is concen-

trated in Greater Tunis, including the areas of La Chargui, Ben Arous, Megrine and Bir El Kassâa. There are several other major concentrations: Bizerte (petrochemicals), Menzel Bourguiba (steelworks), Gabes (chemicals), Sfax (SMEs), Gafsa (phosphates) and Kasserine (paper pulp and chemicals).



Traditionally polluting sectors

At least 12% of the 10,000 industrial firms have been classed as polluters on account of the waste water, solid waste and atmospheric emissions which they release. They belong to certain specific, traditional sectors. The phosphates and phosphate by-products sector, which extracts and processes, is basically centred on three towns. In Gafsa, where dust-based air pollution has been dealt with, the problem of discharge into the environment of sludge from the phosphate enrichment washing plants has still to be tackled. In Gabes and Sfax the processing of enriched phosphate in the chemical plants causes two types of pollution: air pollution in the towns through the emission of toxic gases, sulphur oxide, ammonia, fluoride gas and nitrogen oxides; marine pollution in the Gulf of Gabes and the Sfax region with large quantities of phosphogypsum and solid waste from the action of acids on phosphate being dumped.

The cement industry (six plants in the country) continues to produce atmospheric dust and contaminated waste water. The Kasserine complex produces 80 metric tonnes of paper pulp daily, as well as chlorine, hydrochloric acid, and caustic soda, generating non-negligible quantities of mercury (used as a cathode in the electrolysis units). The complex discharges 15,000m³ of polluted water daily, 8,000 of which are treated in ageing sewage works. Finally, the country's sole refinery is in Bizerte and processes 1.7 million tons of crude oil per year, generating three types of pollution: air (nitrogen and sulphur oxides); heat pollution of the sea through the discharge of waste water containing hydrocarbons and other chemical pollutants at 30-35 degrees; the discharge of decanting sludge with a high lead content.

Action taken

So far all the major plants just listed have been assessed, providing an exact diagnosis and reducing both air and waste water based pollution. By way of

example, the ICM factory in Gabes saw its sulphur oxide emissions reduced by 65% and those of ammonia by 80%, although a once-and-for-all solution for phosphogypsum has still not been found because of the major cost involved. Of the 600 industrial units in the Ben Arous area (textiles, soap, batteries, paints etc.) 170 turned out to be polluters: 72 have already installed pre-treatment units whilst the remaining 100 should be building their own individual plants or installing pollution-reducing systems. The 30 most highly polluting units are working on the construction of a shared treatment plant for waste containing heavy metals in particular. Similar moves have been made in Sfax and Gafsa, but the major obstacles facing all the industries which were set up some time ago (e.g. the ICM plant in Gabes which dates from 1972) is a financial one, the cost of renovating and equipping older plants to bring them into line with new regulations often being exor-

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bitant in terms of the companies' economic viability. The Ministry of the Environment has included new provisions in its legislation encouraging prevention, control, and technical assistance.

The new legal and financial provisions

Prevention nowadays includes the requirement to carry out an Environmental Impact Assessment (EIA) for any new project. In 1996 1,165 EIA dossiers were submitted to the ANPE (768 in 1995), 63% of which received a positive opinion. For existing plants or those already on the drawing board, the Ministry carried out several studies aimed at producing a precise picture of the pollution status and putting forward practical solutions. In 1993 a financial instrument, the FODEP or Pollution Elimination Fund was set up, which should beef up the curative side of ministerial strategy, encourage the elimination of industrial pollution and help in the creation of waste collection and recycling units. FODEP backing comes in the form of a subsidy limited to 20% of the initially approved investment cost. It is principally used to finance installations for the reduction or elimination of pollution. For existing or planned plants, dossiers on pre-treatment studies for different sectors of activity are also submitted to the ANPE: in 1996 it looked at 1,100 cases compared with 638 in the previous year, this huge increase showing that the policy applied in this sector to existing industries (control and various incentives) is starting to bear fruit. The ANPE also carries out regular and systematic checks on industrial firms, or intervenes on a one-off basis in case of accident or grievance: in 1996, 6,117 checks resulted in 604 legal reports being produced. Finally, a project on the management of industrial waste water discharge was begun in 1996 and carried out by the ONAS with German technical assistance. It involves revising water discharge standards, drawing-up a register of all industrial units, training, informing and raising the awareness of companies, and assisting industrial operators. ■

THE WATER PROBLEM: THE BLUE PLAN'S CONTRIBUTION

A five-yearly update on Tunisia's total water resources is regularly produced by the Ministry of Agriculture's services. The last update (1995) shows that surface water levels have stabilised, whilst there has been a slight increase in levels of ground water. Compared with the previous assessment in 1990, there has been a 3.4% increase in the deeper-lying sources and a 7.4% increase in the water-table. This increase can be attributed to work on locating and prospecting using hydraulic sounding.

The water resource sector has always gravitated much more towards mobilising resources rather than optimising their management. Thus, demand trends are of particular importance in this sector if optimum use is to be made of resources, particularly resources which are of strategic importance since they are non-renewable (water-tables in the South) or subject to changes in natural chemical quality which are

difficult to reverse (coastal water-tables). Irrigation is the sector of economic activity which, overall, consumes the lion's share of exploited water resources, swallowing up almost 75%. It is also the least demanding sector in terms of quality.

In its fascicle on "Water in the Mediterranean Basin" (Fascicle 6, Jean Margat, prefaced by Michel Batisse, Editions Economica, Paris, France) the Sophia Antipolis Blue Plan Centre stresses the importance of transferring water from one basin to another within the Mediterranean part of the same country as one of the essential ways to plan and manage the future, quoting the Tunisian example in the article which is reproduced hereafter.

A slight shift in strategy was recently decided upon, however, with the drinking water sector being urged to supply urban demand in the long term (particularly in southern Tunisia) by adopting desalination as the only solution, costly as it may be.

Water transfer in Tunisia

The Master Plan for water use for northern Tunisia aims at mobilising surface water resources to provide the best possible coverage of water requirements for various ends up until the year 2000.

Geographically speaking, the Plan covers the whole of northern Tunisia (the drainage basins of the oueds of Medjerda and Zouara, Lake Ichkeul and the far north), stretching as far south as the Sfax region. Priority on use was given to drinking water for the main towns in the north and on the coasts but, in terms of the demand to be covered, this is first and foremost a hydro-agricultural project (more than 150,000 hectares of irrigable land).

Resources: Surface water resources in Tunisia are estimated at 2.7 billion m³ per year, 2.1 or 77% of the total in the north. The Master Plan for water use for the north covers a potential 1.9m³ per year. These resources are captured by 10 dams holding 1.1 billion m³. Dams planned for the near and more distant future will raise this figure to 1.7 billion m³ or 87% of the total resources in the region which can be technically made available by damming.

Management: in order to achieve flexible management of this group of dams, the Master Plan hinges on two main principles:

- the possibility of inter-linkage between dams in the same drainage basin;
- the transfer from one drainage basin to another.

This approach means that optimum use can

be made of collected water, avoiding the need to release water into the sea, whilst at the same time water quality can be improved by mixing freshwater from the Medjerda's left bank and the far north with lower quality water from tributaries on the right bank.

Water transfer: Apart from belonging to an arid zone, Tunisia also has to cope with the problem of a mismatch between the areas where water is consumed and those where it is collected. As a result, both short and long term strategies for transfer from one basin or region to another have had to be implemented in order to cover the population's essential needs. The main transfer routes, which cover hundreds of kilometres, are the following: The Oued Ellil pipeline which supplies Greater Tunis; the Kassed pipeline, again supplying Greater Tunis; the Joumine pipeline to "freshen" the waters of the Medjerda and provide drinking water to parts of Tunis, Cap Bon, Sahel and Sfax; the Medjerda-Cap Bon canal which supplies Tunis and Cap Bon (drinking water), Mornag and Cap Bon (irrigation), Sahel and Sfax (drinking water); the Sejnane and Sidi-El Barrak pipeline which is still on the drawing-board. It is intended to carry water to and improve the quality of water in the Medjerda-Cap Bon system. The total transferable volume thus amounts to 880 million m³/year, or half the available water resources in northern Tunisia. This example shows just how important water transfer could become in the near future. ■

COMBATING DESERTIFICATION

The causes of desertification and steps taken to counter the phenomenon

The phenomenon of desertification which is highly active in the centre and south of the country is attacking around 5.5 million hectares to a greater or lesser degree. In the governorates of the south, 25% of productive land is affected by marked desertification, 40% by moderate desertification. Even land which has been spared until now is starting to be threatened.

Desertification has always been blamed on poor management of grazing routes. Vast amounts of these areas are in fact used to grow cereals some years and then left bare and completely unprotected during years of low rainfall.

Moreover, they are also seriously over-grazed, which often causes irreparable damage (the governorates of Medenine, Tatouine and Gafsa). Tree-felling, mainly for firewood, also creates damage.

Aware of the gravity of this phenomenon, for over 10 years Tunisia has been struggling against desertification through the soil conservation programmes ("Yellow Hand") which have been set up, involving the NGOs.

Vast financial and technical means have been poured into this struggle which has affected the whole of the country. To give the soil

a chance to re-grow its plant cover, efforts have been made to rehabilitate some forests and to replant bare land with trees. This should bring about an improvement in woodland coverage rates.

Planning activity has been undertaken on the Tunisian grazing routes, the aim being to: protect the land on the routes; to plant hardy species to provide perennial pasture and thus reduce the risk of erosion and desertification; and to increase levels of income within the local population and improve their standard of living.

The ten-year plan for the forestry sector aims at: increasing forest growth to slow down the loss of plant cover and improve productivity: planting nurseries; improving the management of areas of natural regeneration; and automating reafforestation work.

These activities should give a real boost to efforts to replant trees on the bare land and to improve plant cover on grazing land, thus providing the flocks with a sustainable supply of food whilst protecting pastoral species. Rational grazing will allow for sustainable conservation of soil resources.

Improvements in the forest code should also make it easier to protect the woodland areas. Once the forest

inventory is completed woodland development will become more focused.

Secondary salination is being countered through projects on oasis rehabilitation and the conservation of irrigated land. Rehabilitation of traditional oases has basically concentrated on an area of 10,000 hectares within the framework of the Master Plan for water in the south. As a result of this rehabilitation work some traditional oases have been overhauled and new areas put under irrigation, including Regim Maatoung (right in the Sahara).

Salinity control procedures have been studied and worked out, and through simulation exercises and models these have helped the managers of irrigated areas to apply more appropriate preventive techniques in the fight against salination. The observatories for monitoring desertification which have been set up in certain regions (Mensel Habib, El Ouara, and Bir Amir) have the job of quantifying this phenomenon and finding fitting solutions to the problems of degradation in an arid environment. ■

(Extract from "Protecting Soil Resources", a monography published by the Tunisian Ministry for the Environment).



CURBING NON-REGULATED HOUSING IN TUNISIA

Tunisia had an urbanisation rate of 32% at the end of the 50s. Since then the urban population has shot up, largely as a result of the rural exodus.

By 1994 the rate had reached 62%, it should reach between 67 and 70% by 2001 and be pushing 75% in 2010.

According to the Blue Plan the country has a "coastalisation" rate of 70%. Although no-one would deny Tunisia's success in containing its population growth, and in spite of the fact that city development has retained a human dimension, a far cry from the population explosions

encountered in the Mediterranean megalopolis such as Istanbul and Cairo, the mushrooming of under-integrated areas due to the rural exodus, the difficulties of household waste management and the extension of public sanitation systems are all doing their bit to undermine the quality of life.

Some order is being put into urban area management policies thanks to the new Land Planning Code which was adopted in 1994.

Another pointer to the degree of degradation of the urban environment is the mushrooming of "non-regulated" or "jerry-built" housing, a phenomenon which exists in many other Mediterranean countries such as Greece,

Turkey, Egypt, Morocco, etc.

In Tunis it is an accepted fact that one house in every three is illegally built, with some areas of mass concentration such as Ettadhanen in the western part of the capital. In Sfax, non-regulated settlement covers 36% of the

cesspit or simply throw their waste water into the street.

Thus unauthorised settlement is a major factor in the problem of pollution caused by untreated liquid waste.

It artificially restricts the run-off areas for rainwater, thus increa-

ing the risk of flooding during downpours. Moreover, it spoils the traditional appearance of Tunisian towns because of the poor aesthetic and architectural quality of the buildings, and it encroaches on green and agricultural areas. For several years the public authorities have been trying very hard to



urban area. However, it would seem that the trend towards this type of settlement has now taken a downward turn with a clear slow-down in growth of 7.5% between 1983 and 1992, and 6.6% from 1990-92.

Amongst the negative effects on the urban environment are:

- more limited access possibilities to municipal services;
- the low density of anarchic housing which wastes available space and leads to an increase in the cost of infrastructure;
- inadequate water supply, rubbish collection and sanitation. Households not connected to the network but having nonetheless a decent septic tank are in the minority. The remainder use a

build new housing, and to renovate and renew urban areas—the price tag amounts to 4.2% of GDP.

Incentives have been offered to building constructors to encourage them to build social housing within the reach of low income families.

This policy has brought about a spectacular improvement in the degree of sanitation, creation of green space and urban face-lifting (Environment Boulevard-style operations on the outskirts of towns).

But the deficit in the quality of life which has built up over several decades still has to be made up for, backed up by the injection of vast amounts of funding. ■

PROTECTING AN OUTSTANDING SITE: ICHKEUL NATIONAL PARK

As North Africa's last surviving major wetland, Ichkeul National Park is an essential refuge for large numbers of European and North African migratory waterfowl (an average of 100,000 to 200,000 use it as their wintering ground, including wigeon, pochards, coots, etc). The exceptional hydrological and ecological conditions which exist in the Park have created a wealth of fauna and flora which is now universally recognised: it was placed on the list of biosphere reserves in 1977, World Heritage in 1979 and the Ramsar Convention in 1980.

Ichkeul is a prime example of a vulnerable ecosystem. It is situated in the Mateur plain, 75 km north of Tunis, is part of the Bizerte governorate, and covers a surface area of 12,600 hectares, 2/3 of which are made up of Lake Ichkeul, the rest by the djebel (limestone massif) and the marsh which bear the same name. The lake is a

The site lies at the heart of a region undergoing full expansion (intensive agriculture on the adjoining plains, industrial development of the lake of Bizerte to which it is linked, rapid tourist development).

Upstream drawing-off of water for irrigation purposes is seriously disturbing the ecological characteristics of the lake's habitats, by encouraging saltwater infiltration which will severely upset this singular biotope.

The opening of three dams along with low rainfall during dry years are causing a major drop in water levels and an increase in salinity: the aquatic meadows, the main source of food for the waterfowl, are sinking, the birds deserting.

A further three dams are in the pipeline. Their construction has been postponed. In an attempt to compensate for the water drawn from Ichkeul, a sluice gate was built in the late 80s on the Oued Tinja which provides the link with Lake

February 1990 an international seminar was organised in Tunis with the support of UNDP, the World Bank, UNESCO and the European Commission. It gave rise to a study which was led by the ANPE in co-operation with Germany, and which laid forth a structural, future-oriented approach to the definition of appropriate management and planning techniques for the park and its environment.

The primary results of this study were the drafting of a management strategy integrating the National Park into the "Programme for Economic and Social Development" which the Bizerte governorate is expected to adopt by the year 2015. The study recognises that in the absence of integration it will be impossible to take any safeguard action or, even more so, to restore the natural environment, and that the conditions under which this lake management can come about will not be entirely satisfactory until the year 2000 when partial water transfer to the lake from one of the dams will take place and the sluice gate will become fully operational.

A monitoring committee and an observation unit have been set up. A visitors' centre has also been built with an eco-museum located at the tip of the djebel.

However, as the threat hanging over the wintering possibilities for migratory birds becomes ever more intense, the Committee for World Heritage was planning to strike the lake off its list. High rainfall in 1996, however, led the Committee to rethink its position and to include the site on its list of endangered heritage. Strict implementation of the priority stage of the project will be a determining factor in the future and survival of Ichkeul. ■



secondary lagoon which is fed with fresh water from a 2,080 km² drainage basin, linked to Bizerte's saltwater lagoon, and having an average depth of 1 metre.

It contains extensive underwater aquatic meadows (reed beds).

Bizerte, so that flows between the two lakes could be controlled and the maximum amount of freshwater could be collected in Ichkeul at the end of the winter.

At the same time, people realised the threat hanging over Ichkeul. In

INTERNATIONAL CO-OPERATION

Tunisia has incorporated the transnational dimension of environmental problems on various levels. At purely regional level (the Maghreb in her case) she is actively involved in developing an environmental strategy with the Maghreb Arab Union.



THE TUNIS-BASED SPA/RAC : a major component in MAP

On the broader regional level of the Mediterranean, and within the MAP framework, she plays host to the Regional Activity Centre for Specially Protected Areas, or SPA/RAC, located in Tunis. This centre is one of MAP's mainstays. In 1977 expert consultations held in Tunis on marine parks and wetlands laid down the principles for the setting up and management of protected areas in the Mediterranean, and the creation of an integrated network of these areas. The 1982 SPA Protocol drew widely on these principles. Although the creation of a specialised centre was not planned for, Mediterranean governments meeting in Athens in 1980 accepted Tunisia's offer to act as host to this type of centre. The centre was set up in 1985 in order to

implement the SPA Protocol (which came into force in March 1986), particularly through the drafting of guidelines on the selection, creation and management of protected areas, assistance to countries in the promotion of such areas, and the drawing up and up-dating of an inventory of protected marine and coastal areas in the Mediterranean. It was also responsible for achieving one of the objectives contained in the 1985 Geneva Declaration (the setting up of 50 new areas), investigating legislation pertaining to these areas in the different Mediterranean countries, and organising training programmes. But protected areas alone are not enough to safeguard certain particularly threatened species, which is why the Tunis centre was called upon to co-ordinate activities under the action plans which were successively adopted by the Mediterranean countries for the conservation of the Monk seal (1987), marine turtles (1989), and cetaceans (1991). All of these activities were carried out with the scientific and technical backing of the International Union for the Conservation of Nature (IUCN). The SPA/RAC's range of activities was extended even further, however, when in 1995 a new SPA Protocol was adopted which it actively helped to draft, to replace the 1982 version. It is now entitled "Protocol concerning Specially Protected Areas and Biodiversity in the Mediterranean". This new instrument, which was completed in November 1996 by the

addition of two new annexes, provides the definition and list of the Specially Protected Areas of Mediterranean Interest (SPAMI), and, in line with the Rio decisions and the spirit of MAP II, includes the biodiversity dimension with everything which that implies.

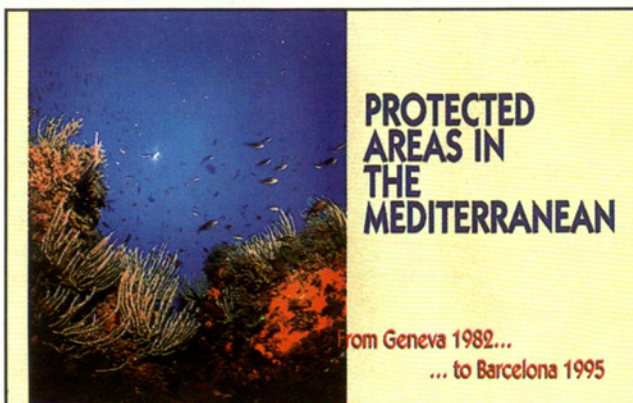
The Sfax CAMP

Still within the MAP framework, Tunisia suggested that the Sfax coastal zone be covered by a Coastal Areas Management Programme (CAMP) in which all MAP activity centres participate by intervening in the different stages of the project (the Split centre on the integrated management centre, the Blue Plan on the environment-development scenario, the Palermo centre on the remote sensing study etc.) alongside national and local experts.

An active role post-Rio

Tunisia was actively involved in drafting an Agenda 21 for the Mediterranean, and in November 1994 she hosted the Conference of Environment Ministers for Mediterranean countries which adopted the Agenda MED 21 programme. This conference, following in the wake of the RIO UNCED led a year later-in 1995- to the overhaul of MAP and the Barcelona system, and in 1996 to the creation of the Mediterranean Commission on Sustainable Development. Tunisia was in fact one of the very first countries to create its own National Commission on Sustainable Development. By taking over the presidency of the Bureau of Contracting Parties to the Barcelona Convention for the two year period 1998-99, Tunisia is in a position to use the experience she has gained at national and regional level in helping MAP at crucial junctures to integrate the new concepts adopted at Rio.

At bilateral level, several countries provide Tunisia with assistance: Germany (for the ONAS's clean-up programmes, reduction of industrial pollution, and the protection of Ichkeul), Luxembourg, Belgium, the Netherlands and Sweden (in countering erosion, building sewage plants, promoting research, etc.). These last two countries have agreed to recycle the service of Tunisia's debt in environmental projects. ■



The most recent SPA/RAC publication (November 1997) describes the history and problems of the protected areas in the Mediterranean.

THE NGO'S CONTRIBUTION

The Tunisian associative movement, largely sponsored by the public authorities, at present includes 50 environment-related NGOs which are genuinely active at national or local level.

It emerged in the 70s with the setting-up of the Tunisian Association for the Protection of Nature and the Environment. At the present moment there are two Tunisian NGOs on the list of MAP partners: the APNEK and the Centre of International Studies for the Maghreb (CETIMA). A third, the Tunisia-Mediterranean Association for Sustainable Development (ATUMED) has been short-listed by MAP as a potential partner. APNEK and Greenpeace Tunisia have submitted the following two articles:

APNEK

The Association for the Protection of Nature and the Environment in Kairouan (APNEK) was founded in 1984. As the name indicates, at the outset its scope was limited to the town of Kairouan, and more specifically to the promotion of its green areas, but rapidly extended to national level. From 1993-95 the APNEK participated in two GEF/UNDP funded projects, in the organisation of a seminar on "The role of women in environmental protection" and in the drawing-up of the Tunisian NGO's document for the Tunis NGO forum/MED 21 Ministerial Conference (October 1994). In March 1996 the APNEK and three other NGOs organised an international workshop in Kairouan entitled "Partners against Desertification" which led to the founding of a Euro-Mediterranean liaison centre to combat desertification (CLEM/LCD). In its partnership with MAP, the APNEK has been responsible for translating, publishing and distributing the last two Arabic versions of "Med-waves".

The Tunisian NGOs for Sustainable Development

by Youssef Nouri,
head of APNEK relations

There are more than one hundred grass-roots organisations for the environment and socio-economic development in Tunisia. Six of them are womens' organisations. Their main activities can be summed up as follows:

a. Awareness-raising through conferences, study tours, documents; clean-up sites and tree-planting. These activities target young people and local populations.

b. Partnership with the administration: the long-standing nature of the Tunisian movement and the new political context which favours its expansion spawned a new climate which has allowed the NGOs to work on several questions in partnership with the national administration. The NGOs were thus involved in the various stages of preparation for the national development plans (VIII and IX- 1992-96/ 1997/2001), and the National Agenda 21. They are represented in the National Commission for Sustainable Development (CNDD). They have written guides to the national parks in collaboration

with the Ministry for the Environment and Land Planning.

During the first workshop between the Ministry and the NGOs on the "Partnership for Sustainable Development" held on June 6th 1995 in Tunis, the two sides agreed to produce a Charter under which the Ministry committed itself to working with the NGOs as national partners, to supporting them, to working to encourage their involvement, and to co-operating with them.

c. Programme implementation in partnership with various donors (GEF, Canadian Co-operation), the Tunisian NGOs have implemented several programmes related to the different international conventions. The overall package for work done in the field amounts to some 700,000 US\$. ■



GREENPEACE TUNISIA



Tunisia is the only Arab or African country where Greenpeace has opened an office (December 1991). Greenpeace Tunisia orchestrates some highly active campaigns, examples of which are: the protection of the Gulf of Gabes (against over-fishing and industrial pollution); against blue-fin tuna fishing using pirate long-liners; for the protection of the posedonian meadows and, in summer 1997, in the hunt for "Caulerpa Taxifolia" (which luckily turned up no traces). This NGO

publishes a bulletin, "The Greenpeace Courier" in both French and Arabic. It is also campaigning to promote solar energy, as can be seen from the article it has submitted.

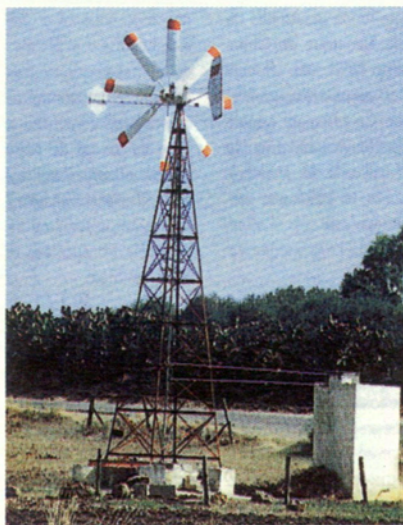
Renewable energy: Tunisia should leap at the opportunity

by *Mustapha Kharrat*

The work of the 2,500 experts in the inter-governmental group on climate change and the numerous other teams around the world who are studying this question proves just how urgent it is that we set the alarm bells ringing on global warming and the emission of greenhouse gases. Without going into all the ins and outs of the phenomenon, let us just say that increasingly convergent forecasts are starting to reveal all the incalculable consequences of global warming: glaciers will melt, causing an increase in sea-levels, resulting in the disappearance of some coastal zones, there will be salinisation of coastal watertables, we will see an increased number of catastrophic events, ecosystems will be knocked completely off balance, etc.. It is therefore in our vital interest to bring the burning of fossil fuels within reasonable limits, thereby reducing emissions of CO₂. We can achieve this by turning to new natural resources (sun, wind, water and sea) as a source of essential energy, gradually turning away from fossil fuels, even though historically they played a role in world development. It was with this in mind that Greenpeace along with many other Tunisian and international NGOs called on participants in the 3rd conference of parties to the convention on climate change held in Kyoto in December 1997 to adopt draconian measures to reduce CO₂ emissions by 20% by the

year 2000, and to invest in ecologically and economically acceptable solutions such as renewable energy.

Thus, renewable forms of energy such as sun and wind may represent the basic source of energy for the future, bearing in mind that, if backed by the determined will and participation of our governments, by the year 2030 they could be satisfying 60% of world demand. Moreover, these new energy



technologies open up broader horizons in job terms than does conventional fuel production (it is expected that wind and solar energy together will create 300,000 jobs in the European Union by the year 2010, and a further 800,000 in the United States). The examples of Greece and Denmark which have opted for the development of solar and wind plants bear witness to the determination of these two countries to move in this direction. Unfortunately, several countries in areas enjoying plenty of sunshine have not made much headway in the exploitation of

these energy sources. Such is the case of Tunisia where renewable energies represent a mere 1% of overall energy production, compared with a world average of around 14%.

In order to kick-start the exploitation of these resources, it is essential to subsidise it, whilst at the same time taxing more polluting forms of energy, and, more importantly, to develop research and investment in this sector in order to achieve optimal viability. There once again, Tunisia is trailing behind, to the extent that the government is drawing up new legislation entitled "The hydrocarbon code", which will encourage the exploration and exploitation of fossil sources, basically by introducing a whole series of subsidies and tax incentives in an attempt to attract as much investment to the sector as possible. Over recent years Tunisia has invested 500 million dinars (about the same in US dollars) in fossil fuels. Why not do the same to promote renewable energies, particularly solar? This question is all the more justified since, according to the World Bank, Tunisia annually pours 580 million dollars into health spending linked to air pollution, and 100 million dollars to combat desertification.

As for the 7 million dollars granted since 1994 by the Global Environment Fund and Belgian co-operation for promoting the use of solar energy for heating water in the tertiary sector (hotels, hospitals, public baths, etc.), the project is still struggling to take off, not through any lack of will on the part of the Energy Agency (AME) which acts as co-ordinator, but rather because the

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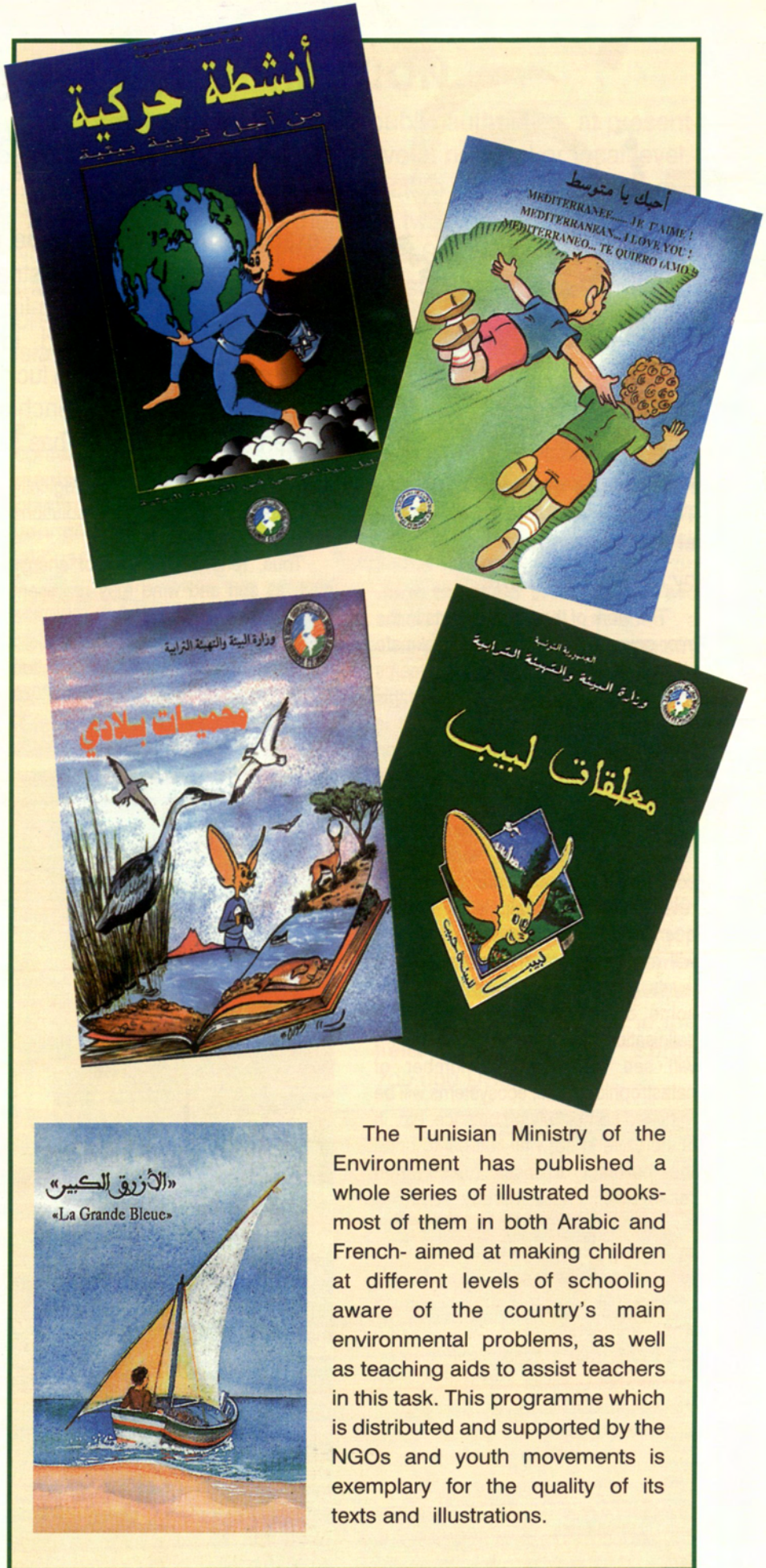
sector is just not aware of the advantages of solar energy. The same could be said of the Tunisian public in general. This explains why, since December 1995, Greenpeace Tunisia has been running an awareness-raising campaign for the general public, and more specifically for the decision-makers (public authorities, financiers, investors, industry, insurance etc.) who are mostly still resisting the idea of solar energy.

During the study day on the cost of climate change and the potential for solar energy in Tunisia, organised by Greenpeace Tunisia and the Youth Chamber of Economy in December 1997, both the speakers and audience recognised the need to invest the necessary resources in this type of solution, rather than continuing to finance problematic forms of energy. We remain convinced that Tunisia will manage to pick up the gauntlet, particularly since her energy balance is in the red. ■

Sources-references:

This dossier has been produced partly thanks to data and information taken from documents published in Arabic and in French by the Tunisian Ministry for the Environment (MEAT): National reports, The state of the environment (1993-1996), Safeguarding the Tunisian Coasts, Biodiversity and Biological Rarefaction in Tunisia, Protection of Water Resources, Safeguarding Ichkeul National Park. For the introductory article and the country profile we used the Europa World Yearbook 1997, Quid 1997, the special edition of La Presse Francaise on Tunisia (No.1, autumn 1997), and official Tunisian statistics.

It should be pointed out that some data differs widely between sources. The article on water is taken from BP fascicle no. 8 and certain aspects of the Ichkeul article from BP fascicle no.3 (new edition 1997). Some of the information on industrial pollution and fishing in the Gulf of Gabes is also taken from Greenpeace Tunisia's documentation. The article on Wildcat settlement is inspired by A Profile of Tunisia (published by the BP/RAC in 1995, from which some of the elements for the article on international co-operation were also taken) and the National Report: the state of the environment 1996 (MEAT). The illustrations are taken from documentation produced by the MEAT and the Tunisian National Tourism Office (ONTT).



The Tunisian Ministry of the Environment has published a whole series of illustrated books—most of them in both Arabic and French—aimed at making children at different levels of schooling aware of the country's main environmental problems, as well as teaching aids to assist teachers in this task. This programme which is distributed and supported by the NGOs and youth movements is exemplary for the quality of its texts and illustrations.