LEGAL AND MANAGEMENT INSTRUMENTS FOR THE PROTECTION OF THE MEDITERRANEAN COASTS

Palma de Mallorca, 6-8 June 2002

Programme Officer, MAP-UNEP.

Govern de les Illes Balears Conselleria de Medi Ambient

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INTRODUCTION

Both the Mediterranean Sea, and the Mediterranean countries, particularly their coastal areas, face heavy pressures, most of them resulting from human activities related to uncontrolled development.

Since 1975 Mediterranean States, through the Mediterranean Action Plan (MAP), have been working in close cooperation to address environmental issues, taking into account political, cultural, developmental and religious differences.

MAP's objective is to preserve the region values, integrating environment and development to achieve prosperity and sustain the rich Mediterranean heritage in a lasting way.

MAP's work focuses on the sustainable management of natural marine and coastal resources and on integrating the environment into social and economic development and land use policies. It seeks an earlier assimilation of environmental considerations into development plans because the management of the environment can only be effective if it is incorporated into development. All citizens, particularly business and professional people as well as municipal personnel, NGOs and educators, are being called upon to make environmental considerations an intrinsic part of all Mediterranean development activities.

MAP is involved in coastal zone management, pollution assessment, control and prevention and protection of ecosystems to maintain biodiversity. It also seeks to strengthen solidarity among Mediterranean coastal states in managing their common heritage and resources for the benefit of present and future populations.

EVOLVING IN LINE WITH CHANGING ENVIRONMENTAL PRIORITIES

The Mediterranean Action Plan (MAP) was created in 1975 when representatives of 16 Mediterranean states and the EU, highly concerned about the state of the Mediterranean Marine Environment, got together in Barcelona under the auspices of the United Nations Environment Programme (UNEP).

Immediately after its establishment, MAP called on Mediterranean governments to draw up and adopt a series of legally binding agreements on specific environmental issues and a regional programme of pollution monitoring and research (MED POL). At a second conference a year later, the Convention for the Protection of the Mediterranean Sea (the Barcelona Convention), an umbrella convention, was adopted, as were its two Protocols, one on the dumping of waste from ships and the other on cooperation in combating marine pollution in cases of emergency.

During its first twenty years, MAP addressed a broad range of issues relating to the protection of the marine environment and accumulated experience as a pioneering cooperation project between Mediterranean countries concerned about their environment. Shared intentions on specific environmental protection issues were consolidated into four additional Protocols. These Protocols, which are updated when necessary, have provided a framework for the implementation of common actions for environmental protection.

The main MAP objectives were to assist the Mediterranean governments to assess and control marine pollution and to formulate their national environmental policies. The MED POL programme played a leading role in upgrading the technical capabilities of most Mediterranean countries, taking out 500 research contracts with national institutions between 1982-1995. MED POL also helped MAP countries establish marine pollution monitoring programmes. MAP built up a scientific and information base which along with the Protocols can be credited for a large number of concrete actions taken by Mediterranean states such as environmental policies adopted in conformity with MAP requirements.

As MAP has evolved, its original focus on the pollution of the Mediterranean Sea has widened in the light of observation and scientific evidence that most marine pollution originates on land. Mediterranean countries have begun to pay more attention to the environmental management of coastal areas. This need to broaden the range of concerns was further acknowledged by MAP Contracting Parties in the Genoa Declaration of 1985 which addressed the problems of the depletion of fresh water and the degradation of coastal areas, wetlands, forests and agricultural lands. MAP's focus gradually shifted from a sectorial approach to pollution control, to integrated coastal zone planning and natural resource management as the key tools through which solutions are being sought. The steady incorporation of Regional Activity Centres into the Action Plan has helped to support this broader focus.

In the late 1980s and early 1990s, global developments in environmental approaches confirmed and supported MAP's new approach. In particular, Agenda 21, a document highlighting the relevance of environmental concerns to all aspects of development that was publicized at the 1992 United Nations Conference on Environment and Development (UNCED) in Rio, thrust the links between the environment and sustainable development into the public arena. MAP responded in 1994, with the presentation in Tunis, of Agenda MED 21. This document, adapting Agenda 21 to the Mediterranean context, reflects the commitment of the Mediterranean states to the ideal of sustainable development. Implementing sustainable development in the framework of the Barcelona system, the Contracting Parties proceeded to extensively revise it. In 1996, the Mediterranean Commission on Sustainable Development (MCSD) was set up with a mandate to advise MAP states on sustainable development solutions and to offer them recommendations and proposals for action. The MCSD highlights the interrelationships between economic development and the environment, and the consequent need to involve the range of key social actors from NGOs to businesses to the public, in environmental conservation efforts.

MAP STRUCTURE

Today, 20 countries fringing the Mediterranean Sea and the European Union (EU) make up MAP. All are contracting parties to the Barcelona Convention, the MAP legal framework that commits them to a dedicated environmental course of action for the Mediterranean. The Convention is

accompanied by six Protocols which are binding legal instruments addressing specific aspects of environmental protection.

MAP is coordinated by a Secretariat based in Athens. It works under the auspices of the United Nations Environment Programme (UNEP) and was the first UNEP Regional Seas Programme. MAP comprises a MED POL Programme for the assessment and control of pollution, a Programme for the Protection of Historic Sites, now under review, and six Regional Activity Centres (RACs). Each RAC offers its own environmental and developmental expertise for the benefit of the Mediterranean community through its implementation of MAP activities.

The Contracting Parties (Mediterranean governments and the EU) meet every two years to decide on MAP strategies, budget and programme in pursuit of MAP's goal of an improved Mediterranean environment, in the framework of Mediterranean sustainable development. A number of partners such as non-governmental organisations (NGOs) and UN specialized agencies and bodies are invited to sit in on these meetings. A rotating Bureau of six Contracting Parties meets to guide and advise the Secretariat in the interim periods.

Each member country appoints one or more individuals to be responsible for the follow-up and coordination of MAP activities at national level. Known as Focal Points, they are the official representatives of the Contracting Parties, and in turn delegate other Focal Points to focus on key MAP issues.

MAP COORDINATING UNIT (MEDU)

The MAP Coordinating Unit (MEDU) is the nerve center of MAP activities. Since 1982, it has been based in Athens. MEDU is responsible for the implementation of the Mediterranean Action Plan. It performs diplomatic, political and public relations roles. MEDU cooperates with countries, NGOs and other relevant international organisations, facilitating capacity-building and supervising MAP Regional Activity Centers. It is responsible for the follow-up and implementation of legal documents and MAP's information strategy. MEDU also performs all secretariat functions such as the organisation of major institutional meetings and programmes and the management of MAP finances.

FUNDING

Most MAP activities are primarily financed by the Mediterranean Trust Fund to which all MAP Contracting Parties contribute according to a mutually agreed level in line with a UN assessment scale. Other main sources of funding to support specific projects and activities include voluntary contributions, the European Union, UN agencies, and the Global Environment Facility (GEF).

LEGAL STRUCTURE

MAP's legal framework - the 1976 Barcelona Convention for the Protection of the Marine Environment and the Coastal region of the Mediterranean, as amended in 1995, and the six Protocols, the so-called Barcelona system - bears witness to the countries' commitment to give priority to environmental considerations despite the fact that they may be at different stages of economic development. Once they have signed and ratified these agreements* the task of the

member states is to go on to take appropriate steps to implement national organizational and legal initiatives as a route to optimal compliance with the Barcelona system.

These legal texts interact with global legal agreements, some of which have been developed under the auspices of the United Nations Environment Programme, such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and the Convention on Biological Diversity.

MEDITERRANEAN COMMISSION ON SUSTAINABLE DEVELOPMENT (MCSD)

Sustainable development is about integrating respect for the environment into all aspects of economic development to ensure sufficient natural resources for future generations. Set up as an advisory body to MAP in 1996, the Mediterranean Commission on Sustainable Development (MCSD) is a think-tank on policies for promoting sustainable development in the Mediterranean basin. Unfortunately its influence at national and regional policies is still very low.

PROGRAMME FOR THE ASSESSMENT AND CONTROL OF POLLUTION IN THE MEDITERRANEAN REGION (MED POL)

MED POL, based at MEDU, assists Mediterranean countries in the formulation and implementation of pollution monitoring programmes, including pollution control measures and the drafting of action plans aiming to reduce and ultimately eliminate pollution from land-based sources. It also carries out capacity-building programmes concerned with the analysis of contaminants and treatment of data and technical and management training. MED POL is responsible for the follow-up work relating to the implementation, by Mediterranean countries, of the LBS, Dumping, and Hazardous Wastes Protocols. In recognition of the close relationship between environment and health, a senior World Health Organisation (WHO) scientist works full-time on broad health issues within the framework of MED POL.

REGIONAL ACTIVITY CENTRES (RACs)

MAP RACs carry out environmentally related activities at the regional level, as agreed by the Contracting Parties, and coordinated by MEDU. With their bases in six Mediterranean cities, they play key roles in the implementation of various components of the Programme at regional, national and local levels. Financially supported by MAP Contracting Parties and respective host countries, they assist member countries in numerous ways, and especially in capacity-building.

REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE MEDITERRANEAN SEA (REMPEC)

Situated on Manoel Island, Malta, REMPEC is there to aid Mediterranean coastal states with their commitments under the Emergency Protocol, helping them build up their national response capabilities to be prepared for and to cope with prevention and combat of major marine pollution incidents. The center also facilitates cooperation between countries in combating accidental marine pollution from a range of hazardous substances including oil. REMPEC's crisis management work includes the dissemination of information before and during an emergency and the provision of training and technical help. At the request of affected countries, it mobilises expertise in cases of

emergency, if necessary from beyond the Mediterranean region. REMPEC is managed under the joint auspices of the United Nations Environment Programme and the International Maritime Organisation.

BLUE PLAN REGIONAL ACTIVITY CENTRE (BP/RAC)

Located in Sophia Antipolis, France, the BP/RAC adopts a broad and prospective approach to Mediterranean environmental problems in its work on sustainable development solutions for the region. The centre considers the interwoven tapestry of human activities such as urbanization, industry, agriculture, energy, transport or tourism, that impact on marine and coastal natural resources. BP/RAC produces a range of carefully researched information on topics such as population trends on all Mediterranean states. Experts go on to produce scenarios for reconciling the environment and the realities of socio-economic development in a drive to help Mediterranean countries make decisions with the future in mind.

PRIORITY ACTIONS PROGRAMME REGIONAL ACTIVITY CENTRE (PAP/RAC)

Situated in Split, Croatia, the main PAP/RAC objective is integrated coastal area management, a holistic approach to alleviating developmental problems in built up coastal areas relating to their impact on the environment. The aim is to address immediate problems of a developmental nature and their effects on the coastal environment and its resources, through priority actions in several fields, with a view to inducing sound environmental management practices. The centre offers technical assistance and coordinates local projects that typically involve the participation of many local bodies.

Other environmental themes PAP/RAC has focused on include water resource management, soil protection, the development of environmentally-friendly tourism and environmental assessment studies of coastal areas. The centre organises regular workshops and training programmes, and prepares guidelines for the implementation of actions related to these themes.

SPECIALLY PROTECTED AREAS REGIONAL ACTIVITY CENTRE (SPA/RAC)

From its base in Tunis, this centre focuses on the protection of Mediterranean species, their habitats and ecosystems. Responsible for assisting countries with the technical implementation of the SPA and Biodiversity Protocol, SPA/RAC is involved with habitat management, the drawing up of legislation, the establishment and management of protected areas and the implementation of action plans for the conservation of endangered species such as the Mediterranean Monk Seal, marine mammals, marine turtles and marine vegetation. It also works in the elaboration of biodiversity conservation strategies and the enhancement of national capabilities through training programmes. SPA/RAC plays an important role in the coordination and follow-up of SPAMIs (Specially Protected Areas of Mediterranean Importance). The centre also promotes the exchange of information and experience among Mediterranean specialists and the involvement of relevant international organisations including NGOs.

ENVIRONMENTAL REMOTE SENSING REGIONAL ACTIVITY CENTRE (ERS/RAC)

Based in Palermo, Italy, ERS/RAC cooperates with countries to support planning and decisionmaking processes aiming at the sustainable development of marine and coastal areas through the application of data derived from remote sensing.

This technique of using satellite technology to survey land and marine surfaces, is a valuable environmental assessment tool complementary to more conventional methods. It is particularly effective for accurate monitoring of environmental states and changes over time and over wide areas. Such changes may be due to impacts of human activity or to natural phenomena. Raising awareness on the potential of these advanced techniques, the dissemination of their results and the boosting of the capacities of Mediterranean countries through accelerated use of satellite techniques are key ERS/RAC commitments.

CLEANER PRODUCTION REGIONAL ACTIVITY CENTRE (CP/RAC)

Cleaner production techniques, which reduce industrial wastes at source, are to be encouraged because industry is one of the major causes of pollution. The main activities of the CP/RAC, which is based in Barcelona, Spain, include publicising the concept of clean production and pollution prevention, and its advantages, to the industrial sector, and the dissemination of tried-and-tested cleaner production techniques. The centre also organises training programmes, and promotes the exchange of experts, facilitating technology transfer within the region.

PROGRAMME FOR THE PROTECTION OF COASTAL HISTORIC SITES (100 HS)

The Mediterranean coasts feature the world's greatest concentration of historic sites and monuments, the rich legacy of 5000 years of successive civilisations and trade, conquests and conflicts. Known as '100 Historic Sites', this programme seeks to help to protect more than150 threatened coastal historic sites, dotted throughout Mediterranean coastal areas. Priority fields encompass underwater archaeological sites including shipwrecks. The programme offers training in optimal site management practices.

THE STATE OF POLLUTION IN THE MEDITERRANEAN REGION

Since MAP members launched a concerted effort in 1975 to clean up the Mediterranean environment, individual countries and the region as a whole have made considerable progress in the protection of the Mediterranean Sea against chronic or accidental pollution. A recent joint European Environment Agency/MAP study highlights the generally good state of the open waters in the Mediterranean Sea. The coastal regions, however, remain under considerable stress as a result of human activities, with only a very small percentage remaining in a pristine condition. Current pollution threats include organic and microbiological pollution, heavy metals and oil spills.

Areas that feature the heaviest concentration of pollutants from human activities are known as pollution hot spots. These clusters of severe pollution problems are generally found in coastal areas with semi-enclosed gulfs and bays near important harbours, big cities and industrial areas and constitute a major Mediterranean problem.

MARINE POLLUTION

Accidental pollution threats.

The high density of shipping traffic in the Mediterranean Sea means an increased risk of a maritime accident resulting in a major spill. It is estimated that around 50% of all goods carried at sea are potentially hazardous, while about 30% of the total volume of world sea-borne traffic originates from or is directed to the 305 ports scattered along the Mediterranean coastline or passes through Mediterranean waters. Rising industrialisation and petroleum refining in the southern parts of the region will only increase the volume of hazardous substances transported by ships.

Oil pollution risks to human health, economies, and the ecology of the area affected, are a particular concern. The Mediterranean Sea is a major route for transporting oil from the Middle East and North Africa to Europe and North America. Most of the Mediterranean countries are not in a position to rely on their own resources when dealing with a major marine pollution accident.

According to REMPEC records, 151 maritime accidents resulting in oil spills were reported in the Mediterranean region between August 1977 and December 1999. Although only five oil spills of more than 10,000 tonnes were recorded during this period, the incidence of pollution-causing accidents is nevertheless considered to be too high, and accidental spills, regardless of their size, have caused localised damage to the Mediterranean marine and coastal environment. A major oil spill could occur at any time, particularly along the main sea routes, around ports and in the vicinity of the more important oil loading and unloading terminals. This threat is made worse by the use of several ageing tankers in Mediterranean waters. Since 1988, when data on accidents involving hazardous substances other than oil started to be collected, REMPEC has recorded 79 accidents causing or likely to cause pollution of the Mediterranean Sea.

Routine pollution.

Land-based activities (urbanization, industry, tourism and agriculture) represent the main source of pollution into the Mediterranean Sea. Marine pollution from ships is largely due to inadequate implementation of international standards. In the course of routine operations, ships may discharge oily wastes, and other harmful liquid substances, sewage and rubbish into the sea - a significant source of marine pollution. An estimated one million pleasure boats of all sizes were moored or registered in Mediterranean ports in 1997. In addition, aircraft frequently dump fuel into the sea. Offshore exploration and exploitation of the continental shelf and the seabed and its subsoil, e.g. rig construction, are also a significant potential pollution source.

POLLUTION OF COASTAL AND INLAND AREAS

The Mediterranean Sea is a dumping ground for municipal and industrial wastes and the destination of pesticides and fertilisers carried via rivers or through runoff which can also include hazardous industrial chemical elements. The results of using the Mediterranean in this way are often severe. Deposits of excessive nutrient loads from rivers and urban and industrial effluents can lead to eutrophication which variously affects almost all Mediterranean coastal states. Severe manifestations of this damaging altered state of the marine ecosystem are especially prevalent in some Mediterranean enclosed coastal bays which receive elevated nutrient loads from rivers as well as direct discharges of untreated domestic and industrial wastes. Under certain conditions the water surface becomes covered by a stagnant film of thriving algae that can consume dissolved oxygen

and prevent the water from sustaining other forms of life. Consequences include a reduction in the diversity of marine species and human health risks arising from the proliferation of algal species that produce potent toxins. These can trigger gastrointestinal diseases in humans when consumed. Eutrophication can also result in negative socio-economic effects on tourism and fishing industries.

Overall, the main risks to human health from sea pollution arise from contact with seawater or sand polluted by pathogenic micro-organisms such as bacteria and viruses or from consumption of contaminated seafood. In recent years, several Mediterranean countries have imposed temporary bans on shellfish consumption in the interests of safety. These bivalves have been found, on occasion, to bioaccumulate pollutants of an industrial or human origin. A number of diseases have been associated with bathing in polluted waters. These include ear, eye, skin and upper respiratory tract disorders.

Human activities on land are responsible for more than 80% of the total pollution in the Mediterranean Sea. Industry, agriculture and dense concentrations of residents and tourists in large coastal towns and cities generate huge quantities of liquid and solid waste. Levels of atmospheric pollution are intensified by the burning of fossil fuels for vehicles and for domestic heating. These activities impact on the quality of water and the atmosphere and therefore on the quality of life.

MAP FIGHT AGAINST POLLUTION

MAP employs a multifaceted approach to launch a strong, many-sided offensive on these complex pollution problems. Through five of the MAP Protocols, Mediterranean countries have dedicated themselves to tackling pollution on several fronts as part of their drive to assess, control, prevent and, if possible, eliminate pollution. MED POL and the RACs are vehicles of MAP's capacity-building and information-sharing strategies. Through their implementation of these Protocols and additional MAP response strategies to pressing problems, they are addressing pollution issues with the Mediterranean countries. With respect to the combating of marine pollution, for example, MAP is helping to strengthen institutional capacities of Mediterranean countries, and supporting them with technical assistance and the provision of scientific equipment. These efforts are bolstered by cooperation with a wealth of UN bodies and concerned NGOs, international organisations, local authorities, entrepreneurs and other partners.

Protocols play a key role in the MAP drive to conquer pollution. The role of cleaner production in the alleviation and eventual elimination of pollution loads is emphasised in both the LBS and Hazardous Wastes Protocols, while the former identifies wastewater treatment and disposal as crucial in the elimination of pollution from land-based activities. Under the Dumping Protocol, regional level activities include the collection of information on the few dumping activities, such as the dumping of dredged material from harbours, that are permissible. The Offshore Protocol aims to regulate offshore activities in an effort to protect the marine environment. These activities include prospective drilling, offshore loading of ships, and the disposal of waste from installations. The offshore disposal of non-biodegradable wastes such as plastic bags, for instance, is prohibited, as is the disposal of harmful substances such as mercury compounds or those proven carcinogenic in or through the marine environment. The Emergency Protocol presently addresses pollution emergency issues and the intention is to revise it by expanding it to encompass routine operational discharges into the Mediterranean Sea. In doing so it will make the International Convention for the Prevention of Pollution from Ships and its Protocols (MARPOL 73/78), as well as all relevant IMO conventions relating to the prevention of pollution and safety at sea, more effective in the Mediterranean region.

It would thus cover leisure activities linked with nautical tourism, particularly commercial boats and cruise ships, a growing source of Mediterranean pollution.

MED POL is a diverse programme for pollution assessment and control in the Mediterranean which has evolved from a pioneering research tool carrying out pilot projects to assess marine pollution, to a body helping countries build the capacity to monitor and control marine pollution, in particular from land-based activities. It encourages the use of synchronised scientific standards, national monitoring programmes and other devices enabling countries to manage problems caused by pollution. These have a control edge allowing better evaluation and comparison between countries. For instance, through monitoring of biological effects, scientists judge if the environment is deteriorating by studying the physiological and biochemical impact of pollutants on, for example, the reproductive cycle of fish. Together with classical chemical monitoring, this provides a more holistic picture of pollution effects. Compliance monitoring, by measuring what is actually being done for the environment, helps identify bottlenecks and so assists countries to facilitate their resolution. For instance, countries can check whether industry is complying with legislation.

The programme has a contract with the Monaco-based Marine Environmental Laboratory of the International Atomic Energy Agency (IAEA) for data quality assurance of MED POL's analytical data. IAEA and WHO, in the framework of MED POL, have responded to gaps in the practice of national laboratories by the organisation of regular intercalibration exercises to introduce and standardise practices around the entire region and thus improve data quality in both the microbiological and chemical fields. WHO and MED POL have also cooperated to offer training courses in wastewater treatment. When work on the identification of regional hot spots revealed a shortage of trained personnel for these plants, regional training in France, Greece, Egypt and Israel was swiftly organised.

MED POL's research component is being restructured to allow it to respond more dynamically to arising pollution issues. Current research themes include innovative sewage treatment technologies for island mountain villages and cost effective methods of recycling. Information is being centralised on technical databases making it more easily accessible to Mediterranean countries.

The Strategic Action Programme (SAP) is a new action-oriented MED POL initiative deriving from the terms of the LBS Protocol with a timetabled approach to tackling and eliminating the range of Mediterranean pollution problems by facilitating and accelerating the implementation of national environmental goals. Setting out to eliminate pollution stemming from land-based sources, it works towards the phasing out of inputs of substances into the Mediterranean Sea which are toxic, persistent and liable to bio-accumulate. It also targets the region's 109 identified pollution hot spots and 51 sensitive areas.

The SAP is a 25-year plan with built in scope for the revision of detailed operational timetables at two-year intervals. Its initial three-year phase is being mainly funded by the Global Environment Facility and the French GEF and involves a host of partners including METAP and several IGOs and NGOs.

The SAP sets out to have National Action Plans up and running by 2005 to help countries fulfil their pollution clean-up objectives. These will tackle inadequate national legislation and institutional and

enforcement structures at national and local levels, by focusing on sustainable and integrated environmental management capacity building.

Through the adoption of the SAP, MAP countries have made a commitment to safely dispose of sewage from towns and cities with more than 100,000 inhabitants by 2005 and to the intensive reduction of pollution at source, via cleaner production, for instance. Other national obligations include strategies for the promotion of sustainable agriculture involving controlled use of chemicals as well as targets for reduced air pollution.

SAFEGUARDING THE NATURAL AND CULTURAL HERITAGE

Mediterranean countries vary greatly in their ability to participate in the environmental initiatives needed to protect and manage natural heritage. MAP aims to boost competencies, and technical resources, thus improving national institutional capabilities in the implementation of conservation policies. This needs to be supported by the strengthening of national legislation. The protection of endangered and threatened species in the Mediterranean is crucial. Eighteen cetacean species are considered at risk. The Mediterranean Monk Seal is on the World Conservation Union's list of the 12 species in the world most threatened with extinction.

SPA/RAC has a remit to protect the region's natural heritage and works to achieve the following objectives:

- to implement the SPA and Biodiversity Protocol,
- to establish well-managed specially protected areas in MAP countries,
- to help safeguard long term biological diversity in the region,
- to conserve marine and coastal ecosystems as well as sites of cultural interest
- to set up a list of Specially Protected Areas of Mediterranean Importance (SPAMIs).
- -

. Its work is also in tune with broader relevant international agreements such as the Bern Convention on the Conservation of European Wildlife and Natural Habitats, the Bonn Convention on Migratory Species and the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS).

MAP APPROACHES TO THE MANAGEMENT OF COASTAL AREAS

Integrated Coastal Area Management (ICAM) is a holistic environmental approach which sets out to deal with the grid of coastal area environmental problems collectively on the understanding that they are interlinked. This approach to sustainable management and coordinated public policy demands the involvement of a range of sectors, stakeholders, administrative levels and planning processes. In many cases, the participation of adjacent areas, and even countries, is vital. This is because certain negative environmental pressures originate beyond the confines of the areas hallmarked for protection. A move to protect turtle nesting grounds which happen to compete for space with a popular Mediterranean island's bathing beaches, for example, is more likely to succeed if hoteliers, neighbouring local authorities, residents and tourists are all part of the picture.

Through ICAM, MAP is seeking to reverse these coastal negative trends so often the result of a sole consideration for short-term economic advantages. By anticipating and preventing irreversible

destruction of resources, and by implementing pilot coastal area management programmes in worst affected coastal areas, it is moving to integrate informed management of natural and cultural heritage into planning and development activities. MAP would like ICAM to gradually become the common approach to tackling problems affecting Mediterranean coastal areas.

Coastal Area Management Programmes (CAMPs) are MAP initiatives aiming at the introduction of ICAM at local or national levels and institutional strengthening and capacity-building, in an effort to rehabilitate areas with the heaviest load of environmental problems. These projects are a form of advanced collaboration between MAP, national and local authorities and international financial bodies. They are based on the principles of sustainable development, integrated planning and the management of Mediterranean coastal areas. Thirteen CAMP projects have been implemented since 1989 in various parts of the Mediterranean. Further projects are ongoing or in preparation.

CAMPs are finite pilot projects, lasting an average of three to four years, with countries nominating areas most in need of ICAM assistance to the Contracting Parties for approval. The country itself implements the CAMP with MAP acting as catalyst through help in funding and training provision, and significant input from RACs.

CAMPs present an interesting opportunity for MAP to work at local level in coastal regions, kickstarting a range of actors and sectors into working together. These projects routinely propose further planning or institutional strengthening activities, on completion. Analyses show, for example, that on the Greek island of Rhodes, in Kastela bay, Croatia and on the Syrian coast, CAMPs have sparked follow-up projects carried out by other actors. The significant improvement in institutional capacity (particularly in Albania, Izmir bay, Turkey, and on Rhodes) and thus in the sense of 'ownership' of the projects, along with enhanced local environmental awareness, are considered to be the CAMPs' best achievements. Indicating the growing Mediterranean emphasis on the sustainable management of coastal zones are the introduction of protection legislation and the emergence of national agencies for coastal zone planning and protection such as APAL in Tunisia and Conservatoire du Littoral in France. Greater public and private participation remains a challenge.

CITIZEN SUPPORT

The key ingredient in the continued and enhanced success of this regional collaboration is the commitment of the region's inhabitants, and its millions of visitors, to an overall respect for the environment and their will to integrate this respect into their daily lives. This is a challenge because while symptoms of environmental degradation such as beach litter and increasing air pollution are all too noticeable, major achievements are not always visible. These successes include the multiplication of wastewater treatment facilities, the improved quality of bathing waters, the sea change in the attitude of major industry, the greater responsiveness of local authorities and the establishment of natural protected areas. The public are likely to be more motivated if they realise that things are changing for the better.

As environmental solutions are most often long term goals, with no overnight panaceas, it is all the more important to build public awareness with staying power. The goal is not only to change

attitudes but also to motivate and empower people to act for the environment. In this framework the role of NGOs is crucial.

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EADWAY IN MEDITERRANEAN STATE COASTAL LEGISLATION AND MANAGEMENT PLANS IN MAP COASTAL AREAS

I .- HEADWAY IN MEDITERRANEAN STATE COASTAL LEGISLATION AND PROTECTED AREAS.

Introduction:

From a legal and practical viewpoint, the optimum way to ensure the sustainable development of coastal areas and the conservation of their natural resources is integrated coastal management. Integrating environmental affairs in the configuration and development of other policies and initiatives is the best design formula for efficient protective mechanisms. The creation of infrastructure, institutional development, economic affairs, the distribution of the population, urban planning models, tourism, agriculture and the regulation of land use are all factors that intervene in some way in the well-being of coastal areas.

Given the differences between the different states involved in the Mediterranean Action Plan (MAP), standard legislation and/or uniform management of their respective coastal areas has yet to be achieved. To find out what degree of coastal regulation had been achieved in recent years by the Contracting Parties to the Barcelona Convention, during the course of a meeting by a reflection group held in Nicosia, Cyprus (March 19th-20th 1998), it was agreed that a legal questionnaire would be created, destined for the national focal structures of the Priority Actions Programme Regional Activity Centre (PAP/RAC) of the MAP.

The reflection group, composed of technical and legal experts, were asked to prepare the guidelines for national legislation on the management of Mediterranean coastal areas.

The questionnaire, designed in January 1999, was to be inspired by the Council of Europe's Model Draft Law on Coastal Zones. According to this model law, the integrated management of coastal areas involves "the regulation and sustainable use of coastal zones, taking into account economic and social development associated with the presence of the sea, safeguarding the fragile biological and ecological balance of coastal zones and landscapes for present and future generations".

The different governments' responses, received between April 1999 and February 2000, were compiled in a document drawn up by Michel Prieur and Mahfoud Ghezali, together with an analysis of integrated coastal management principles and obstacles.

The results of this questionnaire show that although headway has been made in this field, there is still no standard full legal framework in Mediterranean countries, and neither do the different legal systems receive the necessary institutional, structural and financial support in all states. There is no standard definition or demarcation system for coastal areas and, on occasions, precision is lacking in the land-based or marine surface area they cover. Likewise, the integration of the MAP's legal instruments varies from country to country.

Furthermore, a general delay can be observed in the acceptance of the approved amendments to these instruments. Thus the amendments to the Barcelona Convention of 1995 and those to the Protocols on Dumping from Ships and Aircraft and Pollution from Land-Based Sources have still not come into effect due to an absence of ratification mechanisms. The adoption of the Barcelona Convention's new guidelines, which integrate coastal areas (including watersheds) in its scope of application, might seem to indicate that the states are faced with a more ambitious real objective in the management and sustainable development of coastal areas.

However, over the last three years, Mediterranean governments have made important legislative efforts to protect natural resources in general, whilst also focusing more specifically on factors involved in the configuration of a coastal management system. Different national laws have been adopted or are in the draft law stage: national environmental laws or codes (Slovenia and Lebanon in 1999, Malta and Cyprus in 2001), territorial planning and sustainable development laws (France 1999, Greece, 1999), draft coastal and marine defence laws (Albania, Morocco), coastal development laws (Italy, 1999), or maritime safety laws (Spain 1999).

In parallel, at a planning and action-based level, different initiatives have been implemented with the assistance of the MAP's **Regional Activity Centres**, the United Nations Environment Programme and NGOs. These initiatives receive funding from different international and regional bodies (the World Bank, LIFE-Third Countries funds or the Mediterranean Trust Fund), and also from national environmental project investment funds.

Among other things, mention should also be made of the approval of National Environmental Plans (Bosnia & Herzegovina, and Syria in the year 2001), the development of national integrated coastal management strategies; freshwater sustainable management plans; conservation programmes for marine species and ecosystems (wetland and coral reef conservation programmes in Egypt, 2001; the Cetacean Sanctuary created under an agreement between France, Monaco and Italy, 1999); institutional reinforcement in those countries with less infrastructure for the management of natural resources; environmental information systems; national biological diversity inventories, monitoring programmes and new CAMP projects (Albania and Morocco).

At a MAP level, notable achievements have also been made:

- The entering into effect of the Protocol Concerning Specially Protected Areas and Biological Diversity in mid December 1999;

- A proposal for a specific legislative framework for coastal areas (either in the form of a future protocol or by first achieving a minimum common base via the creation of legal instruments or via improvements to each country's existing ones);

- Improvements to integrated coastal management projects, extending the CAMPs to encompass the whole of the Mediterranean Basin and promoting citizen participation in decision-making processes, and the development of appropriate methods and instruments for the new strategic guidelines;

- The approval last January 25th of the new Protocol Concerning *Cooperation in Combating the Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency*, directed at the development of a regional strategy for combating pollution.

All these steps reflect the desire of the Contracting Parties to the Convention to make headway in achieving a more sustainable situation for the Mediterranean Basin. Nevertheless, they must still overcome certain problems in the application of legislation for the protection/management of coastal areas. Most of the countries have developed a complex legislative framework, with sectoral laws that are rather uncoordinated, not very precise or inadequate if new legal mechanisms and the guiding principles of the MAP are to be incorporated. In the future, improvements must also be made to the coordination of state, regional and local authorities in jurisdictional affairs and in the allocation of powers and responsibilities, and legal institutions must be strengthened so as to ensure compliance with current legislation.

ALBANIA

The Republic of Albania's coastal areas have a rich variety of natural habitats that represent an essential part of the country's geography, with lagoons, beaches, barrier islands and wetlands on a coastline that stretches for over 500 kilometres, including the section that lies alongside the Adriatic Sea.

The Albanian coast's most serious environmental problems are mainly associated with an increase in anthropogenic activities in coastal areas, since the process of economic and social liberalization began. The most heavily affected areas are near the cities of Durres (in the north) and Vlora (further to the south). Minimum treatment of urban and industrial wastewater and uncontrolled urban development are two of its main problems.

The Ministry of the Environment is responsible for drafting policies on the protection and management of coastal areas, with the technical and scientific assistance of other ministries and institutions, in particular the Academy of Sciences (in charge of environmental studies) and the Committee for the Protection and Conservation of the Environment.

At a regional level, Albania's prefectures have Environmental Agencies.

- Legal instruments for the protection of marine areas and coastal management: The framework law that defines environmental policy and management principles, corresponding procedures, and the competent authorities for the licensing of activities with an impact on the environment is **Environmental Protection Act** n° 7664 (21.01.1993), amended in July 1998 (Act n° 8364) and currently subject to new modifications.

Even though Albania does not have specific legislation for the protection and regulation of coastal areas, with the exception of partial regulations like Decision nº 36 of 1994 on urban planning for the development of tourism in the Divjaka-Karavasta coastal area, in the last few years important legislative progress has been made, and the draft text of the future **Marine & Coastal Defence Act**, which will fill an important gap in the Republic of Albania's environmental legislation, is now prepared, as is that of the Basic Water Protection Act.

Since 1999, the Albanian Government has subscribed to several different international conventions:

- The Convention on the Conservation of European Wildlife and Natural Habitats (12.01.1999)

- The Convention of Vienna for the Protection of the Ozone Layer (8.10.1999), and
- The Convention to Combat Desertification (27.04.2000)

At a planning level, in collaboration with the Priority Actions Programme (PAP/RAC) and Dobin Milus International, Albania is preparing a **Coastal Management Plan** for the region of Durres and Vlora, and also for Albania's northern and southern coastal regions.

Albania is also taking part in the UNDP's **Conservation Programme for Wetland and Coastal Ecosystems in the Mediterranean Region**, with two areas of considerable biological importance: Narta Lagoon (10,000 hectares) and Orikumi Lagoon, the Karaburun Peninsula and island of Sazani (25,000 hectares). The Vlora region has recently been included in the project. With it, it is hoped that in the near future Albania will be able to approve the necessary legal framework for the creation of a **network of specially protected areas**.

ALGERIA

With a coastline that stretches for 1,200 kilometres, Algeria's coastal strip is the country's most fortunate region from the perspective of its climate and resources. As a result, a large part of Algeria's population has settled in the area and numerous activities are concentrated here, particularly near its big ports.

With regard to environmental conservation, human pressure on the area has generated a situation of some concern, particularly in the case of Algeria's lagoon systems¹, a phenomenon that also affects the Ebro Delta, the Rhone, the Po, the Nile and the coastlines of Tunisia and the Aegean Sea.

Algeria's newly created **Ministry of the Environment**, established last year, is responsible for developing coastal management and planning policies and corresponding regulations in conjunction with the **Higher Council for the Environment and Sustainable Development**, presided over by the Head of State and composed of ministerial representatives and a team of experts.

- <u>Legal instruments for the protection of marine areas and coastal management</u>: Algeria has abundant legislation that deals with aspects of its coastal and marine areas², but none of the country's laws regulates the management of all elements of its coastal areas.

¹ Thanks to the microclimatic, topographic and edaphic characteristics of these coastal ecosystems, very specific communities of wildlife live here. The land-based biotopes around Algeria's only coastal lagoon and Lake Mellah in El-Kala suffer from a high degree of salination.

The two most important wetlands are the lake system and D'EI-Kala marshes in the region of EI-Tarf, and the Guerbes Plain in the Skikda area, both in the north of the country.

² Legislative texts on the marine environment:

⁻ Decree nº 66-192 of 1966 regulating **underwater fishing** in coastal areas.

⁻ Act nº 83-03 of February 5th 1983 concerning environmental protection.

At an international level, one of the last agreements to be ratified by the Government of Algeria was the 1989 Basel Convention on the Control of Transborder Movements of Hazardous Waste, drafted on May 16th 1998.

As for recent environmental initiatives, last year Algeria held a national debate on the state of the environment and its future protection, with a view to increasing the population's awareness of local and world environmental problems and its understanding of the concept of sustainable development, as well as encouraging active citizen participation, identifying the causes and factors behind Algeria's current environmental situation and determining priority fields of action.

During the debate, a **Strategic Environmental Plan** for the period **2001-2020** was proposed, which included legislative and institutional reinforcement, awareness campaigns, environmental education and land conservation.

BOSNIA & HERZEGOVINA

Bosnia & Herzegovina has a small strip of coastline alongside the Mediterranean Sea, stretching for just 25 kilometres. The Mediterranean region of B&H is made up of three cantons: Western Herzegovina, Herzeg-Bosnia and Herzegovina-Nerteva. The part belonging to the Republic of Srpska corresponds to Western Herzegovina.

- **The Federation of Bosnia & Herzegovina** (F B&H)³: the legislative framework for the Federation is a Constitution approved on March 30th1994, under which *bodies* are delegated authority over environmental affairs, since environmental protection and management is not expressly contemplated as an institutional area of authority. In the cantons, **Regional Ministries for Physical Planning and Environmental Affairs** have been created and some of them have their own environmental legislation.

Given its recent history as an independent state, there is still no legislation on the regulation and integrated management of **marine and coastal areas**, and these concepts are neither legally defined nor demarcated in any national legislation. (Article 50 of the 1994 Maritime Code merely has a definition of the term "coastline", based on the definition given by the Barcelona Convention

⁻ Decree nº 85-01 of January 5th 1985 concerning the ratification of the Protocol on Specially Protected Mediterranean Areas, signed in Geneva on April 3rd 1982.

⁻ Decree nº 85-13 of January 26th 1985 establishing the conditions for the use of beaches.

⁻ Decrees $n^{\rm 0}$ 143 and 144 of June 16th 1985 establishing national park and nature reserve regulations and modalities.

⁻ Act 85-08 of November 12th 1985 on ${\rm land}\ {\rm use}$ regulations, depending on the need for the land's conservation and protection.

⁻ Decree nº 95-38 of January 28th 1995 establishing modalities and conditions for the **commercial capture** of highly migratory species of fish by foreign vessels in Algerian waters.

⁻ Decree nº 95-323 of October 21st 1995 regulating the exploitation of coralliferous resources.

⁻ Decree nº 96-121 of April 6th 1996 on fishing conditions and modalities.

³ Since the Dayton Peace Agreements, Bosnia & Herzegovina is composed of the Federation of B&H (F B&H), a decentralized authority composed of 10 cantons, and the Republic of Srpska (RS), both with their own policies, institutions and organization in the field of environmental protection.

for the protection of the Mediterranean). It does have partial legislation on these areas, like the Territorial Waters Act of 1987, the Fisheries Act of 1989, the 1980 Decrees on Coastal Waters etc.

The **Federal Water Act**, in force since **1998**, regulates freshwater resources and divides F B&H into two areas: the basin of the River Sava (accounting for about 75% of B&H's catchment area) and the basin of the Adriatic Sea, which accounts for the rest. When this act was developed, regulations were approved on prices, watershed limits, the measurement and analysis of water, dumping etc.

<u>The Republic of Srpska</u>: According to the Constitution, the Republic is the guarantor and entity responsible for the environmental protection of the whole of its territories. At a local level, municipal environmental problems must be dealt with by the pertinent local authorities.

Although it has legislation on particular aspects of the environment (agriculture, water, territorial planning etc), no law refers specifically to coastal areas and their management.

Its institutional and planning framework is still in the development phase. The existing institutions and human and financial resources are insufficient to consider a system of sustainable coastal management. Nevertheless, efforts are being made, with the aid of different regional and international bodies.

In the year 2001 preparatory work began on a **National Environmental Plan** for B&H, with the financial assistance of the World Bank.

Another initiative is a **project** entitled "*The Development of a New Management Policy for the Hutovo-Blato Wetland*", a national park that currently receives financial support from the EU "LIFE-Third Countries" fund to continue research work that was suspended when funding dried up in 1999.

CYPRUS

The island of Cyprus is one of the world's oldest maritime trading centres. The Republic of Cyprus occupies the west side of the island following the island's division in 1974.

Cyprus' Council of Ministers is responsible for formulating its environmental policy, although the **Ministry of Agriculture**, **Natural Resources and the Environment** controls and coordinates activities for the protection and conservation of coastal areas (excluding urban and rural planning aspects), with the aid of different bodies like the Environmental Protection Council (a consultative body) or the Environmental Committee, which reviews environmental programmes and the objectives of environmental policy.

Cyprus' environmental policy was redesigned in the mid nineties in the form of an **Environmental Protection Action Plan**, approved by the Council of Ministers in March 1996.

- Legal instruments for the protection and management of marine and coastal areas: Cyprus has specialist legislation covering different aspects of the environment (forestry, fishing, wild birds) but it does not have any legal mechanism dealing specifically with the management and protection of its 648 kilometres of coastline and adjacent areas.

As a candidate for EU accession, Cyprus has incorporated several different environmental laws, based on European Community directives and guidelines. The new laws cover fields like **quality controls of bathing and drinking water and measurement methods**, the control of atmospheric pollution from industrial or agrochemical sources or the pollution of public areas.

It recently approved an **Environmental and Nature Protection Framework Law** (2001) which establishes the institutional and administrative framework for environmental planning. This legislation includes the *polluter pays* principle, environmental protection liabilities, the establishment and management of protected areas, environmental impact assessments, emergency action, the reduction of waste products etc.

In July 2000 it adopted the legislation contained in the Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the International Conventions on Desertification and the Conservation of Migratory Species of Wild Animals.

Its most recent environmental projects include the construction of new **coastal desalination plants** (Larnaka, 2001) to combat the area's lack of water resources and guarantee continuous supplies; a proposal to treat wastewater for irrigation and replenish aquifers; the creation of a Water Authority and the implementation of a **Biological Conservation Management Plan** of a local nature, with the technical assistance of METAP (the Mediterranean Environmental Technical Assistance Programme) for the **Akamas Peninsula**.

CROATIA

Croatia has 5,790 kilometres of coastline, mostly belonging to numerous different islands. The main environmental problems faced by coastal areas in the Croatian Republic are the dangerous expansion levels of algae in the northern and western Adriatic, and high pollution levels in some of its bays (Bakar, Sibenik and Kastela) and in ports with big populations (Pula, Rijeka; Zadar, Sibenik, Split and Dubrovnik), mainly due to the dumping of urban and industrial waste that has not been previously treated.

To reinforce its existing institutions, in February 2000 a law was approved creating the **Ministry of Environmental Protection and Physical Planning**, which took over the functions and responsibilities of the former State Directorate for Nature Protection and the Environment. It is assisted technically and scientifically by the **Oceanographic & Fisheries Institute**, based in Split, and by the **Rader Boskovic Institute**, in Zagreb, which compile and analyse information on the state of marine water and its marine species; by the Institutes of Public Health (in Pula, Rijeka, Zadar, Gospic, Sibenik, Dubrovnic and Split), which control the pollution of beaches due to the dumping of urban waste; and by the State Statistics Office, which provides data and analyses of socio-economic activities and their repercussions on coastal and marine areas. In 1999 Croatia also decided to create an *Environmental Information System*.

- <u>Legal instruments for the protection of marine areas and regulation of coastal zones:</u> Croatia has steadily produced new environmental legislation since the mid nineties: the Environmental Impact Assessment Regulation (1997), the **Environmental Protection Act**n^o 34/97 (amended by **Act nº 128 of 1999**), and modifications in 1998 to the **Territorial PlanningAct**. There has been less significant progress in the regulation of the country's coastal areas, because, although legislation has been developed on individual aspects of coastal areas (the **Maritime Fishing Act** of 1994, amended on several occasions, or the **Maritime Ports Act** of 1996), there is still no specific coastal legislation and neither have coastal areas been legally defined nor demarcated. Only the **marine coastline** has been defined in a 1994 Maritime Code (Article 50). There is a draft regulation for the future demarcation of coastal areas (which is yet to be approved) and a Land Act that will shortly be adopted.

As for coastal and marine management initiatives, the most important is the **National Environmental Action Plan** (Conference of Donors, September 2001), based on the principle of sustainable development and on the assessment of leading environmental problems and priorities. Its **Priority Action Plan**, presented in January this year, contemplates initiatives like the conservation management of coastal areas' biological diversity, the creation of an inventory and data charting Croatia's biological diversity, the establishment of an Environmental Agency, and projects to control marine and freshwater pollution (studies and investment).

The Adriatic Sea Project (1998) also continues its work, analysing environmental data on the sustainable use of the Adriatic Sea, coordinated by the Ministry of the Environment and Physical Planning and its Marine Coastal Protection Unit in Rijeka. The same is also true of the "130 Indicators for Sustainable Development in the Mediterranean Sea" Project, which was put into practice halfway through the year 2000 as a continuation of a joint initiative by the UNEP/MAP LIFE Programme and the Mediterranean Environmental Technical Assistance Programme (METAP).

Another initiative taken by the Croatian authorities in 1999 was an Environmental Protection Emergency Plan.

EGYPT

In Egypt, in addition to the conservation of the quality of its freshwater resources (mainly from the River Nile), the protection of its coastline (stretching for over 3,000 kilometres alongside the Mediterranean and Red Seas) is another of its leading environmental concerns. This country has a wealth of biological resources and variety of ecosystems that make it unique. In this respect, through its **State Ministry for Environmental Affairs**, the Egyptian Government is carrying out a policy to ensure the sustainable development of coastal and protected natural areas under a **National Integrated Coastal Management Plan**.

Nevertheless, Egypt does not have a specific law to regulate the management and planning of coastal areas, and action in this field is based on numerous different types of legislation (there are about 200 national laws and decrees on different aspects of the environment). Two leading examples are Act n° 102 of 1983 on Protected Natural Areas and Act 4/1994 on Environmental Protection.

Coastal areas are **defined** in a 1996 Integrated Management Plan as "the domain and interface between the land and the sea", whilst for demarcation purposes they are "areas in connection with the sea, up to a distance of 30 kilometres inland, unless interrupted by larger geographic features".

At the same time Egypt has numerous coastal management and marine conservation plans and projects in progress, including:

- A **National Environmental Action Plan:** implemented in 1996 with the aid of the UN Environment Programme;

- An Action Plan and National Strategy for the Conservation of Biological Diversity (1997-2017). One of the activities it involves is the development of a National System for Protected Areas⁴, in accordance with studies of the areas' local economic value and their possible contribution to the national economy, particularly through eco-tourism activities;

- A **Programme for the Development of Protectorates in the Gulf of Aqaba (1996-2001):** its main objective is the protection and development of the natural resources and ecological system of the Gulf of Aqaba area as the basis for tourism development in the southern Sinai region, where 40% of the land is protected.

- A **Coral Reef Programme (2001):** monitoring coral reefs, in order to examine the impact of underwater diving activities in marine areas.

- A **Programme for the Conservation of Wetlands (1999-2003):** designed within the context of a Strategic Action Plan (SAP) aimed at protecting the existing wetlands along Egypt's Mediterranean coast. It has focused on the Zaranik, Burullus and Ommayed areas.

- A **Monitoring Programme** (1999) to control the quality of Mediterranean and Red Sea coastal waters via a network of 84 sampling stations.

The coastal priorities of the government's Environmental Policy Programme for the period 2001-2002 are the creation of a *maritime park* on the west coast of the Red Sea.

SLOVENIA

Slovenia has a small strip of Mediterranean coastline, no greater than 50 kilometres long, in the Gulf of Trieste. The gulf is characterized by relatively shallow waters and considerable freshwater reserves from big rivers that flow into the sea. One quarter of Slovenia's coastline has been designated a protected area (including a large network of salt flats listed in the Ramsar Convention on Wetlands of International Importance).

- <u>Legal instruments for the protection of marine and coastal areas</u>: Slovenia's Ministry of the Environment approved a **Nature Protection** Act in 1999 directed at protecting natural resources and regulating the conservation of Slovenia's biological diversity, based on the EU "Habitats" and "Birds" Directives, international conventions and regional development policy. In the same year it adopted a **National Environmental Action Programme**, which guarantees the integration of environmental affairs into different sectors of activity.

Even though Slovenian legislation does not contain a specific coastal law, in recent years notable legislative progress has been made with the adaptation of legislation to EU environmental directives and guidelines via **eleven framework laws** such as:

a) The **new Water Act** (currently pending approval): based on the sustainable use of water, the definition of quality-control targets, a watershed-based water management policy, the development

⁴ At present there are 21 protected areas in the country, covering 8% of its surface, and it is hoped that by 2017 these areas will account for 17% of Egypt's territories.

of a financial management analysis of water resources (including the costs of the pollution and use of water) and public involvement in decisions regarding the management of water resources.

The act defines two aspects of a coastal area⁵: **bodies of seawater** (*"The back of coastal and territorial waters up to the coastline"*), and the term **coastline**, which *reaches the high-tide mark*. It also establishes a system of licences or concessions, if applicable, for uses other than common ones and, more specifically, for the approval of bathing areas, the construction of ports, the farming of aquatic species etc.

b) The Decree on the **Quality of Surface Water** ranging from the quality of coastal waters to transitional waters.

c) The adoption of various different regulations on effluents from the agrofood industry, and urban wastewater and its processing by sewage treatment plants \mathfrak{D} as to reduce the amount of wastewater piped into the sea.

SPAIN

The Spanish coastline stretches for 8,000 km, with sections beside the Atlantic Ocean, Cantabrian and Mediterranean Seas.

Like other countries with high numbers of tourists, the Spanish coast has suffered from the consequences of years of uncontrolled urban development. At the same time, increasing pollution from industrial focuses and other activities along its coastline have contributed towards the deterioration and erosion of coastal and marine areas.

Powers over Maritime and Land-Based Public Domain (MLPD) are shared by state, autonomic and local authorities. The **State Secretariat for Water and Coastal Affairs**, attached to the Ministry of the Environment, is responsible for drafting all corresponding legislation and for the management and administration of MLPD. Attached to the Secretariat are the **Directorate-General for Coastal Affairs** and the Directorate-General for Water.

Through a public body known as **State Ports**, the Ministry for Public Works is responsible for the management of those maritime ports whose control has not been transferred to Spain's Autonomous Communities, whilst the **Secretariat-General for Fishing** (attached to the Ministry of Agriculture) is responsible for maritime fisheries policies.

- Legal instruments for coastal and marine management: Since 1988 Spanish legislation has contained a **Coastal Act** (Act 22/1988, of July 23rd) which defines and demarcates **Maritime and Land-Based Public Domain** (MLPD)⁶. This act was developed by Royal Decree 1471/1989 of December 1st.

⁵ Coastal areas are defined in a **regulation** approved in **1985** entitled *A guide for the definition of coastal areas*, and they extend inland for a minimum of 10 metres from the highest tide mark.

In recent years, progress has been made at an international level with the acceptance and publication of amendments to international conventions⁷ and, on an internal level, with the adoption of a new **Water Act**, approved under **Royal Decree-Law 1/2001**, of July 20th, and the creation of legislation on maritime safety and security and the prevention of pollution (Royal Decree 768/1999, Royal Decree 1828/2000).

Leading state and autonomic initiatives in the field of coastal management are directed at recovering illegally occupied DPMT areas (via their demarcation), at the rehabilitation of areas in a state of deterioration, and the preservation of coastal ecosystems:

- Projects for the rehabilitation and restoration of coastal habitats, beaches and marshes in Atlantic and Mediterranean areas (the **restoration of Formentera's dune system** in the Balearic Islands or the **restoration of the Ebro Delta's dune system** in Tarragona);

- Three projects to be put into practice over the next few months by the Directorate-General for Coastal Affairs: the **regeneration and environmental rehabilitation of the Bay of Portman** in Cartagena (Murcia), which is in very bad condition due to mining activities carried out there since 1957; the regeneration of **Peñiscola Beach**, which is now underway; and the **rehabilitation of the natural environment of the Archipelago of Tabarce Marine Reserve** (Alicante). (This was the first marine reserve created by the government, in1986. It is considered to be of special interest due to its reserves of *Posidonia Oceanica*, and the reserve is designated a Special Area of Conservation (SAC) belonging to the European Natura 2000 Network).

- An international database of beached cetaceans in the Mediterranean Sea8:

FRANCE

The French coast runs along the Atlantic Ocean and the Mediterranean Sea, extending for over 3,000 kilometres. The south (the Mediterranean or Provence area) is the warmest part of the country, although the humidity keeps temperatures from reaching extremes.

The responsibility for the integrated management of marine and adjacent coastal areas is shared by different authorities. The **Secretariat General for Maritime Affairs** is responsible for coordination, under the instructions of the Prime Minister in accordance with government policies and initiatives relating to the protection and integrated management of marine resources.

Other ministries, like the **Ministry for Territorial Planning and Environmental Affairs, the Maritime Transport Department** (in charge of defining the conditions and implementation of

Territorial and inland waters, including their beds and subsoil;

The seashore and estuaries, which in turn include land-based coastal areas (from the low -tide to the high-tide mark), together with beaches, dunes, cliffs, marshes and other low wetlands;

³⁾ The natural resources of the economic area and the continental shelf.

⁷ Between June and September 1999 different amendments were published in the B.O.E. (Spanish Official Gazette) modifying the annexes of the **International Convention for the Prevention of Pollution from Ships**. An *ad referendum* Cooperation Agreement on Sea Pollution and Maritime Salvage between Spain and Morocco was also published, reached in Rabat on February 6th 1996. (BOE n° 253, of 22.10.99).

⁸ This initiative was proposed by Spain at the 12th Ordinary Meeting of the Contracting Parties to the Barcelona Convention for the Protection of the Mediterranean held in Monaco last November.

coastal policies) and the **Ministry of Agriculture and Fisheries** and its **Aquatic Species Farming and Fisheries Department**, round off the list of institutional bodies with authority over the management and protection of coastal areas.

The task of combating sea pollution is shared by different authorities: **maritime prefectures** and, in the event of more serious accidents leading to sea pollution, the Ministry of Defence.

The **Conservatoire de l'Espace Littoral et des Rivages Lacustres** is a public body responsible for safeguarding coastal and natural areas. It carries out a land-purchasing policy, after which the land can neither be resold nor developed. It currently possesses **475 areas** (63,912 hectares) in coastal areas or on shorelines.

- <u>Legal instruments for the protection of marine areas and integrated coastal management</u>: Since 1999, sustainable coastal management has been integrated in territorial planning policies regulated by the **Territorial Guideline**, **Planning and Sustainable Development Act** (25.06.99). The objectives of this act are "....the balanced development of the nation's territories as a whole, including social progress, economic efficiency and the protection of the environment within the framework of a coherent, solidarity-based Europe".

To protect the coast from speculative building activities, mainly derived from the pressure of the tourist and home construction industries, on January 30th 1986 France approved a **Coastal Use**, **Management and Protection Act** (defined in Articles 1 and 2), which prohibits new buildings within 100 metres of the shoreline if the area has not been developed. In principle this law prevails over **General Urban Development Plans**.

Other legislation that regulates the protection of coastal areas and their marine resources are: the **Public Maritime Domain Act** of 1963, the Water Act of 1992, two 1995 framework laws on **Environmental Protection** and **Territorial Planning and Development** and a Decentralization Act of January 7th 1983 on the zoning of marine areas, which establishes the fundamental guidelines for the protection, exploitation and planning of coastal areas. These are drafted by decentralized state services in coordination with local groups.

Among those coastal management initiatives that have been implemented or are in the pipeline, mention should be made of the **Master Plan for Water Management (**SDAGE) for the catchment area spanning the coastal section of the Rhone-Mediterranean-Corsican Basin. Its objectives and actions have focused on specific priorities: the control of water pollution, the achievement of high quality water, and the preservation of natural systems. 50 individual management units have been created, each covering a homogenous area, for the integrated rehabilitation, conservation and exploitation of the corresponding coastal zone.

GREECE

Greece is the country with the greatest stretch of Mediterranean coastline (17,000 kilometres), although it is unequally distributed between the Greek mainland and its islands. Thanks to its historical, geomorphologic and economic features, from very early on the Greek coast was a Mediterranean focal point for the development of trade, maritime transport and for the people that lived in the region.

The majority of the population (which has grown rapidly) lives in the country's big coastal cities: Athens, Patras, Thessalonica and Heraklion. Due to a lack of infrastructure or facilities for the treatment of urban sewage, this has led to big focuses of pollution in coastal areas, as well as other problems such as the pollution of wetlands and river deltas due to the over-use of pesticides and fertilizers, coastal erosion, and the deterioration of dune systems.

The **Ministry of the Environment, Physical Planning and Public Works** and, in particular, its Directorate General for Environmental Affairs and Spatial Planning are responsible for the sustainable management of the coast's natural resources. Besides these bodies, other authorities are also influential in decision-making on coastal policy. They are the Ministries of the National Economy, Defence, Home Affairs, the Merchant Navy (in the case of the prevention of sea pollution), Agriculture, Health and Development.

- Legal instruments for the protection of marine areas and integrated coastal management: Greek legislation does not include a specific coastal act for the management of its coastal areas. Neither are the latter demarcated in legislation, although some elements of a coastal area are⁹. Nevertheless, legislation abounds on specific coastal aspects: Act 743/1977 on the Protection of Greece's Marine Environment, Act187/1973 establishing a **Code of Public Maritime Law**, Act 1739/87 on the Management of Water Resources, and **Environmental Act nº 1650/86**, which is currently under reviewed. Examples of the most recent laws to have been approved include:

- Act 2742/1999 on Territorial Planning and Sustainable Development, which has created Special Frameworks for Territorial Planning (SFTP) for areas that are under heavy pressure or have a high ecological value. A SFTP will shortly be drafted for coastal areas which will include management goals and targets, the demarcation of coastal areas, management principles etc.

- The recently approved **General Construction Act nº 2831/2000**, which will control the expansion of building activities in Greece's coastal areas, particularly if the building projects are for tourism or leisure purposes.

- The Ministry of the Environment has embarked on a new policy, focused on more efficient management of coastal areas. To develop this policy, a high-level National Committee will be responsible for the management of coastal areas and islands. It is anticipated that this initiative will include the creation of a sustainable development strategy for Greek coastal areas and islands and an Action Plan.

Initiatives are also underway to create **Areas of Integrated Tourism Development** (POTA) and **Special Spatial Studies** (E.X.M), which constitute the only kind of territorial planning carried out until recently in coastal areas.

ISRAEL

[.] coastline \mathbf{P} "the land-based area that surrounds the sea and is splashed by waves during the highest tides",

^{. &}lt;u>beach</u> **P** "the land-based area next to the coast, no wider than 50 metres from the coastline, that must be crossed to reach the land from the sea or vice versa ".

Israel's coastline is mainly composed of sandy beaches. It stretches for 190 kilometres and is well developed from an urbanistic and economic perspective, with a strong presence by the tourist industry.

The Mediterranean coast is threatened by contaminated waste that is dumped into the sea from on land, spillages from vessels and oil refineries, the erosion of beaches, a reduction in open spaces due to intensive building and the deterioration of natural resources.

Several different ministries have authority over coastal affairs. The **Environmental and Coastal Division** and the **Environmental Protection Department**, both attached to the **Ministry of the Environment**, are responsible for the planning and management of coastal areas, for combating sea pollution and for the supervision of environmental legislation. The Home Office is responsible for designating new protected areas, for national and regional framework plans, for the supervision of beaches used for bathing and for safety.

The Ministry of Transport and its Ports Authority are responsible for Israel's ports, whilst the Ministry for National Infrastructure is in charge of monitoring and carrying out research into coastal and marine resources, assisted by the **Oceanographic Research & Limnology Centre**. Others ministries that are involved are the Ministries of Defence, Agriculture, Health, Tourism and Education.

- Legal instruments for the protection of marine areas and integrated coastal management: Among Israeli legislation on planning and construction, there is a **Master Plan for National Coastal Areas**, which includes instructions on territorial planning and building. Other coastal activities are regulated by sectoral legislation, like the **Sea Pollution Act** and the Nature & Fisheries Conservation Act.

There is no legal definition of a coastal area, but in practice these areas are demarcated. The on land boundary varies between 1 and 2 km from the coastline, not including the sea.

As for the legal headway made during the last few years, one important example is the **Draft Law on the Protection of the Marine Environment** (also known as the Draft Law for the Protection of Mediterranean Coastal Areas). Its objective is to consolidate the principles of national policy on the protection of marine and coastal areas and to define a system of prohibitions in order to protect and conserve coastal areas for citizens and political authorities at a national and municipal level.

Other legislation includes the 1965 Act Regulating Organisms from Rivers and Springs, the 1964 Act Regulating Beaches Used for Bathing; the 1980 Ordinance for the Prevention of Oil Sea Pollution and the 1983 Sea Pollution Act which controls the dumping of waste into the sea from aircraft and vessels.

Within the framework of Israeli initiatives, given the country's lack of freshwater resources, a considerable number focus on this particular problem. On April 18th 2001, the Social and Economic Ministerial Committee, headed by the Prime Minister, adopted measures for the management of freshwater resources, aimed at increasing the efficiency with which they are used, creating new desalination plants and eliminating any obstacles in the re-use of wastewater.

ITALY

Given Italy's location and distribution, this is one of the European states with the longest coastline. Italy's beaches account for about 52% of the country's coastline, 1,500 km of which are affected by increasing problems of erosion.

Italy does not have a coastal act that regulates all its Maritime and Land-Based Public Domain, and Italian legislation on the protection of its coastal and marine areas consists of 12 legal instruments adopted between December 31st 1982 and December 5th 1997. The first of these, Act n° 979, regulated sea protection and concentrated mainly on the ecological impact of spillages from ships. It also contemplated the creation of a General Coastal Plan and the identification of specially protected areas, something that was developed at a later date with the 1991 Act n° 394 on Specially Protected Areas, inspired by the Protocol of the Barcelona Convention on Specially Protected Areas of Mediterranean Importance.

Other examples of pertinent legislation include the **Maritime Domain Act** (1990-1996), the 1982 Sea Defence Act and, more recently, **Act nº 490/1999** on the **Planning and Urban Development of Coastal Areas**, which replaced a former act of 1985.

The Ministry of Environmental Affairs & Territorial Control is mainly responsible for the management of coastal areas and the protection of marine areas. Its newly established Technical Secretariat for the Environmental Safety of Shipping and Maritime Transport, created under Act n° 93 of March 23rd 2001 (containing provisions on the environment), will assist in the Italian Ministry of the Environment's national and international policies, in regulatory and technological standards and in sustainable environmental practices in the Mediterranean Basin.

The Ministry of the Environment's **Sea Defence Service** is responsible for controlling the quality of the water and the marine and coastal environment, identifying the causes of the marine ecosystem's deterioration and different types of pollution.

The Ministry of Agriculture and the Merchant Navy has certain management functions relating to protected marine areas and it supervises fishing reserves. Italy also has a *Marine Research Centre* in Lerici.

Italy's most recent marine and coastal protection initiatives include:

- The creation of a **"Cetacean Sanctuary"** (a protected area by virtue of an Italian law passed on December 9th 1998) under an agreement signed on **December 25th 1999** between France, Monaco and Italy. It will be the first big international protected area in the Mediterranean Sea, covering an area of 96,000 km2.

- A **New Programme to Monitor** the Marine and Coastal Environment for the three-year period from 2001-2003 (the last period spanned 1996-1999), directed at more detailed, specific control of 73 areas along the Italian coast.

- The imminent creation of **Protected Marine Areas**, affecting Isole Pelagie (Lampedusa, Lampione, Linosa) in Agrigento (Sicily); Capo Gallo (Isola delle Femmine) in Palermo (Sicily); Capo Caccia (Isola Piana) and Isola dell'Asinara in Sassari (Sardinia).

LEBANON

The Lebanese coast covers an area of 250 kilometres bordering the Mediterranean Sea. Urban areas occupy about 21% of its coastline, a percentage similar to those occupied by beaches and dunes, whilst the rest consists of farmland (4.7%), large industries (10%) and tourism facilities and ports (7.5 and 5% respectively).

Even though action is being taken to protect marine and coastal resources, the Lebanese coast suffers from serious environmental problems: the result of a complex situation based on the existence of obsolete legislation that is often not complied with, a lack of well-consolidated national planning, the insufficient training of those members of staff involved in this type of activity, and a lack of financial resources, technical backup and infrastructure.

Bodies with corresponding powers are the **Ministry of the Environment**, the **Marine Centre for Scientific Research**, the **Ministry of Agriculture**, and the Ministries of Oil, Transport, and Public Health. The first three have functions associated with the sustainable use and conservation of marine resources. There is still no national coordinative committee and local authority powers are as yet rather limited (although there is a municipal coastal plan that has been modified on numerous occasions).

- <u>Legal instruments for integrated coastal management:</u> Lebanon has widespread legislation covering specific environmental affairs, but it needs to update and integrate its laws to adapt them to new international policies on sustainable environmental management. Two examples of these laws are the **Coastal Planning Act**, approved in June 1966, and Decree-Law n° 144 of 1925, which defines the term **maritime public domain**.

Several laws have been designed to combat marine pollution, but none of them has come into effect as yet. They are Act n° 974 of 1974, which forces industries to treat their wastewater, Decree n° 1659 of 1970, and Act n° 1178 on pollution caused by chemical products, pesticides and fertilizers, and a 1996 Decision issued by the Ministry of the Environment which establishes quality levels for the air, water and soil based on 14 measurement parameters, although compliance with it is voluntary for industries.

The **protection of marine areas** focused traditionally on fishing (e.g. Decision n° 138 of 16.06.1983 which prohibits fishing in ports and the use of poison and explosives for fishing) until the approval of the new Environmental Code.

The greatest legislative headway made in recent years was the **new Environmental Code**, submitted in **1999**, which includes guidelines for the sustainable management of coastal areas. Environmental impact assessments and the planning of land use will shortly be regulated by decree.

In late 1998, the Ministry of the Environment developed a **Biological Diversity Programme** that includes a section on the *Conservation of Marine Ecosystems and Protection of Coastal Areas*. A year later, with the assistance of the World Bank, it started an **Integrated Coastal Management Programme** directed at the design of coastal management programmes, and coastal investment plans and strategies at a national, regional and local level; boosting the potential of legislation,

regulations and institutions; providing training in integrated coastal management and planning; and evaluation techniques for environmental impact assessments of the Lebanese coast.

A **Regional Programme for the Conservation of Mediterranean Wetlands** is also in progress. Started in 1999, it affects two Lebanese areas: Aammiq Swamp and Tyre Beach. There are also **three CAMPs** in Lebanon, one on the **Conservation of Marine Areas**, directed at the conservation of the coast's natural resources in an area between Damour and Naqoura.

LIBYA

Despite the length of Libya's Mediterranean coast, there is no specific framework for its protection, and its coastal areas are neither defined nor demarcated in legislation. In practice, their demarcation varies according to the particular section of coastline and problems are solved at an administrative level.

The institutions involved in the management of coastal areas are the Ministries of Planning, Agriculture, Transport and Defence. Other bodies with assistance-related coastal functions are the Marine Research Agency and the Technical Centre for Environmental Protection. There are also public institutions that operate at an inter-regional level.

Not only is there an absence of suitable legislation for the development of an integrated coastal management system, but adequate means and infrastructure are also lacking and there is no environmental database to help formulate a coastal policy and implement the necessary measures.

There is insufficient control over industrial activities and their pollution potential is unknown, as are the real effects on the environment. Only general planning is made on land use for periods of 20 years.

MALTA

Malta is an archipelago of six islands in the middle of the Mediterranean Sea, to the south of Sicily. The capital of the Republic, Valletta, is located on the largest island, Malta, which has a coastline of 137 km.

Malta's most urgent environmental problem is bad land use. A strategy is needed to cope with the development of the building sector, boosted by a recent tourist boom in coastal areas. This situation might endanger highly valuable species of flora and fauna, as the islands are a home to at least 85 native species.

In Malta, coastal management is carried out on a sectoral basis, within a framework of integrated policies involving different agencies created in the 1990s (the **Planning Agency, Maltese Maritime Agency, Water Agency** and **Fisheries Department**). Powers are divided among several different governmental departments. The **Environmental Protection Department** of the Ministry of the Environment is responsible for environmental protection, whilst Malta's police and armed forces are responsible for compliance with legislation, safety and security.

- <u>Legal instruments for integrated coastal and marine management</u>: There is no specific legislation on coastal areas, although some laws cover certain aspects (the 1992 Development Act,

legislation on nature reserves like the Filfla Nature Reserve Act etc). The **Environmental Protection Act (18.09.2001)** represents the most important progress made in recent years in the regulation of coastal affairs. This law introduces the *polluter pays* and *precautionary principles*, sustainable environmental management, integrating it into social and economic decision-making processes, the creation of a National Sustainable Development Commission and a **National Fund** for the financing of environmental projects.

It also requires the application of environmental impact assessments and measurements to protect the country's biological diversity, and it creates a **licensing system** for certain activities, like the dumping of pollutants.

Malta's small islands have been declared nature reserves and, at present, legislation is being drafted to declare the Island of Filfla (a protected maritime area) a **specially protected maritime reserve**.

To date some 29 coastal areas have been declared **Areas of Environmental Importance**, including salt flats and other kinds of coastal wetlands, dunes and sections of cliff or rocky coast.

The Maltese Archipelago is also taking part in the **Coastal Area Management Programme** (CAMP), in collaboration with the MAP and UNEP via a Priority Action Programme (PAP/RAC). The objective of the CAMP is to draft a **Management Plan for the North-West Coast** of Malta. Under the CAMP, maritime conservation areas will be declared in the near future.

At the same time, Malta is working on the creation of a series of Action Plans to protect Mediterranean marine vegetation, turtles, the Mediterranean monk seal (which is already protected under Maltese legislation) and cetaceans in collaboration with the Special Protection Area Regional Activity Centre (SPA/CAR).

MOROCCO

Due to the length of its Mediterranean and Atlantic coastlines (512 km and 2,934 km respectively) and to its wealth of marine resources, the Kingdom of Morocco lends special importance to international and regional legal mechanisms for the protection of marine and coastal areas. As a result, Morocco has subscribed to about twenty conventions to safeguard the marine environment and its fishing resources.

In national legislation, the protection and management of Morocco's coastal areas will soon be reinforced by **several draft coastal laws**¹⁰:

- The Draft Coastal Protection Act¹¹, directed at conserving existing coastal areas; giving priority to essential coastal activities; promoting area management and the exploitation of marine resources and Morocco's shores; improving access to the sea; ensuring the management of the country's

¹⁰ In Morocco, coastal areas are legally defined and demarcated under Act 01.07.1914 as stretching from " the see share to the highest tide mark and the 6 metre area beyond this limit"

[&]quot;....the sea shore to the highest tide mark and the 6-metre area beyond this limit".

¹¹ Although the coastal definition used in Moroccan legislation is not the same as Article 1-2 of the 1995 Barcelona Convention, the draft law includes areas bordering public maritime domain.

maritime public domain, and determining the powers of different authorities involved in coastal affairs.

Other draft laws currently in the pipeline are a **Code Regulating Maritime Fishing and the Conservation of Marine Ecosystems** (which contemplates the adoption of regulatory plans and the management fishing grounds to protect the biological diversity of these marine habitats; a system to control the sanitary conditions of marine waters; and licences to dump industrial and urban waste into the sea); a **Draft Marine Environment Act**; and a **Draft Environmental Impact Assessment Act** (a project of great importance, as Moroccan legislation did not contain any reference to the need for environmental impact assessments for activities with an effect on the environment).

At an institutional level, no single authority has full powers over coastal management and planning, as they are shared by numerous different ministries: the Ministry of Territorial Planning, Urbanism, Housing and the Environment, the Home Office, the Ministry of Tourism, the Ministry of Marine Fishing etc.

As for **the regulation of tourism and beach-related infrastructure**, an Inter-Ministerial Commission, created in 1964, issues opinions on any anticipated planning projects within a 5-km-wide coastal strip or in urban developments in demarcated coastal areas.

Other bodies with pertinent functions are the National Environmental Council, the Coastal Commission, the Central Maritime Fishing Committee and the Inter-Ministerial Committee for Territorial Planning. Local authorities have certain coastal powers and regional action plans are being prepared.

Morocco is developing numerous coastal and marine programmes and initiatives. Among these, it is worth highlighting the creation of a geographic coastal database (MEDGEOBASE), together with a project to protect wetlands in Mediterranean coastal areas (Med Wet Coast) that affects coastal wetlands between Oujdda and Nador, the application of a coastal water control network, a project to assess the risks of coastal pollution between Chechauen and Tetuan, and a coastal resources programme.

MONACO

Despite being a small principality and having a coastline of just 4.1 km, Monaco is a *refuge* for sea vessels, a centre for leisure activities and the home of several environmental protection centres like the Oceanographic Institute and the International Commission for the Scientific Exploration of the Mediterranean Sea.

Monaco's **Department of Public Works and Social Affairs** is responsible for the integrated management of coastal areas. The **Department of the Environment**, **Urban Planning and Construction** and the **Maritime Affairs Department** are in charge of protecting the marine environment from activities on land or at sea. They analyse the quality of freshwater and seawater near beaches, and are responsible for the sustainable use and conservation of living marine resources and for the coordination of different bodies.

In the event of serious sea pollution due to accidental spillages, there is a sub-regional cooperation agreement (the **RAMOGEPOL** Agreement¹², subscribed to by Italy, France and Monaco, for the protection of maritime waters from Spezia (Italy) to Marseille (France).

- <u>Legal instruments for the management of coastal areas</u>: Monaco adopted a new strategy for the protection and management of marine areas in **1998** with the approval of a **Maritime Code**. This law covers matters such as the integrated management of coastal areas, the protection of the marine environment, and the sustainable use and conservation of marine resources. In addition an **Environmental Framework Law** is soon to be approved.

From the perspective of planning and initiatives, under an **International Agreement between France-Monaco-Italy** (RAMOGE) to combat pollution and preserve the quality of the sea in their coastal area, working groups have been formed to deal with the sustainable management of coastal areas, the erosion of the RAMOGE section of shoreline, the impact of yacht harbours, the seasonal population and protected areas.

For the protection of Monaco's biological diversity, specially protected areas and protection plans have been created, such as the Protection Plan for meadows of *Posidonia Oceanica*, the Protection Plan for coral formations, and the Protection Plan for marine mammals (cetaceans) and their habitats.

Bearing in mind the fact that the coast of Monaco is mainly used as a residential area or tourist destination, its main (very limited) sources of land-based pollution come from the catchment basin whose waters drain into the sea along this coastline. To deal with the problem, a Plan for the **Treatment of All Wastewater** has been adopted.

SYRIA

Situated in the far eastern corner of the Mediterranean, its coastline stretches for 193 kilometres. Even so, integrated coastal management and the legal protection of living marine resources in Syria are still in the early stages, given the lack of an adequate administrative and legislative framework as well as insufficient funding.

The Syrian coast's main environmental problems, which have reached the critical stage, are the pollution of sea water and beaches due to urban and industrial effluents and the dumping of industrial and urban waste; the contamination of aquifers, illegal construction work in coastal areas and atmospheric pollution from industrial emissions.

The body with authority over such matters is the **Ministry of the Environment**. Its activities mainly centre on the incorporation of integrated coastal planning; the design of a sustainable management plan for coastal resources; the identification of the Syrian coast's most significant natural resources; an analysis of the most common repercussions of different activities on these resources; and increased infrastructure.

¹² **RAMOGEPOL**: Intervention Plan to Combat Accidental Marine Pollution in the RAMOGE Zone (France-Monaco-Italy).

Syria has no basic coastal management and planning legislation. Nevertheless, it is hoped that the new **National Environmental Action Plan**, approved in the year **2001**, will contribute considerably to improving the present state of Syria's coasts and, in the future, to rectifying the environmental problems suffered by the coastline. Funded by the United Nations Development Programme, this plan is implemented under the supervision of the World Bank. It has been designed to cover a period up until 2010, when a full review of the strategy is envisaged. The initiatives that have been proposed focus on:

- The creation of **specially protected areas** in over 30 locations, given their environmental, historical or aesthetic value.
- The creation of a **map** directed at the protection of **freshwater recourses**, identifying areas with contaminated aquifers.
- An analysis of development factors and environmental aspects of the Syrian coast in collaboration with the **Blue Plan Regional Activity Centre** (BP/RAC).

Another project currently in progress is the creation of an **Environmental Information System**, organized by the Ministries of the Environment of Syria, Lebanon, and Jordan, assisted and financed by the German International Cooperation Agency. During the first phase (June 2001–March 2003), a report will be drafted on water resources and atmospheric pollution in Damascus, Amman and Beirut.

The construction of sewage treatment plants is also envisaged in Lattakia and Tartous, as well as the provision of filters for cement companies in Tartous, and a study of crude oil waste in Banias and Tartous.

TUNISIA

Most of the Tunisian coast, which covers an area of 1,298 km, is composed of beaches. Numerous coastal areas have considerable tourist activity as well as a rich variety of marine resources.

Unlike other Contracting Parties to the Barcelona Convention, Tunisia has specific coastal legislation in the form of **Maritime Public Domain Act 73-95**, approved on July 24th 1995. The text of this law defines the term "coastal area" as "...the contact area that determines the ecological, natural and biological relationship between the sea and the land, and their direct and induced interaction".

The coast is also demarcated in relation to inland areas: by the area covered and uncovered by the highest or lowest watermarks and, on the marine side, by the exclusive economic zone. A special commission in charge of determining maritime public domain limits in relation to private adjacent properties is responsible for the demarcation of these areas. The territorial planning and management of inland areas is regulated by a Territorial and Urban Planning Act of November 28th 1994.

In recent years no new basic laws have been approved on coastal areas, as the legislation currently in force was only approved a few years ago.
At a state-authority level, powers over coastal matters are shared by the Ministry of Environmental and Regional Planning, the Ministry of Infrastructure and Housing, the Ministry of Industry, the Ministry of Agriculture, the Ministry of Transport, the Ministry of Tourism, Commerce and Handicrafts and the Home Office.

The **National Agency for Coastal Protection and Development**, created in 1995, reinforces the governmental framework of bodies in charge of coastal management. Its functions include:

. The management of coastal areas and supervision of planning operations, ensuring that

they conform to legal requirements and regulations;

- . Studies, research and surveys on coastal protection and the exploitation of natural areas,
- . The observation of the evolution of coastal ecosystems, using specialist computer tools,
- . The protection of coastal areas from illegal building work and installations,
- . The management, conservation and preservation of places designated "sensitive areas".

Completing the organization chart of different bodies are the National Environment Protection Agency (1988), the International Centre for Environmental Technologies (1996), the Tourism Office and the Habitats Agency, among others. Agreements also exist between Tunisian regional groups and the state.

Coastal planning and management activities have focused particularly on the city of Sfax, southern Tunisia's main industrial and commercial city. In this area, a Coastal Area Management Programme (CAMP) has been developed with special emphasis on the rehabilitation of ecosystems currently in a state of deterioration and also on the improvement of urban and sub-urban areas.

TURKEY

Bathed by the waters of the Aegean, Mediterranean, Marmora and Black Seas (the last two linked by the Bosphorous Straits), the Turkish coast covers an area of 7,200 kilometres.

There is no specific coastal management framework law that regulates all the different elements a coastal area involves, although the term "coastal area" has been legally demarcated in the **Coastal Demarcation Act** or Coastal Act of April 4th 1990, amended subsequently in 1992 and March 1994. According to this act, the shoreline is defined as "....the line where the water touches the land on seashores or the banks of natural or artificial lakes and rivers, excepting periods when there are floods".

The shore is the area between the shoreline and its on land limit¹³. The coastal strip has been established as covering a width of at least 100 metres, measured horizontally from the on land limit of the shoreline.

¹³ In turn, the on land limit of the shoreline is defined as "the natural limit of a beach made of sand, pebbles, rocks, stones, marshes, wetland or similar areas, formed by the action of the movement of water from the shoreline inland".

Besides this law, others refer to specific activities or aspects relating to coastal areas. They are the Environmental Protection Act (9.08.1983); the 1971 Fisheries Act, amended by an act of 15.06.86; the Ports Act, dating back to 1923; and the Decree by the Council of Ministers for the Establishment of Specially Protected Areas.

As regards the country's administrative potential, as well as the **State Planning Organization** (SPO), several ministries are also involved in coastal affairs: the Ministry of Public Works and Settlements, the Ministry of the Environment, the Ministry of Tourism, the Ministry of Agricultural and Rural Affairs, the Ministry of Trade and Industry, the Ministry of National Defence and the Home Office.

Other institutions also have coastal management functions: the **National Committee on Coastal Zone Management** or the **Environmental and Coastal Management Body**, created in 1997 as part of the Directorate-General for EIA and Planning, attached to the Ministry of the Environment.

In May **1998**, a **National Environmental Action Plan** was drafted, under the coordination of the State Planning Organization (SPO), with the support of the World Bank. The Ministry of the Environment is in charge of the plan's execution and supervision. To fund environmental investments, last year it was decided that a Fund for the Prevention of Environmental Pollution should be created.

As for **specially protected areas**, Turkey currently has twelve, nine of which are located in coastal zones. It also takes part in protection plans for different Mediterranean marine species. In its waters, the capture of **marine turtles** that nest on its beaches (the Loggerhead sea turtle, *caretta caretta*) is forbidden. The finishing touches have just been made to an integrated coastal zone management project (ICZM) concerning this species, directed at the conservation of the coastal areas of Belek and Çýralý, with funding from the LIFE-Third Countries Programme.

THE EUROPEAN UNION

The European Union's coastal regions are subject to constant pressure, due to a combination of different factors that affect these areas. According to a European Commission Communication to the European Parliament on *"Integrated Coastal Zone Management. A Strategy for Europe"* (2000), almost half the population lives in a strip of land within 50 km of the coast. At the same time, coastal resources produce a large part of the Community's economic wealth and the fishing, maritime transport and tourist industries carry out their activities in coastal areas that also contain some of Europe's most fragile, valuable natural habitats.

Although Community instruments and legislation abound on European environmental protection and conservation, the EU's environmental policy does not contemplate any global instrument capable of dealing with all the problems suffered by Europe's coastal areas.

Given its awareness of this situation, since 1996 the European Commission has been working on a *Demonstration Programme on Integrated Coastal Zone Management* (ICZM), based on a series of 35 demonstration projects and 6 thematic studies. This initiative was preceded by two European Council resolutions of February 25th 1992 and May 6th 1994. The Demonstration Programme had

two goals: to provide technical information on the sustainable management of coastal areas and to stimulate broad debate among those agents involved in the management and use of coastal areas.

Finally, on October 29th last year, the European Commission supported an agreement by the Council of Ministers of the Environment on the adoption of a **Recommendation Concerning Integrated Coastal Zone Management** (ICZM), with the approval some months later (13.12.2001) of **European Council Common Position nº 13/2001.** Content:

. <u>The creation of national strategies</u>: In the text of the Common Position, all Member States are asked to develop **national strategies** to promote sustainable coastal development, through the said areas' integrated management. These strategies can refer specifically to coastal areas or else form part of a wider strategy or programme covering a larger area.

The strategies must define a suitable combination of instruments for the integrated management of coastal areas. According to the case in question, legislation, policies and programmes must be developed or maintained relating to marine and on land aspects of coastal areas at a national, regional or local level.

Measures must also be adopted that guarantee the diffusion of information, public participation and training.

Last but not least, national strategies must establish lasting sources of finance for initiatives undertaken in these areas, and a method must be found to optimize existing Community and national funding.

. <u>Guiding principles</u>: Member States must adhere to the principles of integrated coastal management, taking a **broad**, **global (thematic and geographic) focus** that bears in mind: the interdependence and disparity of natural systems and human activities with an impact on coastal areas; a long-term perspective that takes into consideration the **cautionary principle** and the needs of current and future generations; a **modulated system of management** where adaptations can be made when problems arise or further knowledge is acquired; the participation in the management process of all interested parties (financial and social interlocutors, organizations representing residents living in coastal areas; NGOs and the business sector) in accordance with the **principle of shared responsibility** etc.

. <u>National inventories</u>: National strategies must have a database of information, so that initiatives can be decided on the basis of the said information. For this purpose, it is recommended that global inventories are created or updated that can identify the main agents, regulations and institutions that play an influential role in coastal management.

II. INFORMATION ON THE RATIFICATION STATUS OF THE CONVENTION AND ITS PROTOCOLS:

	Barcelor Convention*			Dump	ing Protocol*	ŧ	ner	New Emergency Protocol	
	Signatur	Ratification	Acceptance	Signatur	Ratification	Acceptance	Signat	Ratification	Signature
	е		of	е		of	ure		
			amendments			amendments			
Albania	-	30.05.90/AD	-	-	30.05.90/AD	-	-	30.05.90/AD	-
Algeria	-	16.02.81/AC	-	-	16.03.81/AD	-	-	16.03.81/AD	25.01.2002
Bosnia& Herzegovina	-	1.03.92/SUC	_	-	1.03.92/SUC	-	-	1.03.92/SUC	_
Croatia (1)	-	8.10.91/SUC	3.05.99	1	8.10.91/SUC	3.05.99	I	8.10.91/SUC	25.01.2002
Cyprus	16.02.76	19.11.79	15.10.01	16.02.76	19.11.79	-	16.02.76	19.11.79	25.01.2002
Egypt (2)	16.02.76	24.08.78/AP	11.02.00	16.02.76	24.08.78/AP	11.02.00	16.02.76	24.08.78/AP	-
Slovenia	_	15.03.94/AD	_	-	15.03.94/AD	-	_	15.03.94/AD	25.01.2002
Spain	16.02.76	17.12.76	17.02.99	16.02.76	17.12.76	17.02.99	16.02.76	17.12.76	25.01.2002
France	16.02.76	11.03.78/AP	16.04.01	16.02.76	11.03.78/AP	16.04.01	16.02.76	11.03.78/AP	25.01.2002
Greece	16.02.76	3.01.79	-	16.02.76	3.01.79	-	16.02.76	3.01.79	25.01.2002
Israel	16.02.76	3.03.78	-	16.02.76	1.03.84	-	16.02.76	3.03.78	-
Italy	16.02.76	3.02.79	3.02.79	16.02.76	3.02.79	3.02.79	16.02.76	3.02.79	25.01.2002
Lebanon	16.02.76	8.11.77/AD	-	16.02.76	8.11.77/AD	-	16.02.76	8.11.77/AD	-
Libya	31.01.77	31.01.79	_	31.01.77	31.01.79	_	31.01.77	31.01.79	25.01.2002
Malta	16.02.76	30.12.77	28.10.99	16.02.76	30.12.77	28.10.99	16.02.76	30.12.77	25.01.2002
Monaco	16.02.76	20.09.77	11.04.97	16.02.76	20.09.77	11.04.97	16.02.76	20.09.77	25.01.2002
Morocco	16.02.76	15.01.80	-	16.02.76	15.01.80	15.12.97	16.02.76	15.01.80	25.01.2002
Syria	-	26.12.78/AD	-	-	26.12.78/AD	-	_	26.12.78/AD	25.01.2002
Tunisia	25.05.76	30.07.77	1.06.98	25.05.76	30.07.77	1.06.98	25.05.76	30.07.77	25.01.2002
Turkey	16.02.76	6.04.81	-	16.02.76	6.04.81	_	16.02.76	6.04.81	-
European Community	13.09.76	16.03.78/AP	12.11.99	13.09.76	16.03.78/AP	12.11.99	13.09.76	12.06.81/AP	25.01.2002

*Updated on February 28th 2002

** Their amendments have still not come into effect

				Protocol Concerning		Protocol Concerning		Hazardous Wastes		
	Land-Bas	ed Sources Pr	otocol**	Specially Protected Areas		Specially Protected Areas and Biological Diversity		Protocol		
Contracting	Signatur	Ratification	Acceptance	Signature	Ratification	Signature	Ratification	Signature	Ratificatio	Signatu
Parties	е		of						n	
			amendments							
Albania	-	30.05.90/AD	_	-	30.05.90/AD	10.06.95	-	-	-	-
Algeria	_		_	_	16.05.95/AD	10.06.95	_	_	_	01.10.96
		2.06.83/AD								
Bosnia& Herzegovina	-	22.10.94/SUC	-	-	22.10.94/SUC	-	-	-	-	-
Croatia	-	12.06.92/SUC	-	-	12.06.92/SUC	10.06.95	_	14.10.94	_	_
Cyprus	17.05.80	28.06.88	12.10.01	-	28/06/88/AD	10.06.95	15.10.01	14.10.94	15.10.01	_
Egypt	_	16.05.83/AD	_	16.02.83	6.07.83	10.06.95	11.02.00	-	_	01.10.96
Slovenia	_	13.07.82/AP	16.04.01	3.04.82	2.09.88/AP	_	_	10.10.95	_	_
Spain	17.05.80	6.06.84	17.02.99	3.04.82	22.12.87	10.06.95	23.12.98	14.10.94	_	01.10.96
France	17.05.80	13.07.82/AP	16.04.01	3.04.82	2.09.86/AP	10.06.95	16.04.01	-	_	_
Greece	17.05.80	26.01.87	_	3.04.82	26.01.87	10.06.95	_	14.10.94	_	01.10.96
Israel	17.05.80	21.02.91	_	3.04.82	28.10.87	10.06.95	_	14.10.94	_	_
Italy	17.05.80	4.07.85	7.09.99	3.04.82	4.07.85	10.06.95	7.09.99	14.10.94	_	01.10.96
Lebanon	17.05.80	27.12.94	_	-	27.12.94/AD	_	_	-	_	_
Libya	17.05.80	6.06.89/AP	_	-	6.06.89/AP	10.06.95	_	-	_	01.10.96
Malta	17.05.80	2.03.89	28.10.99	3.04.82	11.01.88	10.06.95	26.10.99	14.10.94	_	01.10.96
Monaco	17.05.80	12.01.83	26.11.96	3.04.82	29.05.89	10.06.95	3.06.97	14.20.94	_	01.10.96
Morocco	17.05.80	9.02.87	2.10.96	2.04.83	22.06.00	10.06.95	_	-	1.07.99	20.03.97
Syria	_	1.12.93/AD	_	-	11.09.92/AD	_	_	20.09.95	_	_
Tunisia	17.05.80	29.10.81	1.06.98	3.04.82	26.05.83	10.06.95	1.06.98	14.10.94	1.06.98	01.10.96
Turkey	-	21.02.83/AD	-	-	6.11.86/AD	10.06.95	-	-	-	01.10.96
European Community	17.05.80	7.10.83/AP	12.11.99	30.06.83	30.06.84/AP	10.06.95	12.11.99	-	-	-

*Updated on February 28th 2002

** Their amendments have still not come into effect

III.- MEDITERRANEAN COASTAL MANAGEMENT AND PLANNING PROGRAMMES.

INTEGRATED COASTAL MANAGEMENT: THE CAMP PROGRAMMES:

The **1st Phase of the Mediterranean Action Plan** 1975-1995 (MAP) was initially focused on the control of marine environments, the prevention of pollution and different activities directed at improving the state of the natural environment. However, the first ten years' experience of the Mediterranean Action Plan revealed that most of the environmental problems suffered by Mediterranean coastal areas were due to bad management and planning in the development of these areas.

This discovery led to the MAP's redirection, with a more global approach that covered other factors (land pollution, polluting land-based activities, the state of freshwater resources etc). As a result, the geographic area it encompassed was also enlarged to include coastal areas. The 1985 Geneva Declaration stipulated the need to extend the MAP's scope of application to include other interests, and it established a framework for the Mediterranean's integrated management.

From this moment on, a series of practical local management projects began to be developed (known today as CAMPs) and a new approach to integrated coastal area management was taken (ICAM).

During the **2nd Phase of the MAP**, adopted in 1995 at the 9th Ordinary Meeting of the Contracting Parties to the Barcelona Convention, the 1992 Rio World Summit's sustainable development policy was integrated into the management of coastal areas; the **Mediterranean Commission for Sustainable Development** (MCSD) was created; and the CAMPs became the ideal mechanism for integrating environmental affairs into the development of Mediterranean coastal areas.

From 1990 onwards, local management pilot projects became Coastal Areas Management Programmes¹⁴ (or CAMPs), and MAP **Regional Activity Centres** took part in them. The objectives of the CAMPs are:

- To develop strategies and procedures for sustainable development, the protection of the environment and rational use of marine and coastal resources;
- To identify, adapt and test methodologies, tools and sustainable coastal management practices;
- To contribute towards boosting the potential of the corresponding human and institutional resources at local and national levels; and
- To secure a wider use of the requirements contemplated in the Barcelona Convention and its associated protocols, both at a national and regional level, and to create the right conditions for monitoring activities.

¹⁴ The creation of CAMPs as Integrated Coastal Area Management Programmes was formally approved at the 6th Ordinary Meeting of the Contracting Parties to the Barcelona Convention, which took place in Athens in 1989.

The **Priority Actions Programme Regional Activity Centre** (PAP/RAC), created in 1978 and based in Split (Croatia), is responsible for coordinating the CAMPs, under the supervision of the MED Unit.

Although the CAMPs were originally practical programmes, carried out at a local level, directed at solving environmental problems and at local area development, today they also have a *regional* focus (via the diffusion of the results and experiences obtained, thus contributing towards the definition and application of corresponding regional policies and strategies) and also a *national* focus.

The type of area chosen for the CAMPs and the main subjects covered to date by those programmes that have been put into practice include:

1.- Projects on **highly polluted industrial and urban coastal areas** in semi-enclosed locations: the BAY OF KASTELA (Croatia), the BAY OF IZMIR (Turkey) and SFAX (Tunisia)

- 2.- Projects covering a country's entire coastline: SYRIA, ALBANIA and ISRAEL
- 3.- Projects associated with islands: RHODES (Greece) and MALTA

4.- Projects concerning fragile and/or specific settings: FUKA (Egypt)

- New ICAM guidelines and approaches: In the year 2000, when *Mr. Prieur* and *Mr. Ghezali* made an exhaustive analysis of national legislation in the document *"National Legislations and Proposals for Guidelines Relating to Integrated Planning and Management of the Mediterranean Coastal Zones"*, what their study reflected (and this was recognized by the corresponding states) was the inadequacy of national legislations in force at the time to ensure the proper management of such resources.

After a series of recommendations on the creation of a specific legislative framework for these countries' coastal areas and the formulation of a series of principles to improve integrated coastal management, discussions were held to decide whether a **Regional Protocol on Integrated Coastal Area Management** should be drafted. Several states responded to this initiative by showing a certain reserve.

In the opinion of the UNEP/MAP Priority Actions Programme Deputy Director, Mr. *Marko Prem*, instead of a protocol, it would be better initially to make a country-by-country analysis of ICAM regulatory and legislative instruments as compared with the provisions needed by each legislative system to guarantee at least the same degree of understanding and ensure the practical application of the principles of sustainable development (many of these principles were mentioned in the amendments made to the Barcelona Convention, in MAP protocols etc). The main objective would be to create or improve these instruments, depending on each country's individual situation, working at all times from a common base. Then specific country-by-country initiatives could be proposed.

a)<u>New CAMPs</u>: Integrated Coastal Area Management Programmes will continue to be important working areas in the future. However, in the document "MAP Coastal Area Management

Programmes: Strategic Framework for the Future", drafted by the Priority Actions Programme Regional Activity Centre (PAP/RAC) and presented in May **2001**, a number of **proposals for the improvement and development of new types of CAMPs** are mentioned.

The main novelty is the idea that the CAMPs might be extended to cover the whole of the Mediterranean Basin, together with the drafting of strategic documents and the implementation of local initiatives. Thus a number of CAMPs might be directed at the preparation of a strategy for the whole of the Mediterranean Basin.

At the same time, the CAMPs should concentrate on issues defined as priority areas by the governments of coastal states (the integrated management of coastal areas, rural/urban management, tourism, the management of natural resources and industrial pollution) Other proposals for new CAMPs focus on the improved integration of activities within the actual CAMPs; the promotion of public participation, the improvement of monitoring activities and the development of appropriate methodologies and instruments for the new strategic approaches.

The last CAMP to have been proposed is the **Cyprus CAMP**, decided at the 12th Ordinary Meeting of the Contracting Parties to the Barcelona Convention held in Monaco (November 14th -17th 2001). The feasibility study for this CAMP must be ready by late May 2002.

IV.- MAP INSTRUMENTS TO SUPPORT THE IMPLEMENTATION OF MARINE AND COASTAL LEGISLATION.

The Regional Activity Centres (RACs):

The RACs are responsible for the application of respective components of the Mediterranean Action Plan. With the exception of the REMPEC, which is managed by the International Maritime Organization, they are regarded as national centres that carry out regional functions on behalf of the Mediterranean community. The RACs are financed by the Mediterranean Trust Fund (MTF) and carry out their activities under the supervision of the Athens-based MEDU Unit¹⁵, in accordance with decisions made at meetings by the Contracting Parties.

A).- The Blue Plan Regional Activity Centre (BP/RAC).

This was created at the meeting of the Contracting Parties to the Barcelona Convention held in Split (Croatia) in 1977. Since its inauguration, this centre, which is based in Sophia Antipolis (France), has investigated interaction between the environment and development in the Mediterranean Basin, using analyses of factors such as population growth, urban development, industry, agriculture, trade, tourism and transport, including studies of their environmental impact on the land, wooded areas, freshwater resources, the coastal strip and the sea.

¹⁵ MEDU coordinates all MAP activities and carries out secretariat-type functions on behalf of the UN Environment Programme, as established by the Convention. The unit also coordinates and directs the work of six MAP Regional Activity Centres as well as the MED POL programme.

This assessment system, which is subject to constant improvements and focuses on coastal regions and catchment basins, includes the assistance of the **MAP/Mediterranean Environment and Development Observatory**, which supplies it with relevant data and indicators for the adoption of decisions directed at achieving sustainable development levels.

In turn, the studies and results of any analyses obtained by the centre are then applied to coastal regions, through Coastal Area Management Programmes (CAMPs). The BP/RAC regularly updates its information with detailed thematic studies called "Blue Plan fascicles".

B).- The Priority Actions Programme Regional Activity Centre (PAP/RAC).

This centre, based in **Split** (Croatia), was established in 1978. Since its creation, it has been a key instrument in the Mediterranean Action Plan (MAP) and part of the UN Environment Programme.

The most important priority action programme this centre has been responsible for is **integrated coastal area management** (ICAM) and it has earned a worldwide reputation, given its proven experience in the field. For this PAP mission, it has at its disposal a previously defined methodology, instruments and techniques.

The PAP/RAC studies immediate development-derived environmental problems and it analyses the impact on the coastal environment and its resources (including catchment basins) via initiatives in different fields aimed at the application of practical environmental management systems. To this effect, over the course of its 25 years' history, it has designed different instruments: **ICZM** (Integrated Coastal Zone Management) and the **CAMPs** (Coastal Area Management Programmes).

The PAP/RAC carries out its multidisciplinary work via: Coastal Area Management Programmes (CAMPs); projects concerning specific natural resources; participation in the activities of the **Mediterranean Commission for Sustainable Development (MCSD)**; technical assistance via the creation of workshops and special training programmes in its specialist field; the publication of research programmes, guidelines for action, technical reports and manuals; and the coordination of local projects that involve the participation of different local authorities.

C).- The Regional Marine Pollution Emergency Response Centre for the Mediterranean (REMPEC).

Also known as the ROCC, this centre has played a fundamental coordinative role since the ratification of the Barcelona Convention by all the Contracting Parties and the legal introduction in 1978 of the Protocol concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency (Emergency Protocol, 1976).

This **Malta-based** centre was created on December 11th 1976, and it is supervised by the International Maritime Organization.

Its initial function, which focused on accidental oil sea pollution, was extended in 1987 to encompass pollution by harmful substances. Latterly, its functions and aims were redefined on several occasions: in 1987, when its name was changed to the *Regional Marine Pollution Emergency Response Centre for the Mediterranean*, and in 1993 to promote regional cooperation.

Five years ago at the 10th Ordinary Meeting of the Contracting Parties held in Tunisia (April 18th – 21st 1997), a new regional strategy was adopted for the prevention of sea pollution by vessels.

D).- The Specially Protected Areas Regional Activity Centre (SPA/RAC).

This centre, based in Tunisia, provides the necessary backup to develop activities and plans deriving from the application of the Protocol concerning Specially Protected Areas and Biological Diversity, which came into effect in December 1999 (replacing the 1982 Protocol on Specially Protected Areas).

The SPA/RAC, whose creation was decided at the **1981** Cannes Meeting of the Contracting Parties, provides guidance and training in the establishment and management of protected areas, which each state is required to declare within its scope of geographical jurisdiction according to the text of the protocol.

The protocol also asks states to create a list of areas of Mediterranean importance that are subject to a system of special protection. This is known as the **SPAMI list**. The common criteria for the selection of these areas can be found in Annex I of the new protocol.

The SPA/RAC has developed action programmes to protect various different kinds of Mediterranean flora and fauna.

E).- The Strategic Action Programme Regional Activity Centre (SAP/RAC):

A centre that promotes special initiatives within the framework of the Mediterranean Action Plan. Under the SAP MED project "the Development of Economic Instruments for the Sustainable Implementation of SAP MED", a workshop was recently organized on pilot projects (March 2002). Seven of these pilot projects on the development and introduction of new economic instruments were selected in December last year, and they will be developed and subsequently assessed in late 2003.

F).- The Environment Remote Sensing Regional Activity Centre (ERC/RAC).

The ERS/RAC has introduced the use of remote sensing techniques for the observation and analysis of the state of Mediterranean marine and coastal areas and changes in their situations, combining these techniques with conventional data from other sources, like *in situ* measurements and cartography.

This centre is a consortium between TELESPAZIO S.P.A. and Sicily's Regional Government. It is based in **Palermo** and uses the neighbouring satellite telecommunications and remote sensing base in Scanzano run by TELESPAZIO S.P.A

Its **main functions** are to assist and cooperate with member states participating in the Convention so as to:

. Improve knowledge and understanding of the state of the Mediterranean environment and any changes in its situation,

. To support decision-making processes and the taking of decisions directed at the region's sustainable development and management,

. To promote the **use of satellite detection systems** and their inclusion in other information systems.

In addition, the ERS/RAC has subscribed to agreements with Mediterranean countries for mid and short-term initiatives aimed at analysing the advantages of remote sensing techniques: identifying priority fields of action; formulating prototype systems for their subsequent introduction; designing individual networks that can be installed for the continuous supervision of the environment; and promoting and carrying out more effective actions in consonance with the objectives of the Mediterranean Action Programme (one of which was the proposed launch in October 2000 of a regional forum in Rabat to design a Mediterranean environment remotely-sensed information web, the MERSI. Web).

G).- The Regional Activity Centre for Cleaner Production (CP/RAC).

The CP/RAC was created in **Barcelona** in **1996** at the initiative of the Contracting Parties. Its main function is the promotion and diffusion of how to prevent and reduce industrial pollution in its place of origin, as well as providing technical support for the Contracting Parties and institutional bodies and, through them, support for companies that wish to promote techniques and practices that are more environmentally efficient and less polluting.

Like the other regional activity centres, it carries out training activities on related themes (e.g. in the year 2001 it held several seminars on a *Minimization Opportunities Environmental Diagnosis* (MOED^{*}) in Croatia and Spain, and courses on training in environmental management).

*MOED - A *Minimization Opportunities Environmental Diagnosis* involves the assessment of an activity so as to detect potential opportunities for the prevention of pollution in its place of origin. It is based on principles of ecological efficiency and on the integration of environmental variables into companies' decision-making processes.

- The Historic Sites Secretariat (HS):

The main function of the Historic Sites Secretariat is the protection of historic sites situated in Mediterranean coastal areas for the defence of common interests already identified by the Contracting Parties, based on accepted selection criteria.

This **Marseille**-based centre focuses its efforts on areas from several different Mediterranean coastal states mentioned in the list of "100 Historic Sites". Priority fields of action are underwater archaeological sites, including wrecks, as well as the sustainable development of historic sites.

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THE INTERNATIONAL LEGAL BASIS OF INTEGRATED COASTAL MANAGEMENT By

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When the Council of Europe declared in their Resolution (73) 29 of 26 October 1973, with respect to the protection of coastal zones, that an "effective protection of coastal areas entails the simultaneous taking into account of multiple interests and problems (maintaining the ecological and biological balance, preserving the beauty of the landscapes and conserving natural resources, promoting economic and tourist development and safeguarding the hinterland)", it was already announcing that integrated management is at the service of sustainable development and guarantees the effective protection of the coast.

Despite this strong signal coming from a regional international organisation, until not long ago the littoral or coastal region was exclusively under the competence of internal national law.

The taking into account of the environment of vulnerable regions and of their sea-land interface, in the name of integrated management, has led to a situation where the law of the sea, a public international law by nature, has become concerned little by little, and then more and more, with the coastal regions.

Because of this, the coastline, an ecologically complex area, has also become a legally complex area, being at once under the competence of national law and international law.

We have come from individual laws to interpenetrating laws. The coastal zone actually concerns three environments: rivers and their openings to the sea, the coastline, and the sea.

These are noteworthy natural environments intensively exploited by man. Throughout the planet's coastal and maritime zones, this exploitation leads to:

- the degradation of resources
- the deterioration of the environment
- competition for the exploitation of land and marine areas
- conflict and interference between multiple uses

In terms of public policies, the relationship between these three environments has undergone an evolution.

Phase 1: individual management

Traditionally, each element was treated as a separate unit of management and common interests were limited.

The management of watercourses concerned navigation and water supply.

The littoral was only managed with regard to the coastline, and to the protection against erosion and the flooding that engineers called «coastal-zone management». Having become an area of intense human activity due to urban planning, tourism, industry and port activity, the main problem of the coastal zone will become that of the availability of land due to the pressure of real estate.

The coastal and maritime waters were mainly controlled by interests linked to fishing and navigation.

Each of the managers involved was concerned solely with their own particular sphere of interests, there being no interrelation neither with other areas, nor with other activities.

Phase 2: the scientific evidence of close relations between these three environments

The growing awareness of the close relations that exist between a river and its watershed, between the river basin and the littoral, and between the littoral and marine waters, will lead to a review of the land area and of the methods of coastal and marine management.

The three elements as a whole constitute a significant and fragile natural environment (this is the zone where bio-physical interactions are at their strongest), but essential on a socio-economic level.

The littoral is the point of contact between the river basin and the maritime zone, and is a part of both ecosystems. The meeting of the river and the sea provides abundant natural resources and a diversity of natural habitats.

Several natural processes link these areas:

- the water cycle influences the quality and quantity of fresh water, and ultimately, the quality of sea water, consequently affecting coastal ecosystems and therefore the fishing industry.

- the transfer of sediments and nutritive substances affects the terrain as well as the dynamics of the coastal zone, which also brings about an effect on coastal ecosystems and human activity on the littoral.

- human activity at the river basin contributes to the bringing of nutrients and water, but also of the various and widespread forms of pollution caused by agricultural and industrial activity and by urban waste.

The watercourse has become a river basin which includes the quantity and quality of the water. Certain new functions of the watercourse have been recognised: the protection of nature, tourism, and cultural heritage.

The river basin is now considered a 'land of multiple uses'.

The coastal strip or the littoral fringe has become a 'coastal zone' which geographically stretches both landwards and seawards, in proportion to an overexploitation which demands a new type of

management capable of solving the conflicts of land occupation and of the accelerated degradation of natural resources.

As for the sea, its nutritive quality and the leisure activities that it offers are conditioned at once by discharge from land-based sources and sea-borne accidents, which lead to the stretching of inshore marine territory and the exclusive economic zone towards the open sea, and therefore make the controlled management of biological and mineral resources a priority along with the protection of marine environment as a whole.

Phase 3: the need for an integrated approach

With the ecological, functional and economic relations between the three areas becoming more and more evident, an integrated approach proves necessary.

The integrated management of the three environments (the river basin, the coastal zone and the maritime zone) comprises approaches, policies and mechanisms of management which recognise the interrelations between the three systems, with a view to protect the environment and socioeconomic development, and in order to ensure the foundations of sustainable development.

A global approach to coastal and maritime management must include the upstream areas, given that management practice in each of these systems can generate effects downstream.

Moving on from the development of coastal zones to their integrated management, we encompass not only the three environments (territorial or geographical integration) but also the physical, biological and human aspects (systemic integration) and the economical, social and environmental objectives (functional and temporal integration).

Sometimes there arise actions aimed at two or more sectors (fishing and tourism, or navigation and fishing), but these cases are not a part of integrated management. What is necessary is a global or holistic approach that takes account of all the current and future uses whilst evaluating their simultaneous consequences. A planning and simultaneous management of all sectoral activities will allow the attainment of more important collective benefits in terms of sustainable development than mutually independent sectoral and individual plans.

Of course, on these foundations, it will be essential both for planning and for management to precisely determine the areas concerned, because the surface covered may be huge and may even include an entire country or several countries at once.

A legal and institutional problem arises when it comes to materialising these forms of integration. Could the legal integration of several territories be achieved? Perhaps not systematically, even if, paradoxically, it seems easier to institute at the level of international law than at the national level. It will also be necessary to make provision for programmatory integration, institutional integration and decisional integration, which are generally closely linked with one another because the competence of authorities still determines the territorial levels of intervention. We shall first examine how international law has gradually rallied to the idea of a sustainable and integrated management, in an attempt to overcome the traditional legal compartmentalisation of rivers, coastal and maritime areas.

We will then observe the objectives and the instruments of integration.

I – THE EVOLUTION OF INTERNATIONAL LAW TOWARDS A SUSTAINABLE AND INTEGRATED COASTAL MANAGEMENT

Paradoxically, the union characterising marine and coastal environments is opposed to the compartmentalisation introduced by legal regulations for marine environment. This legal division of maritime areas constitutes a concrete obstacle, although not to be seen as insurmountable, to a global approach with a view to a coherent management of the marine environment.

1 – The traditional legal compartmentalisation of maritime and coastal territories

One of the major obstacles posed to sustainable and integrated management derives from the legal division of territory, conducive to an institutional and decisional division that complicates global management to a considerable extent. Coastal territory is particularly fragmented at the level of both the national and international laws that do however converge on matters relating to the sea. This results in a gradation of competence, of sovereignty and its exclusively partial jurisdiction, and has repercussions on internal administrative organisation. While national law is entirely free to organise its administration as it so understands it, the tradition of individual management has led to a situation where terrestrial competence is dissociated from maritime competence, even in cases where the legal system applicable to land, inshore and offshore territories is of the same nature.

All reports of international organisations concerning coastal zones point out this certain acknowledgement of powerlessness in the face of the complexity of coastal-zone division. The law thus appears to be an obstacle to integrated management.

In reality, this obstacle is not at all insurmountable. In addition to the fact that it is partly a matter of international maritime law, such an obstacle could be got round via legal and institutional procedures (especially by regional agreements), under the condition of having become fully aware of the need to overcome this division with a view to integrated management. Common management does not require a common legal statute, but does demand that a global vision be taken into account by authorities *ad hoc*, and be subjected to a minimum level of coordination.

Contemporary international law shall contribute towards implanting the new idea of the necessary integration of policies and strategies concerning coastal and maritime zones, on the basis of doing away with the partition of territories.

2 - The legal foundations of integration

There exist over 400 treaties in the field of maritime affairs and maritime law concerning navigation, the protection of marine environment, and the management of biological resources. Only a very

small part of those treaties which at once concern marine and land environment, or at least that of the coastal zone, will be upheld.

We may consider universal measures and regional arrangements separately.

A – Universal measures

a) The Montego Bay Convention on the Law of the Sea (MBC)

Signed on 10 December 1982 and entered into force on 16 November 1994, the MBC determines the statute and the international legal regulations of the oceans and the seas, and thus constitutes the legal framework within which the integrated development of coastal and maritime areas find their place. It has been described as a 'framework law'. The MBC is not indifferent to the coast, as it mentions estuaries (art. 1-4), river mouths (art. 9) and pollution from land-based sources (art. 207). It above all introduces the concept of 'marine environment', which in part XII entitled "protection and preservation of the marine environment" gives an account of the taking into consideration of the environment in sea exploitation. On this count, we should underline that the preservation of the marine environment has henceforth had priority over the sovereign right of States to exploit their natural resources (art. 193). In other words, the exploitation of natural resources is subject to the obligation to preserve the marine environment. Looking beyond sectoral conventions on pollution, the MBC determines the general principles of the new international law concerning the preservation of the marine habitat, coming along on top of the law of the sea. The guality of the marine environment can henceforth be considered as being of a common interest put at the disposal of a common resource, and subject to the general obligation of article 192 and by that of article 194. The measures taken by States (wherever they may be situated: coastal states, flag states, harbour states, landlocked states) must respect, as in the framework of international rivers, the principle of equitable exploitation and of respect for a just balance of interests.

We may lament not finding an exact definition for 'marine environment' in this Convention. It seems, however, that on the basis of this concept a global approach could be found which, synonymous with marine environment, encompasses water quality equally at sea, on the coast, and in estuaries (art. 1-1-4) and also targets biological resources, marine fauna and flora, ecosystems and the habitat of species (art. 1-1-4 and art. 194-5). Indeed, the MBC indirectly refers to the coastal zone, through internal waters (art. 8), river mouths (art. 9), bays (art. 10), territorial sea (art. 2 and 5), and the territorial waters of States with shores that face each other (art. 15). The MBC directly and clearly admits that the coastline is part and parcel of the marine environment with regards to pollution from vessels (art. 211-1), by mentioning "the threat of accidents which might cause pollution of the marine environment, including the coastline". This same article aims at the interests of coastal states, which may include health, water quality, and the deterioration of aesthetic value if we are to refer to articles 1 to 4. Besides such reference, the expression 'coastline' is used also for those states where it is absent (as in art. 124 on landlocked states, defined as states which do not possess a coastline) and to allow states to take measures to protect their 'coastline' (art. 221).

¹⁶ R.J. Dupuy and D. Vignes, Traité du nouveau droit de la mer ('Treaty on the new law of the sea'), Economica, 1985, p. 1006.

Although the Montego Bay Convention does not provide any direct contribution to integrated management, it does nevertheless constitute the legal foundation of all future policies regarding the sea and the coast, at once in content and in form.

In terms of content, the preamble is particularly eloquent in two of its dispositions. It at once refers to the interrelationship of the environment that exists between the various categories of marine space, whatever their legal statute, and it otherwise imposes an integrated management of at least one global strategy:

"Conscious that the problems of ocean space are closely interrelated and need to be considered as a whole."

In addition, it evokes the establishment of a new legal order "for the seas and oceans" based on an equitable and efficient exploitation of resources, and guarantees the conservation of living resources and of the marine environment.

"Recognising the desirability of establishing through this Convention, with due regard for the sovereignty of all States, a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment."

In terms of form, the MBC serves as a basis for all agreed international management of the marine habitat, by encouraging the coastal and border states to cooperate in the signing of regional international agreements.

For the management of fish-stocks (art. 63, 66, 67) For the conservation of highly migratory species (art. 64) For the protection of marine mammals (art. 65, 120) For the management of living resources of the high seas (art. 117, 118) For the exercise of rights in enclosed or semi-enclosed seas (art. 123) For the prevention, reduction and control of pollution of the marine environment (art. 194) For the protection of the marine environment (art. 197) For the elaboration of contingency plans against pollution (art. 199) For the promotion of studies and research (art. 200) For the struggle against pollution from land-based sources (art. 207) For the struggle against pollution form sea-based activities (art. 208) For the struggle against pollution by dumping (art. 210) For the struggle against pollution from vessels (art. 211) For the struggle against pollution from or through the atmosphere (art. 212)

It is clear that international cooperation between borders is fundamental to any equitable shared management of a common natural resource.

We may notice that the formulation of article 194 on the pollution of the marine environment and article 207-3 on pollution from land-based sources also taken up in other articles (art. 208-4, 211)

expressly invites border states to "harmonise their policies", which necessarily entails an integrated management.

b) The Ramsar Convention on Wetlands

This convention, signed in 1971 and entered into force in 1975, is one of the scarce global conventions concerning at once terrestrial, coastline and maritime space, as it includes the marine space whose low-tide depth does not exceed 6 metres. Depending on the coastline concerned, this could reach beyond internal waters and include territorial waters or even the exclusive economic zone (EEZ). The convention encourages the creation of protected coastal areas, thus implementing articles 194-5 of the MBC, which impose the application of necessary measures to protect and safeguard "rare or vulnerable ecosystems" as well as the habitats of species in decline. We may also mention the 1972 Unesco convention on world cultural and natural heritage, which also allows a classification of protected marine and land areas.

c) The Framework Convention on Climate Change

The 1992 Rio Convention, which may appear to have kept its distance from maritime affairs, has a global vision of ecosystems and refers to the marine and coastal-zone environment on several occasions.

The preamble thus underlines the importance of sinks and reservoirs of greenhouse gases in "terrestrial and marine ecosystems" and recalls the harmful effects of a possible rise of sea-levels on "islands and coastal areas". Among the commitments of States, the following appear in article 4-1:

d – promote sustainable management and the conservation of sinks and reservoirs of greenhouse gases, particularly oceans and coastal and marine ecosystems

e - prepare and design "appropriate and integrated plans for coastal-zone management".

d) The Convention on Biological Diversity 17

The other 1992 Rio Convention regarding biological diversity indeed also applies to coastal and marine space, yet without any particular reference to them, apart from one mention in article 2 under the definition of biological diversity, which includes "terrestrial, marine and other aquatic ecosystems".

Nevertheless, the 2nd Party Conference at Jakarta adopted in November 1995 the much-talked about Jakarta mandate in their decision II-10 on the conservation and sustainable exploitation of marine and coastal biological diversity, following recommendation I/8 on the same matter of the subsidiary organ responsible for supplying scientific, technical and technological recommendations adopted in Paris in September 1995. States are encouraged to develop "marine and coastal

¹⁷ www.biodiv.org/jm.

¹⁸ A. Charlotte de Fontaubert, Biodiversity in the seas, IUCN, Environmental policy and law paper n° 32-1996.

integrated management". The liaison between marine and coastal zones via integrated management is the best means to tackle the problem of the impact of human activity on marine and coastal biological diversity, and to foster the conservation and sustainable exploitation of this diversity. The executive secretary is encouraged to investigate methods for the development of integrated management at a regional and a national level. Recommendation I/8 includes, in points 10 and 11, a list of proposals with a view to promote integrated management and the creation of protected marine and coastal areas. With the 4th conference in Bratislava in 1997, decision IV/5 includes to this end a working programme. We there find, as a fifth priority, integrated marine and coastal management that insists on the coordination and integration of biological diversity in all socio-economic sectors which affect the coastal environment.

e) The New York Convention

The Convention on the Law of the Non-navigational Uses of International Watercourses, approved by the General Assembly of the United Nations on 21 May 1997 after the long work of the Commission of International Law contributes, in its own way, towards integration.

In fact, although the convention does not consider the watercourse directly in relation to the watershed, it does establish the equivalent expression of "a system of surface waters and ground waters constituting, by virtue of their physical relationship, a unitary whole and normally flowing into a common terminus" (art. 2-a).

Territorial integration not only consists in the inclusion of the catchment area and ground waters, but also of the marine environment, encompassing the estuaries by virtue of article 23, dedicated especially to the relationship between maritime and fluvial areas.

Moreover, the watercourse is taken into account for its use within a perspective of functional integration, which includes the geographic, hydrographic, climatic, ecological, economic and social factors (art. 6-1, a and b). The preservation of watercourse ecosystems is finally considered as an obligation, and it may be carried out "jointly" between several States (art. 20). The management which, in the words of A. C. Kiss,¹⁹ is a 'mysterious concept for lawyers', equally becomes possible in accordance with integration, as it could be the concern of a joint management mechanism that includes the planning of a sustainable valorisation (art. 24-1 and 24-2-a).

A recent protocol for a regional convention has taken direct inspiration from the model of the New York Convention. This is the revised protocol on shared watercourses in the Southern African Development Community, signed in Windhoek by 13 States on 7 August 2000.

¹⁹ A. C. Kiss and J. P. Beurier, Droit international de l'environnement ('International environment law'), 2^e éd. 2000, Pedone, p. 189.

 $^{^{20}}$ J. Sohnle, Les développements conventionnels récents en droit international des ressources en eaux douces sous l'emprise des conventions-cadre ('The recent conventional developments of International Law on fresh water resources under the competence of framework conventions'), L'observateur des Nations Unies n° 11-2001, Aix en Provence.

f) Agenda 21 (chapters 17 and 18)

The major innovation of Agenda 21 in 1992 was the approach, in the same chapter, to the protection of oceans and seas together with the protection of coastal areas. The Rio Conference thus sanctioned the need for a single management of this fragile environment, and brings to the foreground, among the objectives, the commitment of coastal states to implement an integrated management and a sustainable development of coastal zones and of the marine habitat subjected to their jurisdiction. This is the target of the first proposed programme (17-1-3-a).

With a view to achieve this objective, chapter 17 declares that it will be necessary to:

a) Provide for an integrated policy and decision-making process, including all involved sectors, to promote compatibility and a balance of uses;

b) Identify existing and projected uses of coastal areas and their interactions;

c) Concentrate on well-defined issues concerning coastal management;

d) Apply preventive and precautionary approaches in project planning and implementation, including prior assessment and systematic observation of the impacts of major projects;

e) Promote the development and application of methods, such as national resource and environmental accounting, that reflect changes in value resulting from uses of coastal and marine areas, including pollution, marine erosion, loss of resources and habitat destruction;

f) Provide access, as far as possible, for concerned individuals, groups and organizations to relevant information and opportunities for consultation and participation in planning and decision-making at appropriate levels.

The integrated management of marine and coastal-zone environment should be greater if the need is international (17-119):

States should consider, as appropriate:

a) Strengthening, and extending where necessary, intergovernmental regional cooperation, the Regional Seas Programmes of UNEP, regional and sub-regional fisheries organizations and regional commissions;

b) Introduce, where necessary, coordination among relevant United Nations and other multilateral organizations at the sub-regional and regional levels, including consideration of co-location of their staff;

c) Arrange for periodic interregional consultations;

d) Facilitate access to and use of expertise and technology through relevant national bodies to sub-regional and regional centres and networks, such as the Regional Centres for Marine Technology.

Finally, the relations between the river basin, the coastal zone and the maritime zone are rightly put forward in chapter 17-29:

"As concerns physical destruction of coastal and marine areas causing degradation of the marine environment, priority actions should include control and prevention of coastal erosion and siltation due to anthropogenic factors related to, inter alia, land-use and construction techniques and practices.

Watershed management practices should be promoted so as to prevent, control and reduce degradation of the marine environment."

In order to guarantee a successful policy of integrated management of coastal and marine areas, three *sine qua non* conditions must be fulfilled:

1 – The management structure and its implemented procedures must come above sectoral entities, in such a way as to have a certain autonomy, particularly in order to efficiently co-ordinate the undertakings of several ministerial departments.

2 – The coordinated actions must benefit from an autonomy in terms of financial and human resources, so as to avoid a dependence upon a single sector of activity.

3 – The policy of integrated management of coastal and marine areas must be subjected to an integration within the framework of national development, so as to ensure its coherence.

g) The Code of Conduct for Responsible Fisheries ²¹

This facultative document of a global scale, adopted by the FAO in 1995, sets out the absolutely fundamental principles and directions to link fishing to the demands of the environment, to the sustainable exploitation of fishery resources, and to the Convention on the Law of the Sea. Article 10 is precisely devoted to the integration of fisheries within coastal-zone development. It insists on the need for a legal and institutional framework so as to allow a sustainable and integrated exploitation of resources. It sets out the principle of consultation with the fishing sector for all planning and development of coastal areas. Regional cooperation of States with neighbouring coastal zones is advocated at sub-regional and regional levels, so as to improve coastal-zone development (art. 10-3).

B – REGIONAL MEASURES

a) The Helsinki Convention on the protection of the Baltic Sea

The Baltic Sea became the first to endow itself with a regional legal instrument which linked what at the time were six riparian states, and which was based on an environmental approach. Signed in

²¹ G. Moore, Le code de conduite de la FAO pour une pêche responsable ('The FAO code of conduct for responsible fishing'), Espaces et Ressources maritimes, 1996, p. 198.

 $^{^{22}}$ See also John R. Clark, Integrated management of coastal zones, Fisheries technical paper, FAO, n° 327, 1992 .

1974, the Convention was revised in 1992. Its functioning is ensured by a Commission for the protection of the Baltic marine environment. It is a Convention of integration because, within a single instrument, it considers pollution in all its forms: from vessels, waste, land-based discharge, and so on. On the territorial level, this convention is the expression of contemporary evolution, since the original 1974 text excluded enclosed waters while the 1992 revision extends its geographical scope to enclosed waters.

Recommendation 15/1 of the HELCOM Commission (8 March 1994) directly tackles the problem of coastal zones by encouraging the member States to establish a protected coastal area from 100 to 300 metres long on the coastal strip, as well as a zone for land exploitation planning 3 kilometres into the hinterland.

Three other recommendations show how a maritime convention can very well include the hinterland for environmental purposes:

- Recommendation 15/5 of 10 March 1994 on protected marine and coastal areas
- Recommendation 16/3 of 15 March 1995 on the preservation of natural coastal-zone dynamics
- Recommendation of 22 October 1996 on the spatial planning of the coastal zone.

b) The Barcelona Convention on the Mediterranean Sea

Signed in 1975, this was the first convention on regional seas of the United Nations Programme for the environment. Completed with six protocols and an action plan for the Mediterranean, it constitutes what is today called the 'Barcelona system'.

Whilst the initial territorial competence was merely limited to maritime space, the revision of the Barcelona Convention in 1995 has produced a very progressive convention, in accordance with Chapter 17 of Agenda 21 for an integrated management of the coastal zone. Following the text of 10 June 1995, its very title is an expression of this strong liaison between the sea and the land: "Convention for the protection of the marine environment and the coastal region of the Mediterranean".

The scope of territorial application of the Barcelona system encompasses all maritime waters and gulfs, and yet allows the protocols to extend to 'coastal areas' as defined by each contracting party (art. 1). The protocol of 14 October 1994 on pollution resulting from the exploitation of the continental plateau, of the sea-bed or of its offshore subsoil, thereby covers enclosed waters including the watercourse up to the fresh water limit, and parties may include their wetlands and coastal zones (art. 2). The protocol of 7 March 1996, regarding pollution coming from inland sources and activities, covers the catchment area defined in article 2d as enclosed waters, coastal salt waters and ponds, and ground waters linked to the sea (art. 3). Finally, the protocol of 10 June 1995 relating to specially protected areas and to biological diversity, entered into force on 12 December 1999, automatically applies to "terrestrial coastal zones including wetlands" (art. 2-1), under the condition that such areas are identified by each party.

As for the very principle of integrated management, it constitutes a clear obligation on the part of States within the direct perspective of sustainable development. According to article 3-2: "With an

end to protect the environment and to contribute to sustainable development of the Mediterranean Sea area, the contracting parties

e) pledge themselves to promote the integrated management of coastal areas, taking into account the protection of zones of ecological and landscape interest, and the sound exploitation of natural resources."

The 9th meeting of parties in June 1995 thus approved the scope of priority actions for the following ten years (1996-2005), including the integrated management of water and the integrated management of coastal areas.

On 23 September 1997, the Mediterranean commission for sustainable development adopted recommendations on the integrated sustainable management of coastal areas.

The Barcelona system thus appears on an international level as the convention which has gone the furthest distance in defining a common strategy for the integrated management of fluvial, coastal and maritime space, on the basis of regional conventions which originally came only under the competence of the Law of the Sea.

c) The OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic

For the North-East Atlantic, the conventions of Oslo (1972, on the dumping of industrial waste) and of Paris (1974, on marine pollution from land-based discharge) came to be merged on 22 September 1992 (entered into force on 25 March 1998), for a global approach with a commission having the power to make recommendations and to enact obligatory decisions. It includes 5 sectoral annexes, one of which concerns the conservation of ecosystems and of the biological diversity of the maritime zone.

Its field of application is a good expression of the will to promote territorial integration, since it applies to internal waters up to the limit of fresh water, of territorial sea, of zones without State jurisdiction and of the open sea (art. 1).

The new concepts of sustainable management of the maritime zone are included in the Convention, which recognises the intrinsic value of the marine environment and considers the necessity to ensure a sustainable management of fauna and flora: "Recognising that concerted action at national, regional and global levels is essential to prevent and eliminate marine pollution and to achieve sustainable management of the maritime area, that is, the management of human activities in such a manner that the marine ecosystem will continue to sustain the legitimate uses of the sea and will continue to meet the needs of present and future generations."

d) The Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific

Signed in Lima in 1981, the objective of this agreement is the protection and preservation of the marine and coastal environments against all kinds and all sources of pollution.

The geographical scope is interesting for the relation that it establishes between land and sea, just as in the Barcelona Convention (see above), since it includes the coastal and maritime areas in which the parties exercise their jurisdiction (200 nautical miles). It also reaches beyond this area to the open sea, up to a distance where open sea pollution may affect it. Article 8 stipulates that within the framework of environmental management politics, governments shall develop technical and other guidelines to evaluate and reduce harmful impact on the environment of the development projects, particularly on coastal areas.

e) The Helsinki Convention and the London Protocol on transboundary watercourses

The Helsinki Convention of 17 March 1992 on the protection and exploitation of transboundary watercourses and international lakes is, first of all, a transboundary convention. It entered into force on 6 October 1996. It is particularly interesting for it precisely shows how an integrated management can include a fluvial space. Despite containing measures which are partly similar to those of the 1997 New York framework convention, the Helsinki Convention is much more precise and innovative.

It covers a broad territorial scope including the coastal strip (art. 1-1 and 1-2), the catchment area and the marine environment (art. 2-6).

It makes provision for an institutional co-operation which includes the Riparian States (art. 9-1, 9-3, 9-4 and 9-5). Annexes determine the guidelines to be followed for the optimisation of the best environmental practices and of the objectives and criteria of water quality.

This convention was completed on 18 June 1999 by the London Protocol on water and health. In this text, territorial integration is particularly noteworthy because it regards fresh water, but also estuaries and coastal waters (art. 3). Moreover, basing itself on the main principles of Rio, the protocol advocates the protection of aquatic ecosystems, as well as sustainable development closely linked to human health and everybody's right to access to drinking water.

Integrated management is very clearly at the heart of the agreement:

"Water resources should, as far as possible, be managed in an integrated manner on the basis of catchment areas, with the aims of linking social and economic development to the protection of natural ecosystems and of relating water-resource management to regulatory measures concerning other environmental mediums. Such an integrated approach should apply across the whole of a catchment area, whether transboundary or not, <u>including its associated</u> <u>coastal waters</u>, the whole of a groundwater aquifer or the relevant parts of such a catchment area or groundwater aquifer." (art. 5-j)

f) The European Landscape Convention

Approved in Florence on 20 October 2000, this convention legally establishes the foundations of a policy for the landscape, whether this be an everyday area or an area of particular beauty. It declares the need for a legal recognition of landscape as an essential component of the people's

surroundings, and as an expression of biological and cultural diversity. Landscapes need actions of protection, management and organisation which should always include public participation.

This is of interest to the maritime zone since its scope of application encompasses urban and natural areas, and includes land space, internal and maritime waters (art. 2).

II – OBJECTIVES AND INSTRUMENTS OF INTEGRATED COASTAL MANAGEMENT

As far as these are concerned, we may refer to the general principles of international environment law just as they are set out by the international conventions, by the 1992 Rio Declaration and by international law.

However, the integrated management of fluvial, coastal and maritime zones within a transboundary context requires us to make reference, more especially, to certain general principles which are to be eventually completed by new concepts, and accompanied by instruments that may sometimes be of equal value.

1 – The objectives of integration

A – Sustainable development

Coined within the framework of the United Nations, this concept envisages, in reality, the reconciliation between economic development and the protection of the environment by introducing a new imperative imposed on public policies: the taking into account of the long-term effects of contemporary decisions. It is a question of extending the dimensions of environmental law through time, foreseeing the consequences of today's economic decisions on future generations. Principle 3 of the Rio Declaration thus declares: "The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations".

According to Professor P. M. Dupuy, this concept should be understood "as a conceptual matrix defining the general perspective in which the already established principles of good environmental management should be resituated".

This principle serves as a general framework for a good global world government, and its constant recognition in treaties, official speeches, national and international institutions grants it the universality of a 'opinio juris'.

Even the International Court of Justice made an explicit reference to it, in its ruling of 25 September 1997 (Gabcikovo-Nagymaros affair, Hungary-Slovakia, paragraph 140): "the concept of sustainable development is an expression of this necessity to reconcile economic development and the

²³ See M. Kamto, Les nouveaux principes du droit international de l'environnement ('The new principles of international environment law'), Revue Juridique de l'Environnement, 1993-1, p. 11.

 $^{^{24}}$ P.M. Dupuy, Où en est le droit international de l'environnement à la fin du siècle? ('Where has international environment law come to at the end of the century?'), RGDIP , n° 4-1997, p. 873.

protection of the environment". Elsewhere, it also reflects the fact that the environment includes the concern for the next generation (paragraph 53) and for generations of the future (paragraph 140).

Several legal demonstrations have been carried out to with a view to acknowledge sustainable development as a legal concept and as an actual legal rule. Equally, one fundamental contribution is the individual opinion of Judge Weeramantry of the Gabcikovo-Nagymaros affair, who dedicates nineteen pages to the principle of sustainable development (CIU, 25 September 1997) and speaks of the principle in a normative fashion.

Recognised as such by a large part of those representing the doctrine, sustainable development is not less multiform for it can be declined and broken down into several constitutive elements, which we may likewise find set out in the text of the Rio Declaration. Ph. Sands has thus identified four elements: ²⁶

- Taking into account of the interests of present and future generations (Principle 3 of the Rio Declaration)

- Sound management of natural resources

- Role of equitable principles in the granting of rights and obligations with regard to the exploitation of resources

- Necessity to integrate environmental protection and development research (Principle 4 of the Rio Declaration).

It would also be convenient to add Principle 8 of the Rio Declaration, which explicitly concerns sustainable development by encouraging States to reduce and eliminate unsustainable patterns of production.

The feasibility of sustainable development could be materialised via the national and international process of formulation of an ensemble of indicators or criteria, which could serve as a guide to decision-makers (indication of sustainable development, framework and methodologies, UN, September 1996).

²⁵ S. Doumbé-Billé, Droit international et développement durable, (International law and sustainable development), Hommages à A. Kiss, éd. Frison Roche, 1998, p. 269; W. Lang, Sustainable development and international law, Graham and Trotman, London 1995; FIELD, Report of a consultation on sustainable development: the challenge to international law, RECIEL, Vol. 2-4 1993; De Fisher, Sustainability, the principle, its implementation and enforcement, Environmental and planning law Journal, Vol. 18, n° 4, August 2001.

²⁶ Ph. Sans, Principles of environmental law, Manchester, University Press, 1995, p. 198-208.

²⁷ http://www.un.org/DPCSD/DSD/CSD.

As a concept which is at once theoretical and practical, sustainable development is now the global foundation (or the principle of principles) of all action taken with a view to apply general international law and the principles of the Rio Declaration, the final article of which declares:

"States and people shall cooperate in good faith and in a spirit of partnership in the fulfilment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development" (Principle 27).

In Decision 7/1 ("Oceans and Seas") of its report on the seventh period of sessions (1998-1999), the Commission for sustainable development points out to the Economic and Social Council of the United Nations:

"1-2 – The Commission, taking into full account the different situations of various countries, calls upon Governments to strengthen national, regional and international action, as appropriate, to develop integrated approaches to oceans and coastal area management, and stresses that as in other areas, action should be taken on the basis of the principles set out in the Rio Declaration on Environment and Development."

"22 – The Commission encourages States to establish and manage marine protected areas, along with other appropriate management tools, consistent with the provisions of the United Nations Conference on the Law of the Sea and on a basis consistent with the programme of work under the Convention on Biological Diversity and its Jakarta Mandate in order to ensure the conservation of biological diversity and the sustainable management and use of oceans."

"29 – The Commission also stresses:

(a) The benefits of preparing the necessary national and local programmes within a framework of integrated coastal area management;

(b) The value of further work by relevant international organizations, in conjunction with relevant regional seas organizations, in promoting such management;

(c) The importance of supporting initiatives at the regional level to develop agreements, arrangements or programmes of action on the protection of the marine environment from land-based activities."

Finally, the last resolution approved by the United Nations General Assembly in the 55th period of sessions in 2001 on the subject of "Oceans and the Law of the Sea", n. 55/7, declares that the UN is:

"Convinced of the need, building on arrangements established in accordance with the Convention, to improve coordination at the national level and cooperation and coordination at both intergovernmental and inter-agency levels, in order to address all aspects of oceans and seas in an integrated manner."

"26 – Acknowledges the need to build national capacity for the integrated management of the coastal zone and for the protection of its ecosystem, and invites the relative parts of the United Nations system to promote these aims, including through the provision of the training and institutional support needed to achieve them."

"27 – Calls upon States to prioritize action on marine pollution from land-based sources as part of their national sustainable development strategies and local Agenda 21 programmes, in an integrated and inclusive manner, as a means of enhancing their support for the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, and calls for their active collaboration to ensure that the 2001 intergovernmental review will enhance the implementation of the Global Programme of Action."

B – Equitable and sound exploitation of shared natural resources

According to Principle 5 of the Stockholm Declaration of 16 June 1972:

"The non-renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion and to ensure the benefits from such employment are shared by all mankind".

On 19 May 1978, the UNEP came to adopt the principles of conduct within the environmental domain regarding the conservation and harmonious exploitation of natural resources shared by two or more States.

International rivers and border areas, as well as the marine environment, are necessarily shared.

The principles applicable to these two types of area fulfil, firstly, the general requirements of Principle 2 of the Rio Declaration, according to which States have the obligation of making sure that the activities carried out within the limits of their jurisdiction, or under their control, do not cause environmental damage in other States nor in zones which do not come under the competence of any national law. The sharing of a resource entails unharmful activities with regard to the State with which it is shared, as well as a close cooperation between States. These principles are considered by the International Court of Justice as a customary rule of law, which forms part of the body of rules of International Environment Law.

Beyond Principle 2 of the Rio Declaration, the sharing of natural resources is recognised by the globalisation of environmental problems. It rests on a common principle for international watercourses and border zones: the equitable exploitation and the agreed collective management of natural resources in the interest of two or several States.

This principle follows from the idea of common interest. It was declared in the ruling of 22 September 1929 by the International Court of Justice in the ODER affair, and it was codified in articles 5 and 6 of the Convention on the Law of the Non-navigational Uses of International Watercourses on 21 May 1997. Finally, in the Danube affair of 25 September 1997, the ICJ

 $^{^{28}}$ United Nations, Compendium of Treaties, Vol. 1046, $\,n^{\circ}$ 15749.

²⁹ CIJ, Consultative notice of 8 July 1996 on the lawfulness of the threat or use of nuclear weapons.

recognised the principle of sound equitable exploitation by directly associating it with the notion of shared resource.

Czechoslovakia, "by taking unilateral control of a shared resource and by thus depriving Hungary of its right to and equitable and reasonable part of the natural resources of the Danube... has not respected the proportionality demanded by international law" (paragraph 85). In paragraph 47 of its ruling, the ICJ again mentions the 1997 convention by quoting article 5 paragraph 2 concerning the equitable and reasonable sharing of an international watercourse between States.

2) The instruments of integration

A – Coastline impact assessment

The procedure of environmental impact assessment was born within the framework of international law. However, as pollution knows no frontiers, international organisations quickly came to advocate an adapted procedure for border areas. It was for this reason that the UNEP would systematically incorporate an article on impact assessment into the conventions on regional seas.

The Barcelona Convention for the protection of the marine environment and the coastal region of the Mediterranean as revised on 10 June 1995, projects among the general obligations that the parties "undertake environmental impact assessment for proposed activities that are likely to cause a significant adverse impact on the marine environment and are subject to an authorization by competent national authorities" (art 4-3c).

The protocol concerning specially protected areas and biological diversity in the Mediterranean of 10 June 1995 devotes article 17 to environmental impact assessment:

"In the planning process leading to decisions on industrial and other projects and activities that could significantly affect protected areas and species and their habitats, the Parties shall evaluate and take into consideration the possible direct or indirect, immediate or long-term impact, including the cumulative impact of the projects and activities being contemplated".

The Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena de Indias, 24 March 1983) also contains a particularly comprehensive article on this matter:

Article 12 Environmental Impact Assessment

- 1. As part of their environmental management policies the Contracting Parties undertake to develop technical and other guidelines to assist the planning of their major development projects in such a way as to prevent or minimize harmful impacts on the Convention area.
- 2. Each Contracting Party shall assess within its capabilities, or ensure the assessment of, the potential effects of such projects on the marine environment, particularly in coastal

³⁰ V. J. Sohnle, Irruption du droit de l'environnement dans la jurisprudence de la CIJ: l'affaire Gabcikovo-Nagymaros ('The Emergence of environmental law within the precedent of the ICJ: the Gabcikovo-Nagymaros affair'), RGDIP, 1998-1, p. 85. 65

areas, so that appropriate measures may be taken to prevent any substantial pollution of, or significant and harmful changes to, the Convention area.

3. With respect to the assessments referred to in paragraph 2, each Contracting Party shall, with the assistance of the Organization when requested, develop procedures for the dissemination of information and may, where appropriate, invite other Contracting Parties which may be affected to consult with it and to submit comments.

The Kingston Protocol Concerning Specially Protected Areas and Wildlife (18 January 1990) includes similar dispositions to those of the Protocol on protected areas of the Mediterranean:

Article 13 Environmental Impact Assessment

- 1. In the planning process leading to decisions about industrial and other projects and activities that would have a negative environmental impact and significantly affect areas or species that have been afforded special protection under this Protocol, each Party shall evaluate and take into consideration the possible direct and indirect impacts, including cumulative impacts, of the projects and activities being contemplated.
- 2. The Organization and the Scientific and Technical Advisory Committee shall, to the extent possible, provide guidance and assistance, upon request, to the Party making these assessments.

The Aruba Protocol Concerning Pollution from Land-based Sources and Activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region of 6 October 1999 also includes articles concerning impact assessment:

Art. 7 Environmental Impact Assessment

- 1. The Contracting Parties shall develop and adopt guidelines concerning environmental impact assessments, and review and update those guidelines as appropriate.
- 2. When a Contracting Party has reasonable grounds to believe that a planned land-based activity on its territory, or a planned modification to such an activity, which is subject to its regulatory control in accordance with its laws, is likely to cause substantial pollution of, or significant and harmful changes to, the Convention area, that Contracting Party shall, as far as practicable, review the potential effects of such activity on the Convention area, through means such as an environmental impact assessment.
- 3. Decisions by the competent government authorities with respect to land-based activities, referred to in paragraph 2 above, should take into account any such review.
- 4. Each Contracting Party shall, subject to its domestic law and regulations, seek the participation of affected persons in any review process conducted pursuant to paragraph 2 above, and, where practicable, publish or make available relevant information obtained in this review.

We thus see that all agreements concerning regional seas regard not only the effects of foreseen activities on the neighbouring coastal State, but also the effects on the marine

environment, whether under national sovereignty or coming under the competence of the open sea. This precautionary measure looks to ensure the protection of the environment against degradations that may result from human activity following work carried out both at sea and on the coastline, and directly fulfils the demands of article 192 of the Convention on the Law of the Sea, according to which "States have the obligation to protect and preserve the marine environment". In addition, article 206 of this convention makes environmental impact assessment an obligation for activities affecting the marine environment:

Assessment of potential effects of activities

"When States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments in the manner provided in article 205".

All contemporary international conventions now include an article on impact study, having become a common legal procedure both on a national and an international level. The implementation of these measures will depend on national laws and on future international follow-up procedures set up by the secretariats of the conventions.

Transboundary impact assessment, as we have seen in the maritime sphere, may find its roots in a universal convention (Montego Bay). The same is true in the sphere of biological diversity, with article 14 of the Rio Convention on Biological Diversity of 5 June 1992. Article 14-c specifically encourages States to sign bilateral or regional agreements on border impact assessment, understanding that the Rio Convention applies to maritime, fluvial and coastal zones (art. 2 and 4).

On a universal level, the New York Convention of 21 May 1997 on the Law of the Nonnavigational Uses of International Watercourses includes a model procedure of transboundary consultation regarding the possible effects of planned measures on an international watercourse State (Part 3, articles 11 to 20). To this end, the notification of the planned measures to a neighbouring State is accompanied, where appropriate, by an environmental impact study (art. 12).

On a regional level, the most greatly developed convention on the matter, thus serving as a model for other regions, was elaborated by the United Nations Economic Commission for Europe, the head office of which is in Geneva. This is the so-called Espoo Convention for environmental impact assessment in a transboundary context, signed on 25 February 1991 and entered into force on 13 September 2001. It enforces an impact assessment for a list of works and activities (annexe 1) having an impact on all or on part of the relevant area of jurisdiction of another party. 'Impact' refers to all effects of an activity on the environment, particularly on health and security, wildlife, soil, air, climate, landscape, historic monuments or other buildings, and on the interplay between these factors. It also refers to the effects on cultural heritage or the socio-economic conditions which may

³¹ UNEP. An approach to environmental impact assessment for projects affecting the coastal and marine environment, UNEP regional seas reports and studies, Nairobi, 1990. 67

result from the alteration of these factors. The measure involves a notification and a consultation, and demands that the environmental assessment dossier have a particular content.

The Helsinki Convention of 17 March 1992 on the protection and exploitation of transboundary watercourses and international lakes obliges Riparian Parties to implement environmental impact assessment (art. 3-1-h). Likewise, they should create, via specific agreements, joint bodies which serve as a framework for the exchange of information regarding the exploitation of waters and of common existing and planned installations that threaten to have a transboundary impact. These joint bodies should also take part in the carrying out of the environmental impact assessment concerning transboundary waters.

The main ecological and legal interest of this convention is that it establishes a link between the watercourse and the coastal zone. As a matter of fact, article 2-6 sets out as an objective to Parties "the reduction of transboundary impact and the protection of the environment of transboundary waters or the environment influenced by such waters, including the marine environment". Likewise, article 9-3 invites coastal States affected by transboundary impact to be involved in the activities of multilateral joint bodies established by Parties riparian to such waters. Finally, article 9-4 establishes that joint bodies of a water area should cooperate with other joint bodies established by coastal states for the protection of the marine environment, and should harmonise their work so as to prevent, control and reduce transboundary impact.

Transboundary impact assessment also finds it roots in community law, with Directive 85/337 of 27 June 1985, revised by Directive 97/11 of 3 March 1997. Article 7 sets out the procedure of consultation with States likely to be affected. What implicitly but necessarily results from these arrangements is that national impact assessment must consider the effects that a planned activity may have abroad.

A recent development in the law of international impact assessment looks to make this cautionary measure an obligation, not only as it has been until now for construction works, but also for plans or programmes. This is what we call strategic impact assessment. At the level of community law, a new directive was approved concerning the impact evaluation of certain plans and programmes (2001/42 of 27 June 2001). This directive sets out a new kind of impact assessment, concerning no longer only construction projects but also plans and programmes developed or adopted by a national, regional or local authority, either through the enactment of a law or an administrative regulation taking effect from the very moment that such general documents are required by legislative dispositions or regulations. This does not, in any instance, throw doubts on their actual legal effects. The directive at once covers general and sectoral plans in the sphere of fishing, water management, waste, tourism, urban and rural land development and pressure on the soil. Amongst the criteria allowing the identification of the probable scope of impact are:

- the transboundary nature of impact
- the value and vulnerability of affected areas

- impact on areas and landscapes that benefit from a status of protection recognised at national, community or international levels.

Strategic impact assessment will shortly also become subjected to a Protocol of the Espoo Convention, following the guidance of the United Nations Economic Commission for Europe. The Protocol project in question should be adopted at Kiev in May 2003, on occasion of the 5th conference of European environmental ministers. This project does not only regard plans and programmes having transboundary effects, but all strategic decisions having important effect on the environment. It is of particular interest because, in terms of the measures expressed, it is more greatly detailed than the directive of 27 June 2001, and because it gives priority to public information and participation in accordance with the principles of the Aarhus Convention.

Now that the law of transboundary impact assessment is well established at the level of conventions, the International Court of Justice has been sure to make it an indispensable measure for public interest in connection with the protection of the environment. This came in its ruling of 25 September 1997 on the Gabcikovo-Nagymaros dam complex affair, where transboundary impact assessment is declared a principal measure. According to Jochen Sohnle, "the Court considers that such and obligation [of carrying out an impact assessment], which in addition is closely linked to practical rules of prevention and precaution, well and truly exists".³² The Court in fact declares:

"The awareness that the environment is vulnerable and the acknowledgement of the need to continually assess the ecological hazards have become more and more apparent ..." (paragraph 12, 5).

The ruling adds an important clause concerning the obligation to carry out a follow-up of impact assessments, wherever it is deemed necessary to take continuous account of new data and therefore of the constant environmental changes:

"For the purposes of evaluation of ecological hazards, these are the current norms which should be taken into account" (paragraph 140, 2).

"Thanks to the new perspectives offered by science and to a growing awareness of the hazards that the continuation of these interventions at an excessive and sustained rhythm would represent for mankind, whether of current or of future generations, new laws and demands, abandoned in a large number of watercourse instruments during the last two decades, have been implemented. These new norms should be taken into account and new demands should be properly acknowledged, not only when States plan new activities, but also when they continue activities begun in the past." (paragraph 140, 4).

"For the purposes of the area concerned, this entails that the Parties should together reexamine the environmental impact of the exploitation by the Gabcikovo complex." (paragraph 140, 5).

Impact assessment is, rightly, a cautionary measure against attacks on the environment. It must fulfil its role within the relations between States for border projects, but it must also be subjected to a continuous adaptation in order to take account of new situations. The Espoo Convention has in fact envisaged what it describes in article 7 as an 'analysis *a posteriori*', which may be requested by any of the parties involved. The analysis a posteriori, which is a different document to the original impact assessment, includes in particular the supervision of activity and the identification of all potentially harmful transboundary impact.

³² V. J. Sohnle, Irruption du droit de l'environnement dans la jurisprudence de la CIJ: l'affaire Gabcikovo-Nagymaros ('The Emergence of environmental law within the precedent of the ICJ: the Gabcikovo-Nagymaros affair'), RGDIP, 1998-1, p.118.

B – The governance of the seas

Having become a reference for a good global world governance, sustainable development should, all the more, condition the governance of the sea.

This concept of governance is at once an expression of the demands of form and content within the modern conduct of public policies, here applied to the marine environment as 'the governance of the sea'. It is a matter of managing common interests more efficiently, via a more democratic and participative management.

The idea of the governance of the seas appeared when, after the Montego Bay Convention, the acknowledgement of the multiplicity of treaties, agreements and implementing mechanisms made it necessary to have, at a global level, an instrument of coordination between the law of the sea and the law of the environment. A conference on governance took place in Lisbon in 1991, followed by the Lisbon Declaration of 1st September 1998 (on occasion of Expo 98), regarding "the governance of the ocean for the 21st Century – democracy, equity and peace in the ocean". This declaration was inspired by the conclusions of the Independent World Commission for the Oceans. Political reasoning intervened in the 7th meeting of the Commission of Sustainable Development in 1999, in which Recommendation 7/1 entitled "Seas and Oceans" establishes the foundations of the future structure of the governance of the sea.

Following this recommendation, the General Assembly of the United Nations (in Resolution 54/33 on "Oceans and seas: international coordination and cooperation" of 24 November 1999) decided to organise, at an institutional level, the governance of the sea by taking note of the conjunction constituted by the United Nations Convention for the law of the sea and the objectives of chapter 17 of Agenda 21.

The resolution declares itself "convinced of the need to bring out, on the basis of the existing agreements, an integrated approach of all legal, economic, social and environmental aspects of the oceans and the seas". It organises an official consultative process to annually assist the General Assembly in following the evolution of maritime affairs, as well as in reinforcing coordination. It states that "coordination and cooperation at a national level are important for the endorsement of an integrated approach to maritime affairs...".

This new process of international governance of the oceans was initiated in the year 2000 and tackled the question of the economic and social consequences of pollution and the deterioration of the marine environment, particularly in coastal areas.

In view of the proliferation of national, regional and universal laws concerning Chapter 17 of Agenda 21 and the law of the sea, it is essential to insist on the need for a new strategy of governance based on the following demands:

 ³³ Ocean governance and sustainable development of the sea, United Nations University
Press, 1994 (Peter Bautista Payoyo, ed.).
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- ensure the unity of the marine environment, not to be considered as being constituted by separate oceans, but as an integrated ensemble including the coastal zones which make up a whole with the marine environment
- organise an integrated management of this environment via institutional mechanisms adapted to the necessary coordination
- guarantee a democratic management of this environment via the greater participation of civil society and of local authorities
- ensure the equity and the sustainability of the exploitation of shared resources.

Within this strategy of governance at the level of the United Nations, the most important recommendation with a view to establishing future action on the River Plate is the merging together of integrated management of maritime and coastal-zone activities with a participative democratic process.

Such governance was also at the heart of the Paris Conference organised by Unesco from 3 to 7 December 2001, on oceans and coastal zones for Rio Plus Ten. Certain ideas were pursued on the regional governance of the oceans and their development. The working group report advocated the following:

- the development of a global vision for oceans, seas and coastal areas
- the endorsement of a horizontal regional cooperation with a view to an ecosystemic approach
- the creation of national and local instruments for an integrated policy of maritime and coastal management

At the first intergovernmental meeting in charge of examining the implementation of the Global Programme of Action for the protection of marine environment against pollution from land-based sources, held in Montréal from 26 to 30 November 2001, and in the presence of the representatives of 98 countries including Argentina, item 7 of the agenda was devoted to the improvement of the implementation of the Global Programme of Action via a better governance of the oceans and the coastal areas. It was suggested that coordination and the activities of global and regional conventions should be improved, that interregional cooperation between the United Nations organisations should be endorsed, and that the roles of commissions for river beds and coastal management should be adequately coordinated. In addition, the question was to foster the approach on a regional level by absorbing multiple parties.

The Montréal Declaration of 30 November 2001 resulting from these meetings, devoted to the protection of the marine environment against pollution from land-based activities, declares:

"6. We shall cooperate to improve coastal and ocean governance for the purpose of accelerating the implementation of the Global Programme of Action, by mainstreaming, integrating

³⁴ A. de Marffy-Mantuano, La gouvernance des mers ('The Governance of the seas'), Annuaire du droit de la mer 1998, T.II, p. 71, éd. Pedone, Paris.

 $^{^{35}}$ Sustainable development (publication of the International Institute for sustainable development), Vol. 6, n° 1, 10 December 2001.
coastal area and watershed management, and enhancing global, regional and national governance processes."

"9. We further commit ourselves to improve and accelerate the implementation of the Global Programme of Action by:

(a) Taking appropriate action at the national and regional levels to strengthen institutional cooperation between, inter alia, river-basin authorities, port authorities and coastal zone managers, and to incorporate coastal management considerations into relevant legislation and regulations pertaining to watershed management in particular transboundary watersheds;

(b) Strengthening the capacity of local and national authorities to obtain and utilize sound scientific information to engage in integrated decision-making, with stakeholder participation, and to apply effective institutional and legal frameworks for sustainable coastal management."

c) – Information and participation

This final principle is the procedural constituent of governance and sustainable development. The 1992 Rio Declaration clearly establishes this connection in the well-known Principle 10:

"Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available."

This results in a legal obligation of information and of participation which we today find in all international conventions on the environment, and which has even given rise to a regional convention that specially organises the implementation of this principle (Aarhus Convention of 25 June 1998, entered into force on 30 October 2001). An international customary process is thus in working progress, closely linked on an individual level to the national acknowledgement of man's right to the environment via procedural laws, and linked on a state level to the obligation of cooperation.

Both on a national and on a regional level of cooperation, the various participants (businesses, trade unions, environmental associations, citizens, and local organisms) now have the right to information and the right of expression when public authorities prepare a decision. An essential factor of good governance, it is also a condition of sustainable development to ensure that all interests (including long-term interests with a view to future generations) have been taken into account.

Although the convention on the law of the sea does not set out such a principle for the benefit of individuals or groups, it does nevertheless dedicate section 2 of part 12 to global and

³⁶ Revue Juridique de l'Environnement, n° spécial, 1999.

regional cooperation for the preservation of the marine environment and to the role of scientific organs (articles 197-201).

Regional conventions place much greater emphasis on information and, ultimately, on participation (for example, art. 16 on public information of the Helsinki Convention of 11 March 1992 on transboundary watercourses; art. 10 on public information of the London Protocol of 18 June 1999 on water and health; art. 10 of the Aruba Protocol of 6 October 1999 on pollution from land-based sources and activities in the Caribbean region; art. 15 on public information and participation of the Barcelona Convention for the protection of the marine environment and the coastal region of the Mediterranean as revised on 10 June 1995).

As for the universal Convention on international watercourses (New York, 21 May 1997), this is based on the international customary principle of non-discrimination (article 32) with a view to facilitate the access of individuals to national procedures.

In one way or another, the principles and measures set out above are a clear expression of the recent and immediate developments of international law with the benefit of a new interpretation of the Law of the Sea, deliberately in favour of an integrated and sustainable management of the marine and coastal-zone environments.

The result is thus evidently an international law for coastal areas particularly formulated within the most recent conventions on regional seas.

CONCLUSION

The close relations between the integrated management of the coastline and the preservation of the marine environment rightly took their roots from international maritime law, since the very moment in which such law began to concern itself with the environment.

Today, we might say that the integrated management of coastal areas is the environmental conditionality of the preservation of the marine environment, not only in terms of the effects of land-based pollution but also in terms of the various coastal activities and developments.

The concept of integrated management of marine and coastal areas has been the object of several definitions. For the World Bank, this concept is:

"a process of governance and consists of the legal and institutional framework necessary to ensure that development and management plans for coastal zones are integrated with environmental (including social) goals and are made with the participation of those affected".³⁷

This means that instead of a sectoral approach, what is necessary is a global, unitary and multidisciplinary approach which, within a perspective of sustainable development that integrates

³⁷ Jan C. Post and Carl G. Lundin, Guidelines for integrated coastal zone management, Environmentally sustainable development studies and monographs series n° 9, World Bank, Washington, 1996, p. 1.

the environment, economic problems and social concern, looks to manage the coastal area as a territorial unity that merges the maritime and terrestrial areas.

This is the reason why the preservation of the marine environment has become the major environmental objective of coastal management, and thus explains why the law of the sea today finds itself directly concerned with what happens inland.

We have seen that the preservation of the marine environment is codified in article 192 of the treaty on the law of the sea: "States have the obligation to protect and preserve the marine environment."

The integration of environmental law within the law of the sea has not only brought on the cooperation between States with a view to preventing pollution, but it has also, as we have seen in the Barcelona Convention, reinforced the protection of the marine environment in all spaces linked to the sea and, in particular, to coastal areas. The existence, since several years ago, of a committee for the protection of the marine environment within the International Maritime Organisation (IMO) is the institutional manifestation of such integration. The IMO thus serves as a secretariat to a group of experts on the scientific aspects of environmental marine protection which are common to several international organisations (FAO, UNESCO, IAEA, UNEP, WMO).

Over the whole marine environment, coastal States now have particular competences and responsibilities, and yet these prerogatives are accompanied by new collective obligations of protection and therefore of management regarding the coastal area. Although a coastal State may intervene in the open sea in order to protect its coastline (Brussels Convention, 1969-1973), the new law of the sea rightly projects the general preservation of the marine environment and identifies the obligations of States as far as the protection of the whole marine environment is concerned, without spatial restriction of any kind, that is to say, including territorial sea and enclosed waters. The fact that sea pollution is now regulated on a regional or an international level, not only for pollution coming from the sea or from vessels but equally for pollution from land-based sources, confirms the territorial integration of the preservation of the marine environment, which unites the national coastal areas and even the national river-beds with the maritime space.

Article 207 of the Montego Bay Convention, 'pollution from land-based sources', clearly illustrates the idea that the preservation of the marine environment rests not only on coastal states or flag states, but also on 'States' in general, including landlocked States who discharge their waters into an international hydrographic network. These waters may enter the sea of a coastal State which does not necessarily have sovereignty over the river basin at the origin of the discharge.

Such territorial integration, which causes the protection of the marine environment to be extended upstream to the river basins, is no longer a simply scientific acknowledgement, but has become a legal reality.

In order to assist States in the implementation of these new strategies of integrated management and of preservation of the marine environment, several international organisations have proposed guidelines or models:

³⁸ http:/gesamp.imo.org.

- OCDE, Recommendations for the integral management of coastal areas (1991)

- IUCN, Guidelines and principles for coastal area development (1993)

- World Bank, Guidelines for integrated coastal zone management (1993, 1996)

- PNUE, Guidelines for the integrated management of coastal and marine areas (1995)

- Council of Europe, Legal model for the sustainable development of coastal areas³⁹ and code of conduct (1999).

Other international reports equally endorse a general methodology:

- FAO, Integrated management of coastal zones (1992)

- PNUE, Directives concerning the integrated coastal management of the Mediterranean basin (1995)

- UNESCO, Methodological help guide to integrated coastal management (1997, 2001)

- PNUE, Priority action programme, M. Prieur and M. Ghezali, National legislation concerning coastal management in the Mediterranean and guideline proposals, Split (2000)

- Norcoast, Recommendations on improved integrated coastal management in the North Sea region, Denmark (2001).

Each of these documents insists on the need to establish a legal basis for such integrated management with a view to becoming more effective and more sustainable.

Nevertheless, integrated coastline management is not entirely consistent, for it encompasses several different expressions that can be confused with one another (see the appended list). If various different types of situation exist in different countries of the world, common principles are far from existence, as was proved by the EU demonstration programme (see the attached chart). This situation makes it all the more necessary to push forward a new protocol on the Barcelona Convention, in order to sanction the coastal area as an integral part of the marine environment, and to establish a common minimum of processes and actions with a view to making the indispensable integrated management easier and clearer, by organising a synergy between protocols already partly concerning the coastline.

 $^{^{39}}$ Council of Europe, coll. Sauvegarde de la nature n° 101 (1999).

INTEGRATED MANAGEMENT

<u>AREAS</u>

River basin

Estuary

Territorial or geographic integration

Systemic integration or integration of factors

Wetlands

Littoral

Coastal zone

Maritime zone

Physical factors

Biological factors

Human factors

Economic objectives

Functional and temporal integrationSocial objectivesfor sustainable developmentSocial objectives

Environmental objectives

INTEGRATED MANAGEMENT

Horizontal - between states

- between communities

- between sectors

Vertical - from national to local

Policy

Strategy Global level

Plan

Intersectoral level

Programme

Consultation

Agreement

Coordination

Joint decision

Institutional integration

Programmatory or provisional integration

Decisional integration

INTEGRATED MANAGEMENT

Financial integration

Joint financing

Fiscal harmonisation

Coordination

Integration of monitoring and of follow-ups

Evaluation

Sanctions

THE CHALLENGE OF AN INTEGRATED MANAGEMENT OF THE SPANISH COAST

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1.-INTRODUCTION

The coastal areas are ecosystems of a particular value from the environmental perspective and an important source of resources, from a socio-economic perspective. These double condition, turns it into a strategic framework and at the same time, into a scenery of different and complex conflicts, related to the unsustainable use of the natural resources.

On a worldwide scale, and specially in the European framework, the coastal areas are a strategic element for development, as they constitute an important source of natural resources; a reasonable percentage of the population lives in them (1/3 of the European population lives in less than 50 km from the coast); they are a fundamental link for transport and commerce; they represent the favourite destination of leisure activities and, besides, some of the most valuable habitats are found there. A third of the European wetlands, a 30% of the areas of special protection for the birds – ZEPAS- and eight of the prioritary habitats are found in coastal areas.

However, the coastal areas have been subjected to an accelerated process of degradation in the last decades. Problems like the loss of biodiversity and the destruction of habitats, the intensive occupation of the ground, the contamination of the waters, the conflicts between different uses, the erosion of the coast and the exhaustion of resources are becoming more frequent on the European coasts. Likewise, the European coasts, as a consequence of the generated problems, face big socio-economic problems derived from the weakening of the fabrc of society, the marginalization, the unemployment and the loss of cultural identity.

To give an answer to these problems it is necessary to tackle them from an integrated territorial approach that covers all the areas of intervention and administration levels and results in the management and integral planning of the coastal areas through the coordination and cooperation of all the administrations involved and the participation of the private sectors.

This idea, conceived since long ago by the European Union, has been shown recently in the **Communitary Strategy of Integrated Coastal Zone Management (ICZM)** whose aim is to establish the objectives and priorities of development for these areas and the principles of action in which it must be based on.

In Spain there are legal intruments of protection and management of the coast, though the need arises for an integrated territorial approach that covers all the areas of intervention and levels of administration to culminate in a management and integrated planning of the coastal areas through the coordination and cooperation of all the administrations involved and the participation of the private sectors.

2.- JURIDIC BASES OF THE COASTAL MANAGEMENT IN SPAIN

In the article 132.2 of the Spanish Constitution of 1978 it is stablished that "Are assets of the state's public domain the ones that the law determines and, in any case the maritime-terrestrial zone, the beaches, the territorial sea and the natural resources of the economical zone and the continental platform".

In 1988 the Law 22/1988 of the Coast was passed, which is still in force. As a main objective the Law of the Coast is in charge of giving a precise definition to the public maritime-terrestrial domain and to protect in a special way this fragile zone of the coast. But it also extends its influence onto the neighbouring private plots and it defines three zones, where it establishes certain limitations to the property and a minimal complementary regulation to that dictated by the Autonomous Community in the framework of its competences.



The Law of the Coast divides the competences between the State Administration, the Autonomous Communities and the Councils.

Competences of the State Administration:

The Ministry of the Environment and, within itself, the General Management of the Coast Department is in charge of the management and protection of the maritime-terrestrial public domain and the adjacent terrains in the terms that the Law of theCoast determines:

- Demarcation of the maritime-terrestrial public domain, to give it back its public status.
- Ease the public access to the sea.
- Collaborating in the urban planning of the Coast. Make the reports previous to the authorizations by the Autonomous Communities.
- Managing the public domain. Giving the building and installation concessions in the public domain and the authorizations in the transit zone.
- Works for the protection, defense, conservation and use of the public domain.
- Regenerating, creating and recuperating the beaches, wetlands, dune systems, promenades and littoral paths.

Competences of the Atonomous Communities:

As the Law of the Coast drafts, the Autonomous Communities will exercise the competences that, in the following subjects, are conferred to them in accordance with their respective Statutes

- Construction of marinas.
- Authorizing and controlling dumping to the sea.
- Creating the urban plan of the coast
- Establishing the areas of the marine crops.
- Authorizing intallations in the protected areas.

Competences of the Councils

The municipal competences will deal with the following matters, in the terms planned by the legislation that dictates the Autonomous Communities.

- Informing the requests of occupation of public domain.
 - Exploring the season services on the coast.
- Assuring the vigilance and the security of the people in the sea.
- Cleaning and keeping the hygenic conditions of the beaches.

Due to the concurrence of the competences that takes place on the coast, an effort has been made to help the coordination through a system of consultation and reports that saves the competence of the respective Entities and allows their coordination in a collaboration framework.

As it is explained in the presentation of reasons of the Law of the Coast, above the conflicting interests that meet many times about the maritime-terrestrial public domain, a double purpose rises as the cardinal idea of this Law to guarantee its public character and to preserve its natural characteristics, reconciling the demands of development with the needs of protection, and abolishing as many legal conflicting regulations.

2. RECOMMENDATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL CONCERNING THE IMPLEMENTATION OF INTEGRATED COASTAL ZONE MANAGEMENT IN EUROPE

The Recommendation is based on the results of the programme of demonstration of the Comission on integrated coastal zone management and on the European strategy that arises from it, presented in the document COM(2000)547. Such results indicate that the European coastal zones are deteriorating and that this tendency can only stop or be reversed through a joined action in which all the levels of the administration participate, from the local authorities to the European ones. Likewise, the Recommendation asks the member states to adopt all the necessary mesures at a national scale, in collaboration with the regional and local administrations.

The Recommendation aims to encourage the Member States to establish **a national stocktaking on the situation of the coastal zones**, which takes into account a whole series of factors like the regulations, institutions and agents that have influence on the planning and management of such areas. On the basis of such an stocktaking, the Member States will have to create **a national strategy or strategies to promote the integrated coastal zone management**.

Reach of the Recommendation:

- 1. As it is a Recommendation, it does not imply immediate compromises of legal character, although it could lead to another type of instrument (Directive, Regulations, etc) in the future.
- 2. The general principles of management are established: Each State must establish a national stocktaking to determine the actors involved, and to create a NATIONAL STRATEGY that basically analizes:
 - Results of the national stocktaking
 - Regulations
 - Main actors and institutions that influence in the planning
- 3. The Member States will inform the Comission about the experience in the implementation of the recommendation after a 5 year period: This report will include the national stocktaking, the proposed strategy, as well as adopted mesures for its implementation.
- 4. During the next year the Comission will present an **Evaluation Report** together with a proposal for other actions.

Content of the Recommendation

Chapter I: A strategic approach

A strategic approach for the management of the coastal zones must be adopted based on: a) protection of the coastal environment, based on an ecosystem approach preserving its integrity and functioning, and sustainable management of the natural resources of both marine and terrestrial components of the coastal zones.

- b) recognition of the threat to coastal zones posed by climate change and of the dangers entailed by the rise in sea level;
- c) appropriate and ecologically responsible coastal protection MEASURES;
- d) sustainable economic opportunities and employment options;
- e) a functioning social and cultural operative system in local communities;
- f) adequate accessible land for the public, both for recreational purposes and aesthetic reasons;
- g) in the case of remote coastal communities, maintenance or promotion of their cohesion;
- h) improved coordination of the actions taken by all the authorities concerned both at sea and on land, in managing the sea-land interaction.

Chapter II: Principles

Member States should follow the principles of integrated coastal zone management based on:

- a broad overall perspective (thematic and geographic) which will take into account the interdependence and disparity of natural systems and human activities with an impact on coastal areas;
- b) a long-term perspective which will take into account the precautionary principle and the needs of present and future generations;
- c) adaptive management during a gradual process which will facilitate adjustment as problems and knowledge develop. This implies the need for a sound scientific basis concerning the evolution of the coastal zone;
- d) local specificity and the great diversity of European coastal zones, which will make it possible to respond to their practical needs with specific solutions and flexible measures;

- e) working with natural processes and respecting the carrying capacity of ecosystems, which will make human activities more environmentally friendly, socially responsible and economically sound in the long run;
- f) involving all the parties concerned (economic and social partners, the organisations representing coastal zone residents, non-governmental organizations and the business sector) in the management process, for example by means of agreements and based on shared responsibility;
- g) support and involvement of relevant administrative bodies at national, regional and local level between which appropriate links should be established or maintained with the aim of improved coordination of the various existing policies. Partnership with and between regional and local authorities should apply when appropriate;
- h) use of a combination of instruments designed to facilitate coherence between sectoral policy objectives and coherence between planning and management.

Chapter III: National stocktaking

Member States should conduct or update an overall stocktaking to analyse which major actors, laws and institutions influence the management of their coastal zone. This stocktaking should:

- a) consider (but not be limited to) the following sectors and areas: fisheries and aquaculture, transport, energy, resource management, species and habitat protection, cultural heritage, employment, regional development in both rural and urban areas, tourism and recreation, industry and mining, waste management, agriculture and education;
- b) cover all administrative levels;
- c) analyse the interests, role and concerns of citizens, non-governmental organisations, and the business sector;
- d) identify relevant inter-regional organizations and cooperation structures, and
- e) take stock of the applicable policy and legislative measures.

Chapter IV: National strategies

1. Based on the result of the stocktaking, each Member State concerned, in partnership with the regional authorities and inter-regional organizations, as appropriate, should develop a

national strategy or, where appropriate, several strategies, to implement the principles for integrated management of the coastal zone.

- 2. These strategies might be specific to the coastal zone, or might be part of a geographically broader strategy or programme for promoting integrated management of a larger area.
- 3. These strategies should:
 - a) identify the roles of the different administrative actors within the country or region whose competence includes activities or reosurces related to the coastal zone, as well as mechanisms for their coordination. This identification of roles should allow an adequate control, and an appropriate strategy and consistency of action;
 - b) identify the appropriate mix of instruments for implementation of the principles outlined in Chapter II, within the national, regional or local legal and administrative context. In developing these strategies, the Member States should consider the appropriateness of:
 - developing national strategic plans for the coast to promote integrated management ensuring the control of additional urbanization and of the exploitation of non-urban areas while respecting natural features of the coastal environment;
 - establish land purchase mechanisms and declarations of public domain to ensure public access for recreational purposes without prejudice to the protection of sensitive areas;
 - iii) developing contractual or voluntary agreements with coastal zone users, including environmental agreements with industry;
 - iv) harnessing economic and fiscal incentives, and
 - v) working through regional development mechanisms;
- c) develop or maintain national and, where appropriate, regional or local legislation or policies and programmes which address both the marine and terrestrial areas of coastal zones together;
- d) particularly, identify measures to promote bottom-up iniciatives and public participation in integrated management of the coastal zone and its resources;
- e) identify sources of durable financing for integrated coastal zone management initiatives where needed, and examine how to make the best use of existing financing mechanisms both at Community and at national level;

- f) identify mechanisms to ensure full and coordinated implementation and application of Community legislation and policies that have an impact on coastal areas, including when reviewing Community policies;
- g) include adequate systems for monitoring and disseminating information to the public about their coastal zone. These systems should collect and provide information in appropriate and compatible formats to decision makers at national, regional and local levels to facilitate integrated management. The work of the european Environment Agency can serve inter alia as a basis for this purpose. These data should be publicly available in accordance with relevant Community legislation.
- h) determine how appropriate national training and education programmes can support implementation of integrated management principles in the coastal zone.

Chapter V: Cooperation

- 1. Member States should encourage, enter into or maintain dialogue and implement existing conventions with neighbouring countries, including non-Member States in the same regional sea, to establish mechanisms for better coordination of responses to cross-border issues.
- 2. Member States should also work actively with the Community institutions and other coastal stakeholders to facilitate progress towards a common approach to integrated coastal zone management, examining the need for a European coastal stakeholders forum. In this process, ways of using existing institutions and conventions should be explored.
- 3. In this context, cooperation with the accession countries is maintained and enhanced.

Chapter VI: Reporting and review

- 1. Member States will report to the Commission on the experience in implementation of this Recommendation forty-five months after its adoption.
- 2. These reports will be available and include, in particular, information concerning:
 - a) the results of the national stocktaking exercise;
 - b) the strategy or strategies proposed at the national level for implementation of integrated coastal zone management;
 - c) a summary of actions taken, or to be taken, to implement the national strategy or strategies;
 - d) an evaluation of the expected impact of the strategy or strategies on the status of the coastal zone;

3. The Commission should review this Recommendation within fifty-five months following the date of its adoption and submit to the european Parliament and the Council an evaluation report accompanied if appropriate by a proposal for further Community action.

3. IMPLEMENTATION OF THE INTEGRATED COASTAL ZONE MANAGEMENT IN SPAIN

During the period of Presidency of the Ministers Council of the EU, Spain has established as one of its environmental priorities to move towards a more adequate and integrated management of the coastal zones. This has translated into a remarkable impulse to reach the necessary agreements between the European Parliament and the Council, which has ended with the implementation of the Recommendation on ICZM.

In this context, in the framework of the acts of the Spanish Presidency, the **1st European Forum** on Community Strategies for the Integrated Coastal Zone Management took place in Villajoyosa (Alicante) between the 18th and the 20th April 2002, in which people in charge of the coastal management of the Member States of the EU and of the Candidate Countries as well as the European Parliament and the European Commission participated.

ESQUEMA DE DESARROLLO DE LA GIZC EN ESPAÑA PRINCIPIOS 1er Foro Europeo sobre Estrategias Comunitarias para la Gestión Integrada de las Zonas Costeras Sostenibilidad. Coordinación/cooperación. Subsidiariedad. Integrado y de **OBJETIVOS** Sequridad. Precaución/prevención. LINEAS Conocimiento y su gestión. DE ACCION RECOMENDACION Divulgación del Parlamento Continuación de Europeo y el experiencias. Consejo sobre GIZC MINISTERD DEMEDID AMBENTE -----

The principles on which the definition of objectives is based are:

- a) Principle of sustainability: All the points to discuss are based on the principle of sustainable development, which at the same time is in consonance with the different national political strategies of sustainable and sensible development on which it is necessary a joint and cooperative action, that involves the real compromise of the European countries and the ones around them. As the WORL COMMISSION FOR THE ENVIRONMENT and DEVELOPMENT states, it is a process of change in which the exploitation of resources, the management of the investments, the orientation of the technological development and the institutional changes are in harmony and promote as much the present as the future potential, at the same time as they satisfy the current human needs and aspirations. The principle of sustainability implies a joint progress and of shared responsibility in the fields of economy, the welfare, the diversity, the security and the environmental quality, with a basic vision consisting on not to compromise nor the resources nor the possibilities of the future generations.
- b) *Principle of coordination/cooperation.* The ICZM is based basically in the integration of the decission-making process. The wide range of norms and regulations that affect this process in the coastal areas makes inconceavable a radical change in a short-term. However, it is

possible to offer a continuity panorama from a different point of view, so that we obtain a wider vision of the problems and needs of the whole of the European coastal regions. This principle supports itself in an increase of the information flow at all levels. One of today's differences, with respect to that of the last two centuries in which the actual sectorial politics has matured, is that the new technologies that will allow that increment are already within reach.

- c) Principle of subsidiarity. This principle, that has inspired the communitarian politics since the adoption of the Maastricht Treaty is put into practice, in this instance, at the planning scale and it means that the important political decisions should be always carried out in a context so close to the citizens that it affects as much as possible. It is convenient to make an effort not to interfere in the running of joint politics, essential for the progress of European integration, making clear that the subsidiarity is not necessarily a synonym of decentralization and that, each State would keep the competences in those areas in which the intervention of the regional or local governments prove to be inadecuate. It is advisable to remind in this sense that a high proportion of the investing flow in the coastal areas corresponds to the private sector in a local context. So, while the state or regional controls are normally limited to instruments like the EIA, the regulation of general frameworks of use of the ground, protected areas and others, generally weaker, the local governments assume an enormous responsibility in the future of the resources. The actions of the ICZM should be particularly directed to them.
- d) Principle of understanding of the coast as an ecosystem. Before the complexity of the coastal ecosystems, due to the great quantity and speed of the interdependent processes that take place, the conception of the coast as an ecosystem is a vision that can provide a wide perspective in the long-term. The ecosystemic principle considers the different processes and systems, like the physical, socio-economic, administrative, cultural and ecological, in an integrated way, in which the conjunction of the marine and land components of the coast constitutes a priority. One of the basic points is the consideration of the so-called horizontal interaction, where the consequences of the processes of some areas can affect others, situated even far away from the first ones. The success of the implementation of this principle depends on the specific knowledge of the natural processes and dynamics, which must be based on the specificity of each area, and not in generalities; so it is possible to join the necessary actions with the dynamic processes and the optimization of flows and resources that, in general, are closer to the necessary flexibility that the principle of sustainability proposes, in order not to mortgage the future of the forthcoming generations.
- e) Principles of precaution and prevention. The mistakes that any European citizen can observe in the coastal areas are so abundant that, sometimes, they have even been close to threatening the health of the ecosystems and of the people. The principle of precaution invites to a deep reflection previous to making decisions. Most times, it is about achieving an adequate level of knowledge previously so that, before that uncertainty, it is better not to act. In the same way, the scenarios that are coming must be taken into consideration. The possibility that the sea next to the coast suffers a colonization process by marine farms or that determined areas have to be protected against a forseeable increase of the sea-level should not be ruled out. It is necessary to progress in the techniques of modelling, simulation and prediction to rule out the

uncertainty as much as possible, but, meanwhile, precaution and prevention must become the pillars of the process of decision-making.

f) Principle of security. The security of the coastal area has a great number of elements often interconnected; the environmental security, the protection of the human health, and the food security are central examples of interconnection, that must be taken into account in different situations. But the security implies also that of the natual resources, the borders, the economy and work, the monitoring programmes, the expert assessment, the long-term precaution and the collaboration with neighbouring countries in the European regional area.

Based on the inspiring principles and on the international experiences, the following objectives that aim to give continuity to the Strategy of the Commission are presented:

- a) Make advances in the knowledge and in its management: with the conviction that deepening in the knowledge and optimizing its management are key factors of the success of the ICZM, the progress will be pursued, firstly, in three key aspects: a). the integration of the knowledge; b). the management of the knowledge, with the use of all the improvements and innovations that come from the new technologies (e.g. SIG, Inspira Programme, Galileo Satellite, ...); and c). the strategic knowledge: make advances, as fast as posssible, in the knowledge of the consequences that will come from the accomplishment of the specified scenarios.
- b) Promote the spreading of the ICZM: Knowing the trends of the actual investing flows, the local scale appears with maximum priority. It is vital that the local actors know the existance of the ICZM, its benefits and opportunities. As this is achieved, they will demand in the near future the instrument and its implementation will be then easier and harmonious than if an up-down imposition is alternatively adopted. Likewise, it will be desirable to approach the technical knowledge and the experiences of ICZM to all the areas of the administration that are specially relevant in planning.
- c) Continue with demonstration projects, directing them mainly to the harmonization of the management: These projects should be provided with sufficient means and resources to guarantee a wide participation in the planning processes, aiming for specific goals like trying the reconciliation of interests of different users, optimizing the administration of the public property or locating adequately the uses and activities, and also simplifying the vertical management and boosting the horizontal planning. It is possible, in a near future, to maintain the verticality of current predominant sectorial management, promoting the horizontal integration in the decision-making process of the planning.

With the previously described planning and, after the discussions, the following conclusions were reached:



Ist European ICZM High Level Forum on Community Strategies for Integrated Coastal Zone Management La Vila Joiosa (Alicante, Spain) 18th, 19th and 20th April 2002

The Spanish Ministry of Environment in the context of the Presidency of the Council of the European Union and

the European Commission as well as representatives of EU Member States and Candidate Countries, with the

value support of representatives of European Parliament, meeting in La Vila Joiosa, Alicante, España, from 18 to

20 April 2002, reflecting a true political will to implement ICZM in Europe, recommend to: 1. Make advances towards achieving an integrated and ecosystem approach of the coast, considering the interrelation of physical, biological and geomorphological processes, relevant aspects such as biodiversity, social progress, degree of satisfaction, and particularly advances towards devising objective economic valuation techniques for externalities of main impacting activities.

2. Emphasize the need to propose and agree upon a common understanding of the "coastal zone" in functional terms, a sense of vision of how we wish the coast to meet the needs of current and future generations as well as the interpretation of ICZM as a pro-active tool to facilitate appropriate development of coastal areas and resources.

3. Consider the urgent need to define precise scenarios and their probable consequences, in coordination with the relevant International Bodies, such as UNEP MAP, concerning the three most patent issues that affect to European coasts: the possible rising sea level due to global warming, the gradual depletion of fishing stocks and the increasing population growth registered in coastal areas. At this respect, short-term financial profits should not prevail over broader, long-term economic, social and environmental costs.

4. Promote the general use of existing comparable indicators i.e. for sustainable development, and if appropriate to develop indicators on a national basis to provide standardised descriptions of the status of the coast and possible impacts of human activities, throughout the European Union, as well as of the progress made towards ICZM in Europe.

5. Make advances in the management and development of knowledge, specifically, in knowledge organisation, in light of the opportunities provided by new technologies, and supported by common, systematic and standard formats, capable of producing standardised data bases that facilitate the flow of information on a European scale with the use of standardised G.I.S. too.

6. Underscore the need to compile a Guide to Good Practices with particular reference to main impacting activities (i.e. tourism, fishery, aquaculture, harbours management urban planning in

coastal zone) so as to integrate horizontal decision making processes, and also provide a foundation for communicating the benefits brought by ICZM implementation.

7. Promote ICZM on a local scale, in the conviction that local governmental bodies and stakeholders play an essential role in the success of ICZM. Furthermore emphasising the possibility to use spatial planning integrated with sea-use planning and marine resources management, at national, regional and local level as a way to apply a holistic and dynamic perspective in ICZM in order to create a common vision of the sustainable development in the coastal zone and to ensure dialogue and participation of local and regional stakeholders.

8. Continue with the IZCM Demonstration Projects Programme undertaken by the European Commission, giving priority to those that can serve as good examples for the implementation of the Recommendation of the European Parliament and of the Council on ICZM and to those that aim to optimise the use of public resources, administrative processes and decision making, as well as to transnational and co-operation projects with non-European Union neighbouring countries.

9. Take advantage of the synergies arising in the application of numerous Community instruments affecting coastal zones, such as Water Framework Directive, EIA and SEA, and particularly those emerging from the new

Environmental Action Programme: *Environment 2010: Our Future, Our Choice, and from the Community Strategy on*

Sustainable Development. Ensure compatibility between Community large-scale financing/investment instruments and national/regional/local co-ordination of initiatives and subsequent strategies on ICZM.

10. Ensure the continuity of the *La Vila Joiosa Foru*m, with the aim of facilitating progress towards a common ICZM understanding, and to improve the sharing of information on future national developments in the implementation of the European Recommendation on ICZM.

Finally, in support of the high level forum, the Commission could facilitate an expert group, recognising the enormous complex challenges coastal zones face and the need to develop common understanding and methodologies to adapt to the challenges. This expert group will follow the principles of transparency and stakeholder involvement.

PRESENTATION OF THE BILL RELATIVE TO THE PROTECTED COASTAL AND MARINE AREAS

Mme Kaouthar TLICHE ALOUI

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Protecting the spaces of quality nowadays means protecting the rarity⁴⁰. The economical and social development of Tunisia, the demographic growth, the transition from a society that was mainly rural to a society mainly urban, have contributed to transform radically our landscapes, our coast, the shape and the territory of the villages.

The political power in Tunisia has enhanced, during the last decade, the action of protection of the spaces and species subjected to the baneful effects of the degradation of the ground, the exhaustion of the natural resources, the brittleness of the ecosystems and of the biodiversity, the pollution of the water terrestrial and marine environment.

The integration of the parameter «environment» within the strategies and politics of the State has succeeded in the reinforcement of the legal framework relative to the protection of the environment and to the improvement fo the life framework generally speaking and to the protection of the natural resources and the fragile ecosystems in particular.

Conscious of the danger that lies heavy on the natural terrestrial or marine resources, Tunisia has buckled down since its independence to the implementation of a strategy of conservation, of development and rational and sustainable use of the richness. This preocupation is translated, first of all by the integration of a chapter relative to the protection of nature, flora and wild fauna within the forest code passed in 1988⁴¹; this code distinguishes between three types of natural protected areas, the national parks, the natural reserves and the leisure forests⁴². in accordance with this legislation, 8 national parks⁴³, and 16 natural reserves that essentially assure the protection of the terrestrial ecosystems, have been created. These natural areas created in Tunisia are characterized by the diversity of their biotopes and the limitation of their surface.

Then the juridic paraphernalia as regards of protection of the marine environment has been enriched by the elaboration of a new legal framework whose aim is the protection of the maritime

⁴⁰ The French document: « Guide de la protection des espaces naturels et ubains »; édition la documentation française; Paris 1991 page 9.

⁴¹ Law n° 88-20 of the 13th april 1988, recuperating the forest code ; JORT n°25 of the 15th april 1988.

⁴² There is today an overabundance of terms referring to the protected natural areas. At a world scale, more than 140 names are used by the legislations of different countries to refer to different types of protected natural areas.

⁴³One of the 8 parks has not been the subject of creation, such are the parks of Sidi Toui South of Ben Guerdance.

public domain and the creation of an Agency of Protection and of development of the littoral, mainly in charge of the management and the rational use of the maritime public domain.

Recently a bill that aims for the conservation of nature and the biological diversity of the marine and coastal environment and the use of their natural resources within the framework of sustainable development and this for the creation of protected marine and coastal areas, has been created with the purpose of contributing in a more efficent way to the reinforcement of the action of nature protection in general and of the marine environment in particular.

First of all, it is useful to point out that the forest code gives a definition to the protection of nature. In the terms of this code, protecting nature, consists on « preserving the national biological patrimony and protecting the species of the wild fauna and flora avoiding hunting, destroying, capturing (...) the wild animal species (...) as their eggs, nests (...), or also destroying the sites, allowing to study the history of the earth and of the living world⁴⁴ ».

According to the bill on the protected marine and coastal areas, they are spaces created with the object of protecting the natural environments, the plants, the animals and the marine and coastal ecosystems having a particular importance from the natural, scientific, cultural, educational or recreational point of view, or in which landscapes of a great aesthetic value are present. Thus the new legislation will allow to assign to the protected marine and coastal areas a special régime of protection and management.

With the aim of avoiding the gaps in the current legal framework relative to the protection of the terrestrial areas (governed by the forest code and its texts of application), the bill relative to the protected marine and coastal areas determines in a very precise way the forms of creation (I) and management of these areas (II), as well as the specific system of protection (III).

I: The forms of creation of the protected marine and coastal areas (A.M.C.P)

§ 1-The previous stages of the decree of creation

*The criteria for identification of the areas

The decree relative to the A.M.C.P. needs the criteria of identification of these protected areas, in fact the A.M.C.P. must be relevant enough with the purpose of assuring the protection of one or more of the following elements:

*The types of marine and coastal ecosystems, which present a particular biological diversity;

*The endangered habitats within their natural area of distribution reduced after their regression or because of their very limited area;

*The necessary habitats for the survival, reproduction and recuperation of one or more animal or plant endangered species, threatened or endemic;

⁴⁴See the article 209 of the forest code.

*The sites presenting a particular importance because of their scientific, aesthetic, recreational, cultural or educational interest.

Morover, the bill plans the creation of scientific studies preliminary to the creation of the area in order to appreciate the importance of the site before classifying it as a protected space; it is at this level that the Tunisian Ministry of the Environment and the Development of the Territory elaborated in 1998 a global national study about the biological diversity, within the framework of the implementation of the provisions of the convention of the United Nations on the biological diversity. This national study has permitted to give a description of the Tunisian ecosystems (terrestrial and marine) of their actual state and of the perspectives of their evolution. A complete overview of the protected areas has been drawn up with a certain evaluation of the measures of the protection as well as a whole series of action proposals.⁴⁵.

*The public survey

Before the creation of the A.M.C.P., a public survey must be carried out in the concerned areas. It will be managed by an officer conducting the survey appointed by the minister in charge of the environment.

The results must be presented in the context of the regional administration. This same results will be inserted in the official bulletin of the Tunisian Republic.

The results and the observations of any person concerned are recorded on in the register of the survey.

The observations and results made in written form and addressed by registered mail.

The register will be closed by the officer in charge of the survey at the termination of the time limit of the survey and addressed immediately to the Ministry in charge of the environment.

The public survey is a realization of the participation of the public in making decisions for the creation of the A.P.M.C. and of their right to information. To that end, the questions object of the survey must be solid and include all the necessary information to enlighten the results of the public.

§ 2-The decree of creation of the A.M.C.P and its legal effects

***THE DECREE OF CREATION**

The decree of creation of the A.M.C.P. is proposed by the minister in charge of the environment after the public survey and must determine the objectives of creation

⁴⁵ National study on the biological diversity (summary), page 9.

of the area, its delimitations, the rules of its organization, the areas that are involved, the bans, the restrictions and their levels of implementation.

The bill needs that the A.M.C.P. can be created on any public or private property of the area of the coast as stated by the law n° 95-72 of 24 July 1995, with the creation of an agency of protection and management of the coast. In fact, the coast is defined as in the first article of the law above mentioned as being the **« area of contact which comprises the ecological, natural and biological relationship between the land and the sea and their direct and indirect interaction»**⁴⁶, the same article informs of the components of the coast (coast, beaches,.... inland areas....).

The decree of creation of the A.M.C.P. is the action taken by the administration that allows the protected area to acquire the legal status of a natural protected area and that will mark the change from a area with a general protection regime to its own special regime⁴⁷. Thus the action of creation of the A.M.C.P. is confirmed centralized while the bill takes into consideration the creation of a national advisory council for the marine and coastal protected areas which is necessarily informed of any matter relative to the A.M.C.P. and in particular of the creation, the modification and the downgrading of the area.

*The effects of the decree of creation of the A.M.C.P

The decree carrying the creation of a A.M.C.P. may affect the real rights of the owners or farmers of the areas.

The publication of the decree in the Official Journal is a means of advertisement of the administrative action of classification of the zones of the coast in protected areas. In addition to this publication of the administrative actions, the Agency of the Protection and Management of the Littoral (A.P.A.L.) is under the obligation of informing, by registered mail with acknowledgement of receipt, the holders of the real rights on the properties located in the zone of a protected coastal area about the submission of their buildings at the requirements of the protection, about the modifications that might be introduced or about the uses that might be convenient to carry out.

The owners or farmers of property in under easement could, after receiving the notification of the administration, choose one of two alternatives:

1-either offer the acquisition of their property to the Agengy of the Protection and Management of the Littoral with the condition that the easement has decreased to more than half of any profits that they would have normally got from those properties.

⁴⁶ First article of the law n° 95-72 of 24 july 1995 supporting the creation of an Agengy of the Protection and Management of the Littoral (APAL).

⁴⁷ Kaouthar HAFSIA: "The legal protection of the natural areas in the countries of the Maghreb", memorandum of DEA in law of the environment and of the management of the territory, faculty of legal, political and social sciencies of Tunisia, university year 2000-2001 page 47.

2- or else, for lack of a friendly agreement, the owners and the holders of the real rights of the properties could be expropriated of their properties, which would be in accordance with the current legislation.

The introduction of the right to get a compensation in the bill relative to the A.M.C.P. is an innovation with the Tunisian legislation relative to the protected natural areas, the compensation can be regulated either amicably or at court.

The total or partial downgrading of the protected marine and coastal area as well as any change in its delimitations will not take place unless under the forms planned for the creation, which is an implementation of the parallelism of forms.

II :the management of the protected marine and coastal areas

§1-the management bodies

*The Agency of the Protection and Development of the Littoral (I'A.P.A.L)

The management of the A.M.C.P is assured, according to the bill, by APAL, a public establishment of a non-administrative character, created by the law n° 95-72 of 24 july 1995.

This agency has the objective of assuring the execution of the State's politics within the domain of the protection of the Littoral in general and of the public maritime domain in particular⁴⁸. The APAL is in charge among others of the management of the littoral areas, of the elaboration of the studies relative to the protection of the littoral and increase in value of the natural areas, and of the observation of the evolution of the littoral ecosystems⁴⁹.

The APAL takes charge of the management of the A.M.C.P, either directly and in this case a general manager of the area is appointed by a decision that will determine to this end the attributions, or indirectly in accordance with a convention made between the APAL and the public or private organization that will be in charge of the exploitation of the area.

*the local advisory commitee

The bill plans the creation of an advisory local commitee for each protected marine and coastal area, with representatives of the population involved, of the representatives of the local

 $^{^{48}}$ The article 3 of the law n° 95-72 of 24 july 1995 creating the APAL ; JORT n° 61 of 1st august 1995, page 1612.

⁴⁹ The article 7 of the law n° 95-72 of 24 july 1995....

collectives, of the non-governmental organizations and of councillors representing the professional organizations all appointed by the minister in charge of the environment at the suggestion of the Agency of Protection and Management of the Littoral.

The diversification of the members of the committee, shows the particular intention of the incentive of the participation of the public in making decision about the different matters that concern the A.M.C.P.

*the other actors in the management

The exploitation of the A.M.C.P, according to its management, can be granted in accordance with a convention to a public or private establishment, to a scientific institution or to an authorised private association, and this, according to approval of the minister in charge of the environment.

Besides, the owners that have not been expropriated by the needs of the protection must decide with the Agency of Protection and Management of the Littoral some agreements by which the holders of real rights will agree the properties according to the specifications accepted by the Minister in charge of the environment.

The bill plans, also, the participation of different public administrations in the protected marine and coastal area to carry out, in accordance with the manager of the area, the social, economic and cultural achivements and improvements contributing towards the consolidation and achivements of the objectives planned by the management plan.

§2-the management instruments

The protected marine and coastal area is managed necessarily on the basis of a management plan carried out by the National Agency of the Protection and Management of the Littoral and accepted by the Minister in charge of the environment, this plan sets the protection guidelines, the development and the necessary measures for the execution of such guidelines within the protected marine and coastal area.

The management plan includes essentially:

- La period fixed for the management of the area in accordance with plan.
- A detailed description of the area concerning its location, its limits, the diferent zones that form it, the levels of protection that are applicable and its natural resources
- An ecological inventory of the natural resources of the protected marine and coastal area and the mention in this plan of the obligation of its monitoring and updating.
- The management methods according to the specificities of the protected area...

the bill plans the division of the protected area in zones depending on their importance and the aim of the protection, this constitutes indeed an implementation of the programme of UNESCO, « man and the biosphere »⁵⁰ which plans that the reserves of the Biosphere must include three zones:

One central area strictly protected and where no human activity is allowed with the purpose of protecting the biological diversity and where only the scientific research or educational works related to the environment can be admitted.

One block area: sorrounded by the central area and where certain human activities such as education, ecotourism, which can be developed to a certain extent and guarantee the sustainability of the natural resources of the area.

An transition area where human activities must be developed, such as agriculture, habitat... within the framework of a sustainable use of the biological diversity in a way and rythm that will not lead to its impoverishment.

III-the protection system

§1-the actions which are forbidden or subjected to authorization or to restriction

The actions and activities that damage the protection of the protected areas are forbidden or object of restriction or subjected to preliminary authorization within the protected marine and coastal areas, such as;

- The actions intentionally aiming at catching, hurting or causing the death of animals.
- The deterioration or destruction of the animals reproduction sites or of the resting areas
- The discharge, the dumping of liquid, solid or gasous waste or other substances liable to attack directly or indirectly the integrity of the protected marine and coastal areas.
- The intentional disturbance of the animals, particularly during the period of reproduction, hibernation, dependency of the young ones and of migration.
- The introduction of exotic or genetically modified species.
- The industrial and commercial activities...

§2 the study of impact on the environment

Notwithstanding the provisions of the law supporting the creation of the National Agency for the Protection of the Environment⁵¹ relate to the obligation to present a report of impact on the environment in such agency, all the actions and activities within the protected marine and coastal

⁵⁰Man and Biosphere (MAB).

⁵¹ The law n° 88-91 of 02 august 1988, supporting the creation of an National Agency of Protection of the Environment (JORTn° 52 of 02 august 1988 page 1102) and modified by the law n° 92-115 of 30 november 1992(JORT n° 81 of 04 december 1992 page 1539) 99

area subjected to preliminary authorization, are also subjected to the obligation of presenting a report concerning their impact on the protected marine and coastal area.

Planning a report of specific impact in the A.M.C.P, required by the APAL, reflects the intention of reinforcing the system of protection of these areas.

§3- the repressive system

the bill lists the agents entitled to report the infractions and start the verbal process, as it plans the possibility of coming to an agreement regarding the infractions planned by the law relative to the A.M.C.P. and precise the sanctions relative to the infractions carried out.

* the constant of the infractions

The infractions in the bill are certified by the verbal agreements established by the agents entitled by law.

The verbal processes of the infractions are drawn up by the agents above mentioned who have to certify directly and in person the facts cause of the infraction or its results.

The verbal process certifying the infraction must mention certain precissions like the date, the time and the place of the verbal process, the nature of the infraction carried out, the names, surnames and profession of the infractor when it is a physical person or the social reason and the address when the infractor is a moral person, the procedures related to the seizing with descriptions of the machines and of the tools and objects seized...

*the transaction

The Agency of Protection and Management of the Littoral is entitled to come to an agreement with the infractors who have committed an infraction in the provisions of the law until the final sentence.

*the planned sanctions

The Sanctions can be either fines or imprisonment sentences depending on the level of seriousness of the infractions committed.

PLANNING AND INTEGRATED MANAGEMENT OF THE COASTS: A NOTE ON LEGISLATIVE FRAMEWORK FOR THE MEDITERRANEAN

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RATIONALE FOR ICAM LEGAL INSTRUMENTS

Despite many international and national efforts in recent years to promote sustainable management of coastal natural resources and to guarantee a better quality of life for the coastal populations, development trends and pressures in the Mediterranean region constantly open new problems. Strong approach to integration of coastal sectoral policies, which is a prerequisite of successful integrated coastal management, is still very weak and is a challenge to be overcome.

A. Development trends, the state of the environment and the quality of life

Urbanisation

In 1997, the population of the Mediterranean coastal states was approximately 450 million. The Blue Plan forecasts that population will exceed 520 million in the year 2025. Population is increasingly occupying the coastal zone (today more than 30% of the total), exacerbating "littoralisation". Given that only 40% of the total length of the Mediterranean coasts can be deemed "useful" for human activities and settlements, increasing littoralisation becomes a major regional concern.

In recent decades, with rising incomes, modernisation of transportation infrastructures (mainly road) and tourism, there is an increasing sprawl of urbanisation along the coastline, which continues to attract further population and economic activities from the hinterland. It seems that Mediterranean urbanisation has entered a phase of rapid expansion, reaching a state of "hyper-development", typified by high population densities, environmental degradation and decline of the quality of life, with activities concentrating in a few large urban centres and in coastal areas. This generates imbalances in terms of economic opportunities and growth at national and regional levels, reflected in widespread migratory phenomena, as well as in a further imbalance between the coastal urban centres and their adjacent hinterland.

Coastal urbanisation has significant consequences:

Spatial polarisation. Vast coastal spaces previously open or used for agriculture are inevitably
reduced, generating land-use antagonisms amongst various economic activities. This leads to
spatial imbalances in development between prosperous coastal areas, heavily populated and
characterised by high intensity of land use and consumption, and weaker inland areas with a
lower density of inhabitants and a less dynamic economy.

- *Rising demand for key resources and conflicts of use.* Domestic water consumption is increasing, especially due to steady urbanisation growth, reaching maximum rates in southern and eastern countries. Moreover, population growth in areas suffering from water scarcity can exacerbate the crisis.
- Degradation of resources. The geographic distribution of water consumption is similar to that of
 the territorial concentration of its waste, resulting in problems of groundwater pollution and runoffs of wastewater into the sea. In urban areas, these impacts have been accentuated due to
 the impermeability of substantial areas, blocking rain water from permeating the soil and filling
 natural subterranean water systems, as well as by speeding run-offs into rivers (with occasional
 resultant flooding) and into the sea.
- Pollution threats to the sea. Sewage run-off does not necessarily impact negatively on a sea such as the Mediterranean, which is too poor in nutrients to benefit sea life. The problem arises when there is too much of it in a small area, as is the case around the major Mediterranean urban centres of which 48% are estimated not to have any sewage treatment systems.
- Pollution risks for urban areas. Urbanisation is also linked to ever increasing levels of air and noise pollution. The principal effects of sulphur oxides, lead, nitrogen oxides, carbon dioxide and monoxide, volatile organics, molecular mercury, methane, etc., on the atmosphere are those associated with the so-called "greenhouse" effect and those producing smog, more specifically, in certain places under particular atmospheric conditions, especially those prevailing over big urban/industrial areas.

Tourism

The Mediterranean is the world's prime tourist region with an estimated 170 million arrivals in the mid-1990s. Of these, about 24% originate in Mediterranean countries (according to 1993 statistics). These concentration rates are maximised on the coast; they are heavily seasonal and dominant in the northwestern Mediterranean, although this increase is more rapid in other sub-regions.

The development of tourist activities in most of the Mediterranean countries is a key element in coastal urbanisation (new settings or "re-conversion" sites), both triggering processes of local economic growth and constituting a heavy burden on local authorities who are faced with the difficult challenges of managing every conceivable aspect (facilities, services, municipal sewage and waste treatment, imbalance between seasons, etc.). In this respect, mass tourism exacerbates many of the pre-existing problems in urban areas, such as the occupation of land surfaces, water resource consumption as well as pollution and waste, leading to habitat loss for many wildlife species occupying the Mediterranean sea and land; the abandonment of traditional activities such as fishing and agriculture and sometimes the deterioration of cultural values. This particular development has come to represent a real danger for most popular coastal areas as well as for most of the islands in which the vegetation has been gradually transformed from either a natural or productive element (agricultural landscape) to merely an aesthetic element with a predominantly decorative function.

The state of natural environment and cultural heritage

In general, the state of coastal waters is considered to be good. However, certain contaminants, such as lead and cadmium, have been found in significant concentrations within the deep canyons bordering the continental shelf suggesting possible risks of long-term pollutant accumulation.

The marine pollution problems in the two basins of the Mediterranean (east and west) are, to a large extent, independent. This is because there are many differences (such as meteorology, geomorphology, water masses circulation, ecology, etc.) and the environmental characteristics of the surface water in the western basin do not significantly influence those of the surface water in the eastern basin, and *vice-versa*.

In coastal areas, the presence of <u>pollution "hot spots"</u>, as identified by the Mediterranean states and the Mediterranean Action Plan (MAP), located generally in semi-enclosed gulfs and bays near important harbours, big cities and industrial areas, constitutes probably the major problem of the Mediterranean Sea. The main pollutants or impacts of concern are: municipal sewage (including micro-organisms), urban solid waste, and air pollution; Persistent Organic Pollutants (POPs), including pesticides, PCBs and PAHs, heavy metals, oils, radioactive substances, nutrients and suspended matter, in addition to physical alterations and habitat destruction. Overall, 101 priority hot spots have been identified within 19 Mediterranean Countries. Although these areas do not represent all the polluted sites within the Mediterranean Basin, they nevertheless constitute the bulk of the pollution loads for most of the domestic or industrial contaminants.

Despite the fact that <u>coastal erosion</u> has been considered a severe problem for many of Mediterranean countries, it has been poorly evaluated. For example, it is estimated that 25% of the Italian Adriatic coast and 7,4% of the Aegean Sea show trends of erosion, while only 50% of the total coastline of the European Mediterranean area is characterised by stability.

Land occupation and sea pollution affect negatively the distribution, plethora and survival of flora and fauna, and the natural ecosystems in general. In heavily disturbed or polluted areas, <u>benthic communities disappear</u> to a great extent. When organic enrichment exceeds the potential for remineralisation by benthic organisms, anoxic zones are formed and the seabed is covered by bacterial mats. Although this type of ecosystem change may be redeemable, there are damaging consequences in cases in which the affected seabed is a critical habitat and nursery, such as the seagrass beds.

One of the major manifestations of environmental degradation is <u>habitat loss</u> for certain endangered species, imposed by antagonistic human activities. As an example, 1,500 km of coastline in the Euro-Mediterranean area is considered to be artificial, with harbours and ports contributing the major part (1,250 km). Wetland loss (3 million hectares in the Roman era to 200,000 hectares by 1994, i.e. a reduction of 93%) and degradation have also been identified as a serious threat to many aquatic species, especially water bird species nesting along the Mediterranean coastline.

The introduction of new organisms, in the form of <u>exotic species</u> or highly cultivated strains may be threatening to a given ecosystem. Generally speaking, it is estimated that about 80% of species introduced into the Mediterranean (naturally, through the Suez Canal or the Strait of Gibraltar, or accidentally from ship ballast, and other cases) do not affect indigenous communities. However, certain species cause a harmful impact, including an immediate at the community level, through changes in inter-specific competition and predation, and/or changes in the environment's nature

itself via the influence of certain organisms and the possible genetic degradation of indigenous stock.

As in other parts of the world, potential impacts from <u>climate change</u> in the Mediterranean include drought, floods, changes in soil erosion and desertification, storms, forest fires, coastal erosion, changes in seawater temperature and salinity, sea level rise and biodiversity reduction, in a way that will probably exacerbate the problems that already exist in the different Mediterranean countries.

In the Mediterranean, while the fluctuations of sea level in historical times seem to be largely dominated by the effects of local tectonics, climate change could be an additional factor affecting more particularly the most important natural wetlands and coastal lowlands in different parts of the coast. From a scenario built recently for the Mediterranean, the rise in sea level by the year 2100 is estimated to be within a range of 12 to 30 cm. The study of "high-risk" areas as well as of other Mediterranean tracts shows that human induced effects greatly increase the problems connected to sea level rise.

The Mediterranean cultural heritage, (monuments, historical settlements, archaeological sites, languages, literature, traditions, customs, etc.), constitutes a valuable resource for the region. The stratification of the many distinctive and intricate pasts represents a lived everyday experience leading to a wide cultural diversity on the local scale at present. As elsewhere in the world, <u>globalisation</u> (i.e. standardisation of economic systems, farming technologies, urban settlements and social behaviour) threatens cultural identities represented by local communities.

Among the most visible monuments of cultural heritage are the manmade landscapes, which were traditionally structured around the three main Mediterranean components, encompassing the sea, the coast, and the mountains. Regretfully, in the past fifty years, intensive population and settlement growth within the Mediterranean has accelerated, reaching previously inconceivable levels, while it continues to expand, especially on the southern shores. In general terms, the landscape resources most threatened represent precisely those, which consist the region's, most valuable tourism attractions. On the other hand, there are vast rural areas cultivated in previous decades, which are nowadays abandoned and represent an important loss of cultural landscapes.

B. Planning and management of coastal areas in practice

There is a prevailing crisis of <u>eroded confidence in government planning systems</u>, itself part of the trend related to a reduced state role. In tandem with weak lower administrations, and the absence of a solid private sector and civil society partners - who could assist states to manage coastal areas – this makes coastal management a very difficult task. One of the major obstacles in Integrated Coastal Area Management is the limited influence (and thus weak integration) of environmental concerns in development planning among many Mediterranean partners, jeopardising the possibilities of achieving the establishment of Integrated Coastal Area Management systems at the national level.

Very often the <u>'coastal' legislation is scattered among sectoral legislative frameworks</u>. There are too many responsible institutions at national and local levels to deal with coastal areas, which are sometimes even contradicting. The planning legislation tries to achieve some co-ordination and

consensus on land-use but is often insufficient. The implementation of provisions in practice happens often to be poor because the development control is ineffective, resulting in illegal building and development of coastal areas. Specific coastal legislation exists in a relatively small number of countries and even there it is reported that the situation is not much better.

There are also <u>differences in the approach</u> to Integrated Coastal Area Management in terms of the management focus: resource management versus traditional planning. In the case of Mediterranean countries, the prevalence of tourism and urbanisation in the coastal zones, as well as the reliance of Mediterranean countries on traditional administrative systems, favours the latter. Of particular concern though, are the increasing problems of coastal areas in the Mediterranean, which combine with weak administrative structures and enforcement, a lack of modernisation and integration of policies, the transitory character of many Mediterranean economies and the lack of resources, to form more daunting Coastal Area Management problems.

Furthermore, there is a <u>weak integration of land-sea issues</u> in the respective planning systems around the Mediterranean countries. In most projects the emphasis is placed on the terrestrial part of the coastal zone, which is justified given the pressures from land development speculation. Usually marine issues draw the attention for ICAM particularly whenever pollution incidents prevail posing severe threats to human health and to the viability of economic activities (i.e. tourism and recreation). It is evident that future action should adopt a more integrated, in spatial term, approach, which will be explicitly based on the identification of the interdependencies and continuities of ecological processes, while indicating in a more concrete manner the way that these could be incorporated in coastal area management.

<u>Civil society</u> in most Mediterranean countries is <u>not accustomed to active participation</u> in public affairs so there are constraints in mobilising it to contribute to and aid with the task of managing coastal areas. In addition, the primacy of development needs does not yet allow Mediterranean societies to adopt a broader view in terms of Integrated Coastal Area Management.

Despite the fact that national level initiatives have already taken place all across the Mediterranean, administrative and planning levels have not been integrated, and often efforts cannot be sustained. Finally, there are no actual operational links between national and regional (or local) level activities.

In addition, a <u>neglect of certain critical issues</u> for ICAM, mainly in respect to the use of tools, particularly economic instruments and information management is more than evident.

At the local level the undoubtedly local character of the existing problems and the particularities of each case suggest that the local level is an indispensable dimension in tackling concrete coastal area management problems, provided that strong institutional mechanisms have been established in collaboration with the national level. The lessons gained from experience around the Mediterranean derive from gaps at the local level.

<u>Stakeholder participation</u> is still rather weak. The processes of involving all stakeholders, as well as that of sustaining their participation throughout the succession of different project phases, constitute an integral part of the management process itself and are thus indispensable for securing the initiative's success.

Insufficient integration across sectors and scales of management puts an important burden to coastal area management. Success lies in forging partnerships between the different sectoral institutions and among user groups by employing a "two-track" approach, linking local governance development to national policies, and to central government structures and procedures. Attention must be given to different management approaches on land and sea, bringing together the authorities responsible for these domains, as well as financiers. When transboundary water resources, such as a shared river basin are at stake, collaboration and co-ordination between the authorities involved is necessary. Of utmost importance too is the attempt to engage the private sector, which is functionally linked to the sectoral administrations and can contribute financial resources for the materialisation of remedial activities.

Integration of scientific information is often missing. Research and technical tools (GIS, EIA, inventories, monitoring, modelling, etc.) are of little value, if the institutional and societal context in which they are introduced cannot assimilate the beneficial insights that these resources may provide. Both scientists and managers must work closely as a team, periodically evaluating the usefulness of the produced information in relation to project objectives and priorities. Individual and institutional capacity is very often set aside. Technical and governance complexity requires the formation and nurturing of multidisciplinary teams whose members are prepared to think and act strategically, resolve conflicts, administer complicated projects, have a deep understanding of how coastal ecosystems function and possess the ability to co-operate smoothly with coastal residents.

<u>Implementation of actions that occur concurrently with planning</u> should be secured. "Practical exercises" need to proceed concurrently with the coastal management planning phase without waiting for its completion. Short-term and cost-effective actions, (such as beach clean-ups, protection and rehabilitation of dunes, water facilities, etc.), as tangible manifestations of an improved management, boost local support for the coastal management process (at the community structure level) and offer specific opportunities to test horizontal and vertical co-ordination, whilst providing a basis for exploring successful approaches and implementation constraints. However, it is important that these actions emerge through a participatory process at the selected location, and that they are then supported by comprehensive and professional feasibility studies.

MAP LEGAL FRAMEWORK FOR ICAM

As a response to the environmental situation in the region, the Mediterranean countries came to a consensus to establish a common framework for environmental protection in the Mediterranean. After the UN Conference on the Human Environment (Stockholm 1972), the first Intergovernmental Meeting of the Mediterranean Coastal States, convened by UNEP in Barcelona in 1975, and a year after (1976) the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, known as the Barcelona Convention was adopted, and the Mediterranean Action Plan (MAP) established, as one of the Regional Seas Programmes of the UNEP. The objective was to assist the Mediterranean countries to assess and control marine pollution, and to formulate their national environmental policies. After establishment in 1975 MAP activities were mainly focused on the marine pollution control, although integrated planning and management of natural resources was defined as one of the four original components of MAP.

During the <u>first decade of MAP (1975-1985</u>), its activities were directed toward the monitoring of the sea, pollution prevention and interventions aimed at improving the state of the natural system. Therefore, ICAM could not emerge as an instrument for the implementation of MAP activities. However, the common experience confirmed that poor management and planning of development within the coastal areas is the cause of most environmental problems, and that lasting environmental protection is indeed inseparably linked with socio-economic development. Therefore, the focus was gradually shifting from a sectoral approach to integrated coastal zone management, as the key tool.

As MAP has evolved, its original focus on the pollution of the Mediterranean Sea has widened, as it became evident that the most marine pollution originates on land (it is estimated that 80% of pollution sources are land-based). This need to broaden the range of concerns was further acknowledged by the Genoa Declaration (1985), which provided the framework for integrated application of the pro-active role in the Mediterranean. Consequently, also the geographical scope was extended to coastal areas, and local level projects (known as CAMPs), as practical programmes were initiated and instantly given a lot of attention from the Mediterranean countries. A refocusing on the integrated coastal planning and management characterised the <u>second decade of MAP (1985-1995)</u>.

After the UNCED in 1992, MAP Contracting Parties (CP) decided to initiate activities related to the implementation of Rio documents. This initiative was put forward in the Tunis Declaration on Sustainable Development in the Mediterranean, and through the MED Agenda 21 as a draft policy document adopted in 1994. Finally, at the IX Ordinary Meeting of the CP held in Barcelona in 1995, the Convention was revised in order to comply with Rio principles, and the MAP Phase II was adopted. Therefore, in the MAP Phase II, ICAM was highly recommended as a methodological instrument of integrating environment and development in coastal areas. In this way MAP shifted into its <u>third decade (from 1995 on)</u> focused on sustainable development in the region.

An important milestone in this process was the creation of the Mediterranean Commission on Sustainable Development (MCSD) in 1995 as an advisory body to MAP. Its main task is to make proposals to Mediterranean countries and other stakeholders to promote sustainable development in the region. Its first Working Group on Sustainable Development of Coastal Zones was focused on ICAM. As a result *Recommendations on sustainable management of coastal zones* were prepared and adopted by CP at their meeting in Tunis in 1997. It has recommended that there is need to:

- improve institutional mechanisms
- strengthen and enforce regulatory instruments
- provide access to information and raise awareness
- establish incentives
- develop pilot projects for demonstration
- improve public participation.

RECOMMENDATIONS ON THE INTEGRATED AND SUSTAINABLE MANAGEMENT OF COASTAL ZONES Adopted by the MCSD, Tunis 1997

Box 1
Taking (21-23 with its	note of the findings of the working group convened in Benidorm under the guidance of the two task managers, Morocco and Medcities ⁵⁵ September 1997), and in light of the work of BP/RAC and PAP/RAC on the rapid degradation of many coastal areas, such as islands, inherent risk to certain economic activities, the MCSD adopted the following draft recommendations:						
(i)	To improve institutional mechanisms for the integrated management of coastal areas by creating, if necessary, and/or strengtheni inter-ministerial or inter-administrative structures and frameworks for the co-ordination of the actors involved in coastal development and management and the integration of their activities.						
	Such structures should be set up at the level relevant to each country (national, regional, local).						
	Local and regional authorities should be invited to play a significant role in the preparation of integrated coastal management strategies.						
(ii)	To establish or strengthen and enforce legislative and regulatory instruments:						
	 On the regional scale, to prepare guidelines for implementing appropriate national legal instruments. On the national scale, the legislative instruments should: 						
	 define the coastal areas concerned; require that for all coastal areas subject to development pressures, management plans be prepared; ensure that management plans be accompanied by environmental impact studies; establish regulations for development and protection to promote sustainable management of coastal areas including regulations on the protection of sites of ecological and landscape value, on preventing dispersed urban development, or development too close to the shore, and on ensuring proper provision of environmental infrastructure for areas already urbanised. 						
	- Until regional or local development plans are in force, conservation provisions to protect natural and coastal areas should be adopted and implemented.						
	- Finally, provisions should be made to ensure the implementation of the foregoing provisions; to that effect:						
	 the organisations responsible for coastal development and protection should be strengthened; staff should receive appropriate training as needed; effective law enforcement mechanisms should be provided or strengthened; when necessary and with respect to national conditions, court action should be made easier everywhere to oppose planning decisions; an efficient system for liability and sanctions should be established. 						
(iii)	To ensure access to information in order to raise awareness and training for the largest possible number of actors. Canitalising or						
()	and disseminating information should be encouraged through exchanges of experience and transfer of know how by making us of MAP structures.						
(iv)	To establish appropriate systems of incentives for the integrated management of coastal areas by developing economic, finance and tax instruments which would ensure that the costs of the protection and management of natural areas are linked to, as well a balanced by the financial resources generated by development. Funds from multilateral services, bilateral co-operation are domestic resources should be better co-ordinated.						
(v)	To develop, with the support of relevant international organisations and of the European Union, practical pilot projects in the field of coastal areas management, and disseminate the results.						
	 Priority should be given to projects concerned with: coastal areas subject to potential or actual conflicting uses; other areas of environmental, economic or social significance like islands and deltas. 						
(v i)	The role of the public is very important within the context of sustainable development of coastal areas, according to a principle of joint responsibility which should be encouraged. The main object is to increase opportunities and improve the effectiveness of active public participation.						
	- to that effect, participation mechanisms, such as advisory committees, public enquiries and hearings and actual participation in the management should be developed.						

the MCSD further proposes:
 setting up good practice guidelines on the integrated management of coastal areas;
 drafting a regular report on the state of the environment of coastal areas; and putting assessment tools in place with the support of public stakeholders;
 developing new forms of partnership between the public and other stakeholders to encourage innovative ideas
 inviting the public to participate in the decision-making processes;
 strengthening the co-operation which promotes exchanges of experience and adds incentives for the public to implement integrated management programmes and projects for coastal areas.
 National, regional and local strategies and Mediterranean partnerships should be promoted in order to ensure a sustainable management of coastal areas.

The analysis of MAP evolution from its establishment is clearly showing that integrated management of coastal areas has always been at stake. Although ICAM activities were not given priorities in practice in the first decade of MAP, as marine pollution assessment was a priority, it has gained its full recognition afterwards. The role of ICAM was strongly emphasised in Barcelona in 1995, when the MAP priorities until 2005 were approved. Consequently, the MAP priorities were redefined and new ones established. More emphasis was given to integrating environment and development policies, sustainable management of coastal zones and integrated management of natural resources. ICAM was confirmed as a key-tool in seeking solutions for sustainable development. Thus, the importance of conducting local level projects was underlined, such as MAP Coastal Area Management Programme (CAMP).

Coastal Area Management Programs (CAMPs) have been MAP's own special contribution to the Integrated Management of Coastal Areas. CAMP has been oriented towards the successful completion of practical coastal management projects in selected Mediterranean countries.

The key CAMP objectives are the following:

- To develop strategies and procedures for achieving sustainable development, environmental
 protection and the rational utilisation of coastal and marine resources as these constitute
 integral parts of the process of sustainable development
- To identify, adapt and test methodologies, tools and practices of sustainable coastal management.
- To contribute towards the upgrading of the national/ local institutional and human capacities involved.
- To secure its wider application, at national and international and regional levels and create the necessary preconditions for follow up activities.

From 1989 until 1998, two cycles of CAMP were completed, with projects implemented in Albania (the Albanian Coast), Croatia (the Kastela Bay), Egypt (Fuka-Matrouh), Greece (the island of Rhodes), Syria (the Syrian Coast), Tunisia (the city of Sfax) and Turkey (the Izmir Bay). Recently, the CAMP project in Israel was completed while the project in Malta is reaching its completion. During that period the Programme has been adapted to reflect sustainable development in integrated coastal area management. The third cycle of the Programme includes the preparation of local projects in Algeria, Cyprus, Lebanon, Morocco and Slovenia. In 1995 the revision of the Barcelona Convention, and the adoption of the MAP phase II, including the Priority Fields of Action for the period 1996-2005, strongly support the continuation of the Programme. In order to qualify for 109

CAMP, all selected sites had to face specific environmental problems and a need for the short and long term solution had to be expressed by national and local government. What is more, selected sites had to be considered as typical for the Mediterranean coast so the experience and the lessons learned would be easily transferred.



In addition, a plethora of publications, such as methodological documents and guidelines, were produced in order to help national and local stakeholders in promoting sustainable development and implementing ICAM projects. Among the most important, the following ones can be listed:

- 1. Guidelines for Integrated Management of Coastal and Marine Areas With Special Reference to the Mediterranean Basin. 1995.
- 2. Assessment of Integrated Coastal Area Management Initiatives in the Mediterranean: Experiences from METAP and MAP (1988 1996). 1998.
- 3. Formulation and Implementation of CAMP projects: Operational Manual. 1999.
- 4. Conceptual Framework and Planning Guidelines for Integrated Coastal Area and River Basin Management. 1999.
- 5. White Paper for Coastal Zone Management in the Mediterranean. 2001.
- 6. Good Practices Guidelines for Integrated Coastal Area Management in the Mediterranean. 2001.

In spite of the early concern with coastal areas in the Mediterranean and a qualitative approach in outlining the dynamics involved, an accurate basis for estimating the extent of the problems, which would facilitate regional level policy making, has not yet been found. Moreover, although indicators have been developed, there is still no adequate mechanism to utilise these within a long-termpolicy making process.

From the legal point of view the amended Barcelona Convention is not in force yet as not enough Contracting Parties have ratified it. Nevertheless, countries that wish so can already take advantage of its provisions in practice, such as implementing projects in coastal areas or even within the river

basins. However, in order to fully respect the adopted provisions of the convention a Reporting system should be established as a compulsory mechanism which would put more emphasis on the countries to better implement sustainable development in the region.

'History' of idea for ICAM Protocol

In spite of significant efforts ICAM is not yet widely used and not enough focus has been given to the implementation of strategic issues that would result in tackling major and common problems. Experience of CAMPs where ICAM methodology and principles are put in practice on concrete coastal issues and the experience of some of the countries that have already established some legal frameworks or are in the process of doing so, could be used for the drafting of the Protocol. For example, most countries have established basic legislation concerning the regulation of the public maritime domain and also possess basic land development control and planning legislation. Typically there are multiple authorities and responsibilities with ensuing problems of lack of coordination -if not co-operation-, gaps and overlaps. This is the reason that it is necessary to establish a national level system and process of integrated coastal zone management. In this direction, there have been several responses on the part of Mediterranean countries, such as Land Policy Initiatives: "Conservatoire du Littoral" in France, The Law on "Spatial Planning and Sustainable Development" in Greece, and The Shores Act in Spain. In addition, respective countries ask for help when they try to develop their coastal legislative framework (e.g. Tunisia, Croatia).

Preliminary idea towards a more strict legal framework has already been put forward by the Santorini Workshop on Policies for Sustainable Development of Mediterranean Coastal Areas (1996). The follow-up would include the preparation an extended set of principles for ICAM, and possibly in the form of a Charter or Protocol of ICAM clarifying the minimum steps to be taken by all Mediterranean countries. This has been discussed by Contracting parties and the MCSD at various occasions.

A concrete task was concluded in 2000 when Mr. M. Prieur and Mr. M. Ghezali prepared a document *National legislations and proposals for the guidelines relating to integrated planning and management of the Mediterranean coastal zones*. This document is a synthesis of responses to a questionnaire sent to Mediterranean countries with the aim of becoming acquainted with the state of national legislations relating to integrated planning and management of the coastal zones. After having examined the responses to the questionnaire and territorial obstacles to an integrated coastal zone management, the authors have formulated a set of principles to support an integrated coastal zone strategy. This overview over the situation in the region could serve as a good starting point.

We could say that a consensus for a creation of a stronger legislative support to coastal management in the region has, to a certain extend, been already reached through the revision of the Barcelona Convention made in 1995, when the integrated coastal area planning and management component was given greater importance. Also, the interest of the countries is visible through a large number of meetings, seminars, and workshops dedicated to these issues. Additionally, the important indicator is the large number of practical initiatives (projects, plans, programmes) in coastal management, either completed or in course, financed from international, national and local sources. For instance, the EU and METAP have strong coastal zone

management components in their programmes. Also, the MCSD Recommendations on sustainable management of coastal zones (Tunis 1997) put important emphasis on legal frameworks for ICAM.

Finally, the issue to establish a more comprehensive and legally binding mechanism to deal with coastal area management within the MAP has been for several times on the agenda at different levels. However, the Contracting Parties (CP) never adopted this will as an obligation as there was always a number of countries that did not wish to have such a strong commitment towards ICAM. This idea finally came on the agenda at the last Contracting Parties meeting in Monaco (November 2001) when it was decided that a Feasibility Study for ICAM Protocol be prepared. Therefore, the MAP Co-ordinating Unit and the Priority Actions Programme as a responsible Regional Activity Centre are requested to conduct the Study and to report to the CPs for further steps towards the Protocol.

POSSIBLE OBSTACLES

Some obstacles we should take into account when drafting the Protocol are elaborated below and reasonable arguments should be find when presenting the draft provisions to the CPs.

a) Shift towards territorial approach

Majority of the existing legislation in Mediterranean countries is structured according to individual natural resources that respective sectors are responsible to manage. This legislation covers the whole territory of respective country with some specific provisions for specific areas or issues. Trend to develop legislation on a different approach, i.e. territorial, would therefore make some duplications with existing legislation.

		COUNTRY				
Law	country	coastal	mountain	rural	urban	etc.
		areas	areas	areas	areas	
water	-	?	?	?	?	
Forests		?	?	?	?	
Agriculture	-	?	?	?	?	
Environment		?	?	?	?	
Planning	-	?	?	?	?	
nature		?	?	?	?	
protection						
Minerals		?	?	?	?	
cultural		?	?	?	?	
heritage						
etc.						

b) Overlapping

Evenmore, this new territorial division is making further problems as their coverage in spatial terms is not exclusive. For example, within coastal areas we have rural areas, mountain areas, watersheds, etc. and from this point of view legal frameworks become very complicated and not

transparent. This process started, for example in the Council of Europe where such Charters were prepared (e.g. Charter for mountain regions, Charter for rural areas and alike) and countries never reached consensus and did not adopt these proposals. Some arguments presented by representatives from countries included the above-elaborated ones.



DESIGN OF ICAM PROTOCOL

The objective when drafting the protocol should be to reach the maximum possible consensus on common issues for CZM among the CPs, i.e. should be 'general' enough to satisfy respective countries. Different situation in countries as far as the level of socio-economic development, institutional capacity, level of democracy, and alike would request a good balance between the detail of protocol provisions and possibilities to be accepted and implemented in practice. Needless to say that recommendations adopted at different occasions and levels within the MAP system, as well as other international fora should be taken into account. Also, it should allow for the inclusion of the latest scientific findings, approaches, tools and methodologies to be implemented. In this way it should respond to future long-term trends (socio-economic development, protection of the environment, rational use of natural resources, especially water, also climate change effects, desertification and alike). Besides it should guarantee for the public participation, horizontal and vertical co-ordination and co-operation, i.e. integration among sectors and balanced level of bottom-up and top-down approach, as well as the land-sea integration. Reporting system should be established as a compulsory task, which could contribute to better implementation of the protocol in practice.

Possible main chapters of the Protocol could be the following ones:

Preamble

- General provisions: definitions, geographical coverage, general obligations
- General framework: objective and nature of ICAM, delimitation of the coastal area, basic principles, role of MAP
- National policy: legal tools, strategy development, policy, institutional arrangements, economic instruments, planning, research, information and public participation, publicity, education and awareness, reporting
- International co-operation.

Should the scope of the ICAM protocol be limited to coastal areas or to extend the territorial coverage and approach to river basins (i.e. ICARM principle applied within EU Water Directive) is an issue that also should be taken into account and be discussed. The relation between ICAM and ICARM, a need to explore synergies with other initiatives promoted in other regions or countries is important. For example, recently, the need to promote Integrated River Basin and Coastal Area Management has gained significant recognition. The new Water Directive in EU provides significant opportunities, at least for some Mediterranean states to sustain and incorporate coastal zone management initiatives and concerns in water management initiatives.

Box 2

Integrated Coastal Area Management (ICAM)

ICAM is a continuous, proactive and adaptive process of resource management for environmentally sustainable development in coastal areas. The overall objective of ICAM is to provide for the best long term and sustainable use of coastal resources and for perpetual maintenance of the most beneficial coastal environment. Resource management and environmental conservation, which provide the motivation for ICAM, are not incompatible with economic growth. In fact, enhanced long-term economic development can and must be the overall driving force of ICAM Specifically, ICAM aims to:

- Strengthen sectoral co-operation, i.e. through training, legislation, etc.
- Preserve and protect the productivity and biodiversity of coastal ecosystems, through preventing destruction, pollution and overexploitation.
- Promote rational development and sustainable utilisation of coastal resources.

Fundamental to ICAM is a clear understanding of the relationships between coastal resources, their uses and the impacts of development on economy, society and the environment. Since coastal resources can be used at the same time by various economic sectors and social actors, the clarification and comprehension of all their uses and relationships is essential. Also for ICAM to succeed, a broad context of involvement of major actors and interest groups is essential. The participatory process must focus on facilitating horizontal and vertical dialogue, agreements and compromises between all parties and actors involved in the harnessing and exploitation of coastal resources, in a comprehensive and integrated manner.

Integrated Coastal Area and River Basin Management (ICARM)

Both river basin and coastal issues require a multi-sectoral approach although the emphasis may change into multi-sectoral coordinationwilt some elements of rural land-use regulation (river basin management) or into physical planning and resource management with a strong emphasis on land-use regulations and physical interventions (coastal zone management). As rivers and coasts are physical and ecological entities, changing patterns of land and resource use in upstream areas have an impact on downstream areas. Conflicting demands on natural resources and land uses has brought the need for a comprehensive approach, involving multiple objectives and the need to account for a wider scale of interest in both space and time. ICARM requires the adoption of goals, objectives and policies and the establishment of governance mechanisms, which recognise the interrelationships between the two systems with a view to environmental protection and socio economic development.

CONCLUSION

A positive atmosphere has been created in the last few years, which should not be overlooked. On the contrary, a formal decision to start with the first concrete steps towards ICAM protocol adopted by the Contracting Parties at their Ordinary Meeting in Monaco in 2001 should be taken as one of the priority activity for MAP in the future. Experiences from MAP Regional Activity Centres which

have much stronger legal frameworks in a form of protocol shows that this is the best way to allow for better control and management of marine and terrestrial resources in the region. Coastal areas definitely call for a similar framework. Integrated Coastal Area Management (ICAM) approach has been widely recognised as a conceptual framework to develop policies and actions leading to sustainable use of natural resources and improved quality of life in coastal areas.

The request by the CPs to elaborate in the first stage a feasibility study is a good start for a rather long process, which should end with the adoption of the Protocol. The Priority Actions Programme as the Regional Activity Centre (PAP/RAC) of MAP will in the near future put all its efforts to fulfil this important task.

<u>REPORT ON THE EXPERIENCES RELATIVE TO THE PAC Sfax AND THE</u> <u>PROPOSALS FOR THE FUTURE</u>

By Taoufik GARGOURI

a) Presentation of the project PAC Sfax :

Within the framework of the Action Plan for the Mediterranean, a Programme of coastal management for the town of Sfax has been executed and has concerned the subjet spreading out from the port of the town from the kilometre 20 of the route of Gabès and including, towards the interior, the land of the actual municipality of Thyna and the two Delegations of Sfax Sud and of Sfax Médina (diagram n°1). This programme has been difined in the framework of the application of the recommendations of the contracting parts for the elaboration of case studies about the planning for the integrated management of the coastal areas (IZCM).

The elaboration of this programme for the region of Sfax has been greatly inspired in the process followed by the PAM in other cases carried out in countries of the North Basin of the Mediterranean. The unity of coordination as well as the different Regional Activity Centres (RAC) of the PAM have participated, each one in what concerns to the achivement of the activities planned for the case of the PAC Sfax. The latter started in April 1994 after the approval of the project by the contracting parts for a total of **805 000 \$EU** of which 435 000 \$EU represent the contribution of the PAM and 370 000 \$EU represent the participation of Tunisia (in kind). The project has been planned for a duration of two years, but because of the difficulties found at the level of the collection of data or because of the availability of the foreign and Tunisian experts, or even because of the discrepancy in the programming of the tasks and their executions, the date of achivement of the project has been delayed until the month of December 1998 acknowledging a delay of almost two years.

 $Diagram\ n^\circ\ 1$: global plan of the administrative division the governorat of Sfax and the area of study

a-1) Main actions planned within the framework of the PAC Sfax:

The Regional Activities Centres have divided the tasks as in the following plan:

i- Activities managed within the framework of the programme MEDPOL

- Action 1 : Presentation of the inventories of marine pollutants of telluric origin and the industrial pollutants, application of the protocols « Telluric» and « immersion»,
- Action 2 : presentation of a programme of continued monitoring and of research for the • area of Sfax,
- Action 3 : impact studies of the expected climatic changes.

ii- Activities managed within the framework of the REMPEC :

- Action 4 : presentation of a national plan of emergency for the area of Sfax (critical situation protocol)
- Action 5 : Preparation of the facilities for harbour reception (critical situation protocol)

iii- Activities managed within the framework of the CAR \ PAP

- Action 6: preparation of a management plan of the water resources, study of the undergraound water table, proposal for the continued surveillance, measurement of rehabilitation, proposal of a management programme...
- Action 9: Formation in the techniques and management of the coastal areas (EIE, • SIG, Reception capacity of the tourist resorts) and their application.
- Action 10: preparation of an integrated management plan of the coastal area • (entailing among others the sectorial studies about the management of solid and liquid waste, the protection of the beaches, the use of the ground, the protection and the management of the coastal resources).

iv- Activities managed within the framework of the CAR \ ASP :

Action 7-a : study of the protection and management of the natural park of Thyna.

v- Activities managed within the frameworkd of the 100 Historical sites:

Action 7-b : studies about the management of Sfax Medina.

vi- - Activities managed within the framework of the CAR | PB

- Action 8: Prospective and systematic studies entailing among others the environmental / development scenarios of Sfax.

vii- - Activities managed within the framework of the CAR | TDE

Action 11 : Application of the teledetection by satellite and use of a mathematic model for the characterization of the regime of the marine currents in the area of Sfax and the Gulf of Gabès.

The area of study presents numerous problems linked at the same time to a bad exploitation of the land for the benefit of the industrial units where we witness in particular the preparation of the treatment plants of the phosphate (the NPK whose waste of phosphogipsum were dumped directly into the sea and which was closed at the beginning of the 1990's, and the SIAPE that is still working and represents the most critical point of the whole area of study) in the land currently in the middle of an urban area and other problems related to the breaking up of the urban land in favour of a increasing population that needs the advantage of building plots around the town.

The industrial pollution poses therefore a serious problem that Tunisia has been able to delimit in the last years by the creation of new structures having the responsability of managing the environment like the Ministry of the Environment and of the Planning of the Territory (MEAT), the

National Agency of the Protection of the Environment (ANPE), the Agency of Management and of Protection of the Coast (APAL) and other structures of support. These administrations, supported by legal texts cover the majority of their action fields, have furthermore contributed to the improvement of the urban environment of the citizen. However, the industrial areas in the large sense of the term (established industries within the industrial or agricultural areas like the oil-works and the agribusiness) present always certain gaps that the project PAC Sfax has tried, amongst others, to examine and to solve presenting the necessary solutions. The diversity of the activities mentioned above reveal also the mass of work that has been devoted to this programme of investigation, of research and of evaluation and certainly the solutions that have followed.

Thus, these activities have developed in common agreement between the centres of the PAM and the Tunisian government represented by the National Agency of the Protection of the Environment, which was appointed as project manager of the project. The consultants that have done the work being exclusively the Tunisian consultants directed, in their works, by the foreign experts engaged by the PAM or scientists working within the CAR.

We notice also that there have not been any problems at the level of execution of the works as much from the scientific point of view as from the administrative and logistic point of view; the project has taken nevertheless a period of 4 years during which many missions have taken place: as much those of the foreign experts come in Tunisia as those of the consultants and the Tunisian consultants and civil servants moved to the level of the Regional Activities Centres. These missions are summarized in the meetings between the experts, the training courses as regards to the SIG, in satellite imagery and in the management of the national parks.

b) Aims and objectives of the PAC Sfax :

b-1) Reminder of the problems at the level of the area of study:

On the basis of many considerations mainly environmental and urbanistic, Tunisia has proposed the town of Sfax to the MAP to follow a Programme of Coastal Management (PAC). Indeed, the town has known many problems during its existance, many of which are linked to the industrial activities and all the terrible effects that they could generate.

The town of Sfax, forming a half cobweb developed on a terrain almost flat as much from East to West as from the North to South, presents also routes that converge all towards the centre of the town, which is more and more strangled. This same town offers a territorial layout affected by many anarchic constructions of which the biggest part don't respond anymore to the requirements of the inhabitants. The roads have become too small because of the increasing traffic; the illicit waste and the noise produced in the same urban areas because of the cottage industry installed illicitly and in an anarchic way poses serious problems that the town must fight against almost daily.

The South part of Sfax, which has been mainly reserved to be the study of the case of the PAC, presents many of the problems mentioned above, others quite particular. In fact, this area shelters he famous factory of production of phosphoric acid and of fertilizer (SIAPE), the purification plant of the sanitary urban water of the town, the public dumping of the urban and assimilated waste, the dumping of the inert waste, the new fishing port (without a purification plant), the regional municipal abattoir (without a purification plant), the park of regional buses, four industrial areas and also other units dating from many decades ago like the SIOS ZITEX specialized in the extraction of the oils of the remains by in hexane and in the treatment of the vegetable oils.

It is because of being an area playing the role of recipient of much pollution -at the same time water, solid and atmospheric-, that the project has taken the responsibility to present solutions that the region and the state could take into consideration in a general way and carry out in the short, the average and the long term.

Let us remember also that the socio-economic development of Sfax in the last decades has been indisputable and it has allowed it to keep the 2nd rank after the capital. Nevertheless, despite its 400.000 inhabitants in 1994, the demographic rate (2,1 %/year between 1984 and 1994) is below the average rate of the country (2,3%) and of the urban national one (3,8%). that shows the low attractive power that the urban areas have on its immediate and distant periphery. This weakness relative to the demographic growth rate is produced by a activity rate of 32% in 1989 (against 31,4% for the whole of Tunisia) corresponding to an unemployment rate of 11,3% against 15,3% at a national level.

Also, Sfax occupies honorific ranks in the oil, poultry, halieutic, dairy production and other products like the almonds and other nuts. Luckily, from the industrial point of view, Sfax represents often an important centre that attracts a great number of investors and also consumers and middlemen participating all in a better economic expansion.

b-2) Summaries of the main recommendations and products stemming from the PAC Sfax

The programme of the PAC Sfax succeeded with the formulation of multiple actions (35 listed) leading mainly to the pollution control and targeting at the improvement of the framework of life directed as much to the curative, the preventive as to the creative. The realization of these actions, of which certain are already committed or in process of being programmed to an impact on the pollution control and therefore on the recuperation of the littoral besides different advantages of economical, social, financial and landscape nature.

The inclusion of these different actions allows us to suggest a series of recommendations touching the following aspects:

- the elimination and/or reduction of the types and sources of pollution,
- the treatment and/or re-appointment of the polluted areas.
- the reservation and the rationalization of the use of the natural resources and the research of new potentials
- the monitoring of the climatic data and of the coastal dynamics,
- the creation of a programme of continuous control of the pollution,
- the safeguard of the historical and picturesque sites,
- the reinforcement of the economical, cleaning up, of transport, cultural and recreational insfrastructures,
- the sensibilization of the society towards better respecting the environment,
- the confirmation of the direct contribution of Sfax,
- the creation of a coordination structure.

The study has shown that these recommendations have positive implications on the natural and human resources, on the area at its different scales, on the components of the sustainable development, and on the actors concerned.

b-2-1) Main objectives and variables of integration

The PAC Sfax has allowed to clear the idea that certain key factors prevail to the detriment of other environmental and territorial management factors that should not be. That explains how affected the ecosystem of the coastal area of Sfax (marine, terrestrial, water...) is and the abundance of the threatening sources as well as the perspectives of recuperation of this area. These key variables are almost found in all the studies of the PAC Sfax concerning the Sea, the Water, the Soil and the Energy, concerning the conservation, the maintenance, the rationalization and the management of the natural resources.

The confrontation of these main concerning objectives and the main constraints as well as the components of socio-economic development of Sfax explains the implications between these different elements themselves, and reflects the motor role played by the infrastructures within the eco-development.

b-2-2) Suggested solutions for the ICZM of Sfax

The rehabilitation of the coast of Sfax goes firstly through the protection of the main objectives and the development of the infrastructures. It implies also the elaboration of a national plan coming within the scope of the context of a sustainable development and assuring integration and coherence. The elaboration of this programme or integrated action plan, ending up in the laying out of the implementation priorities, involves the realization of a series of actions linked to the main objectives mentioned above.

i) Main objective SEA: suggestion of actions of pollution control and of protection of this natural resource performing mainly on:

i-1) Relocation of the factory of the SIAPE and of its slag heap of phosphogypsum, condition sine-qua-non of a sustainable development of the area of the PAC and allowing the

safeguard of the whole of the natural resources (water, sea, soil, air ...) or even the promotion of the sector of the phosphates as the future unit will take into account the technological progress, which will endow it with more productivity,

i-2) The creation of the project Taparura (North coast of the town) in the three main components: pollution control of the North coasts, creation of new beaches close to the bathing place and extension of the centre of the town by the gain of terrain to the sea,

i-3) The creation of the national park of Thyna in particular within the wetland aspect which has international rank due to its rich birdlife,

i-4) The creation of the purification plant in the North, the reinforcement of the one in the South (the current one) with a more severe application of the regulations as well as the extension of the purification network to respond to the needs of the strong urbanization of the Grand Sfax.

ii) Main objective water : the preservation of this resource implies the creation of the previous actions affecting directly the water resource, as well as the realization of specific actions related to the elaboration of a management plan of the rationalization of the water aiming to limit the current overexploitation of the water table of limited potential, and to eradicate the obvious pollution of the water, which makes it unsuitable for any use;

iii) Main objective Soil : It will be necessary to face the shocks coming from a dense littoral and sub-littoral urbanization, to opt for revision politics of the statutes of the occupation of the ground aiming to rationalize the use of this resource, avoiding necessarily the pauperization of these areas and the agglomeration of the pollutant industrial units for the vicinity and for the ecosystem;

iv) Main objective Energy: To limit at best the risks of exploitation or even the bad use of this resource;

v) Main objective Landscape : it is at the same time a natural resource to protect and to develop and a result of the different interventions of mankind. That implies taking into account different actions common to other main objectives as well as the realization of other actions has direct effect on the urban landscape including among other the safeguard of the Médina, the landscape development of the North coast, the safeguard of Chott El Mardessia, the respect of the authentic character of the old port;

vi) Main objective Infrastructure : It is mainly a matter of action set to reinforce the infrastructures of transport, to develope the equipments of purification, to create the equipments of economical, touristic, recreational and cultural equipments responding to the centre and rank of the town. Not less important, the establishment of a network of control and of surveillance of the pollution is necessary.

Lastly the study has released a mould mixing proposed actions / main objectives which has suggested an order of priority to take into account at the level of the realization of these actions. Thus, keeping only those not yet released or planned, the following priority actions come out:

- 1. Relocation of the SIAPE and of its slag heap of phosphogypsum,
- 2. Creation of a National Park of Thyna (PAN),
- 3. Management and rationalization plan of the water resources,
- 4. And the reinforcement of the transport, the purification and touristic infrastructures.

b-3) Influence of the PAC on the solution of the priority problems related to the environment – development at the local level:

It is necessary to precise that the PAC, although it has succeeded in the proposals of improvement solutions or even of repair of the framework of life in a general way of the South coast of Sfax and all the built-up areas there, in reality it has gathered together all the available data there is at the level of the administrations (Ministry of Agriculture, of the Equipment, of the Environment, of Culture, of Education ... and of their public enterprises under guardianship), the research units and the university units, the NGO (ex: Association de protection de la Nature et de la Nature de Sfax, Association des Amis des Oiseaux ...) and of the public in a general way (during the dialogue meetings).

This abundance of data can not be efficient and beneficial unless it is put at the level of a single manual in order to be able to compare the data amongst them and to develop them at the level of predetermined programmes and at the level of experts of high level being able assess and to get the maximum profit of the region.

However, the region has at its disposal nowadays a first study gathering all the socio-economic, cultural, environmental and space functional development components that it will be able to update at any moment and carry out depending on the undertaken actions, the current ones and those always planned. In fact it is a matter of a instrument that works in conjunction with the quinquennial plans of economic development and will interfere with the latter by way of permanent confluence amongst them.

The PAC Sfax has become a promising regional project after its first year of execution above all at the level of the administrative and university environments. Let us take into consideration that mainly the actions of the Plan Bleu (systemic and prospective study of the region) as well as those of the PAC CAR concern enormously the general public. Indeed, the meetings of concertation carried out by the Plan Bleu in aid of the scenarios of development of the Sfaxian system or the training courses, the stages of improvement and the different activated meetings by the PAP CAR have brought together the national, regional and local speakers and moreover have clarified the objectives of the PAC to them. Let us remember also that the meeting of closure of the PAC has gather together under the presidency of the Governor of Sfax, more than a hundred participants in addition to the representatives of the CAR, that have debated the results presented forthwith and discussed the recommendations formulated by the consultants.

So, as well the decision-makers as the scientists have become aware of the importance of the PAC for he region and some have expressed their wish to repeat this experience in other regions of Tunisia that we could consider as an area that has suffered the previous bad management.

The studies carried out within the framework of the PAC have also provided numerous solutions and futuristic solutions to repair the previous mistakes and implement a better management of the territory. The suggested solutions have been generated by the local consultants stemming from the universitary and administrative environments and which has been until very recently impregnated with ideas prepared in favour of a better management of the environment. Some of the suggested solutions are already on the way to their implementation by the regional authorities like for example the project of improvement of the depuration system of the urban waters: preparation of a secon depuration plant for the part North of the town or expansion and improvement of the actual station \rightarrow the PAC has participated in providing the justifications of the first solution taking into account the data that it has been able to collect and the experience of the experts of the PAM in the domain. Nowadays, the first solution has been adopted. Many other solutions that are the previous result of the decision-makers and the local managers, the PAC has analysed and has provided the necessary improvements or the justifications of their implementation in opposition to their rejection. The case of the factory of the SIAPE is a good example in the sense of the proposals of the relocation starting at the actual state to develop and we shall see hopefully the day in a near future.

It comes through that the PAC has influenced the solutions of the prioritary problems as much at the local level as the regional and at the same time as at a national level because certain decisions could not be made but by the ministerial decisions and the reflections in the national framework (monitoring national commission).

b-4)The reinforcement of the institutional capacities for the ICZM:

In what concerns the reinforcement of the institutional capacities for the ICZM (Integrated Coastal Zone Management), Tunisia, conscious of the importance of the coastal richness and of its national and Mediterranean interest, has created the Agence de Protection et d'Aménagement du Littoral (APAL) (Agency for the Protection and Managament of the Littoral) in 1996, two years after the start of the PAC. It is a matter of a well prepared decision because of all the problems that the coastal space knows: influence and impact of the great industrial and harbour metropolis and of the dense seaside tourism, Tunisia, with 1300 km of coast, has been the second Mediterranean country after France (conservation of the littoral) to establish a full-time institution to look after its coastal areas.

A fairly young agency, the APAL, whose tasks have been entrusted in part to the Ministry for the Equipment and the Habitat, counts nowadays on a wider field of action and has the responsability of managing and of protecting the whole of the coastal area. The APAL has at its disposal a strong juridic tool to apply a better management of the DPM (Domaine Public Maritime) (Public Maritime Domain). This environment is often the area for anarchic and illicit exploitations so much so that certain urban constructions are found destroyed by the indisputable progress of the sea; nowadays, the APAL does not allow these excesses, on the contrary, it has the role of drawing up a detailed plan of the whole the coast and of the constructions right on DPM with the purpose of treating all one by one all and those judged legally forbidden and dangerous will be destroyed.

b-5) Application of the tools and techniques of ICZM :

In fact, the tools and techniques of ICZM are diversified and certain ones are difficult to implement in a fairly short periode of time like for example the surveillance network of the quality of the sea. Indeed, for this project that has been suggested at the level of the component entrusted to the MEDPOL, we have noticed that the INSTM (Institut National des Sciences et Techniques de la Mer) (National Institute of the Sciences and Techniques of the Sea) counts nowadays with some points of measure and control of the quality of the sea for the Gulf of Gabès, but that remain insuficient to ensure a strict adn precise monitoring like in fact the MEDPOL understands.

However, for other tools like the SIG, which is a very efficent tool for the description of the actual state of sites and the creation of the prospective models, it has gained the trust of the managers and does not stop attracting the attention of the academics who urge the students at the end of school on choosing the subjects of dissertation or of DEA (Diplôme des Etudes Approfondies) (Diploma of Detailed Studies) on the SIG.

The control of the polluted sites (like the old site of the dumping or of the exploitations of the oil fields), it has also caused an awareness at a regional and national level. Indeed, nowadays in Sfax we witness the implementation of several SIG: at the level of the ONAS (Office Nationale de l'Assainissement) (National Office of the Depuration), of the Municipality of Sfax, of the university (Faculty of Sciencies of Sfax, ENIS, Faculty of Arts and Humanities, etc...), the NGOs and the offices of private studies. All these SIGs complement eachother, but they do not meet; thus, the attempts between the ANPE and certain academics are in progress to create a general SIG in accordance with the one that has been suggested by the PAC.

b-6) Formulation and implementation of the national politics and strategies relative to the ICZM:

In what concerns the Government of Sfax and more precisely the perimeter of the study, several actions started have become at the same time the will of the government in the implementation of a policy of ICZM and the realization of the results of the PAC Sfax. These activities as well as in the main national strategies are resumed in the following points:

- i) The Taparura project: It concerns the North coast of Sfax but conveys clearly the political will to amend the problems caused by old decisions (and politics) that did not take into account the environment during a time when all the interests were directed towards development and the creation of employment. The project directed to depolluting the coast and reconciling the inhabitants with their sea, to create new urban, touristic, seaside areas... and prevent the coast that will risk, otherwise, from knowing the benefits of the deterioration;
- ii) The stop of the exploitation of the drying basins of the margin in the sorroundings of the SIAPE and the creation of a new dumping at the level of the place that Sfax occupies in what concerns the production of oil. We notice that the dumping of the margin have multiplied on the whole territory and mainly at the level of the coastal Governments to protect the sea and the seaside turistic areas;
- **iii)** Cleaning-up and multiplication of the urban depuration plants. Nowadays, we have almost 70 STEP on the whole territory while certain Arab and African countries these stations have only 4 or 5. Also, and from the year 2001, all the projected plants or in progress included all, the tertiary treatment to assure a better exploitation of their purified water at the agricultural level and to avoid any possible contamination problems. It is to be highlighted also that the experiences to clean up the rural built-up areas have come again into force through the creation of modulable and compact plants for certain rural concentrations.

Notice also that for the town of Sfax:

iii-1) The North STEP is held up and it is already programmed within the 10th plan,

iii-2) the network is in continuous growth: the one of the area of Sidi Salem (one of the biggest industrial areas of Sfax) is in the process of creation and it is in its final phase,

iii-3) the connection network of the seaside village of Chaffar is being carried out and it will be finished in March 2002. The waters will be driven back via a pumping station towards the STEP of Maharès,

iii-4) the rehabilitation programmes of the existing networks are more and more respected and the works are carried out more and more frequently (as much for Sfax as for Tunisia in a general way),

iii-5) During the start of the PAC, the rate of urban connection in the network of cleaning up was of nearly 50 % whereas nowadays it is of 65 %, so 15 % was gained in the space of almost 5 years.

iv) The promulgation and the application of the new legislations aiming at preserving the environment of which among others:

- The law 96-41 of 10th June 1996, relative to the waste and to the control of its management and of its elimination, has created a new age in the domain of the management of the environment in a general way and of this waste in a more particular way. The domain of the transport of the waste remains often ignored, attracts at present the attention of all the speakers (Ministry of the Interior, of the equipment, of Agriculture, centres of treatment of the waste and certainly the transporters themselves) and it allows furthermore to keep a certain vigilance on fraud;
- The decree of application relative to the management of the packaging used (ECOLEF) promulgated in June 1997 and a year later the appearance of the previous law shows the determination of the Government to take charge of a hot and promising sector. It has also contributed to the creation of a programme of selection after the reimbursed collection. This last one has been created during of this year and has given spectacular results from the point of view used collected packaging. For Sfax, and in the period of 5 months (from July to October 2001) we have received more than 25 tons collected by the private (micro-enterprises). Such a programme has participated at the same time in the conservation of the environment, to the creation of employment (collectors, recyclers, workers taken by the ANPE) and to change certain polluters into new recuperators and protectors of the environment;
- Another decree which appeared at the end of year 2000 has stopped the list of dangerous waste so expected by the industrials and the managers of the environment. It has also contributed to improve the domain of the management of the dangerous waste and to better position Tunisia towards this waste; we take the opportunity to inform that a platform for the treatment of dangerous waste is in process of study;
- Two monitoring registers of the transport of waste respectively for those dangerous and non-dangerous have been prepared according to the law mentioned above and have been put into operation from the month of September 2001.

b-7) Disclosure and exchange of experience contributing to the formulation and implementation of the politics and strategies at the local scale:

Through the PAC Sfax, many local administrations have contributed to the realization of some of their actions. Thus, the representatives of these administrations often qualified and appointed to follow closely the development of the activities, have been able to receive a formation in the fields that they manage.

The courses that have been given on the Geographical Information Systems by the PAP CAR and the Plan Bleu have been very beneficial and have encoraged many participants to give the ANPE the necessary information in the creation of the SIG. These administrations have today the SIGs of the PAC Sfax.

That goes very well for the fight atlas and the preparation for the fight against the accidental pollutions by the hydrocarbons carried out within the framework of the activities of the REMPEC and carried out by the experts of the "Ecole des Mines de Paris", of the CEDRE and of the ENIS; the interactive atlas elaborated in the form of a CD-ROM (with manual of use) has really kept the attention of all the speakers, as much of those invited to participate in the formation cycles as of those who have received it for their information.

From their side, the NGOs and mainly the APNES (Association de Protection de la Nature et de l'Environnement de Sfax), have taken advantage of the great experience acquired by their members, who are greatly compromised as consultants at the level of the PAC.

As for the disclosure of the informations and the studies carried out within the framework of the PAC Sfax, the ANPE has provided in the course of the closure meeting of the PAC the synthesis of all the studies (11 actions) elaborated in the form of a manual of some sixty pages. This manual allows to have a clear idea about the studies carried out to be able to require them to the ANPE in any occasion. Indeed, many university researchers and administrators have adopted the studies of the PAC to take some profit.

Nowadays the negotiations with the academics of the Ecole Nationale des Ingénieurs de Sfax (ENIS), of the Faculty of Sciencies of Sfax (FSS) and of the Faculy of Arts and Humanities (FLSH) and of the Municipality of Sfax and of the National Office of Cleaning up are in progress with the purpose of collecting all the available information of the SIG of the PAC to carry out a new SIG in which all the pieces of information will be collected relative to: the urban area, nature, the hydrographic network, the roads networks, of cleaning up, electrical, telephone, etc. ... the SIG of the PAC will constitute the skeleton of this new SIG.

The ANPE considers that the PAC Sfax is the first report in which it is diagnosed the actual situation of the area of study and the list of the proposal of improvement. Thus, it is at regional instances to demand in order to exploit it with views to materialize the recommendations that have followed.

b-8) Reinforcement of the capacities and the formation of the local and national experts:

After the start of the project PAC Sfax, an expert of the ANPE has been put almost full time for the management, the monitoring of the project and the coordination between different centres of the PAM that are involved. These tasks, often carried out individually, allow the manager of the project to ensure his work because he has the role of following the development of each task according to the terms of reference that are prepared for him. However, some actions have interfere in time, which has involved sometimes the delay of certain actions to the detriment of others.

In what concerns the formation, we notice that as well as for the manager of the project, as for a good number of civil servants of the ANPE and of the Ministry of the Environment and of the Development of the Territory (MEAT) has taken advantage of the formation courses in SIG, in GIRE (Gestion Intégrée des Ressources en Eau) (Integrated Management of the Resources in Water) and in the ICZM in a general way. The external experts at the MEAT, that is the consultants that have led the main activities of the PAC and those who have assisted to the demonstrations of the project (formation courses, meetings, monitoring commision) have learnt to manipulate the tools of the ICZM like the SIG or the atlas of flight and the preparation for the fight against accidental pollutions by the hydrocarbons (action of the REMPEC).

Notice that there has been, at the level of the PAC Sfax, the following specific training:

- Training course on the GIRE (Gestion Intégrée des Ressources en Eaux) (Integrated Management of the Ressources in Water) – PAP CAR; given to Tunisia for the national and Mediterranean frameworks, the ministries involved (of the Environment and its annexes, of Agriculture, of Equipment) and the academics;
- Training course on the SIG PAP CAR and PAP CAR + Plan Bleu; given to Tunisia for the national frameworks of different ministries;
- Training course on the use of the Atlas of fight and of preparation for the fight against accidental pollution by the hydrocarbons REMPEC; given for the main speaker in case of accidental marine pollution (National Marine, merchant navy, APAL, MEAT, ANPE, Civil Protection, etc.);
- Workshop on the release of the emergency maritime plan REMPEC; held in Tunisia, for the frameworks of the ministries involved (Ministry of the Interior, of the National Defense, of the Environment, etc. ...)
- Training course on the use of aerospatial techniques related to monitoring of the marine pollutions – CAR TDE; given for two frameworks of the MEAT and of the ANPE (manager of the project);
- Training course on the GIRE PAP CAR; held in MALTA and in which everyone partook of Tunisia, of the frameworks of the ANPE and of the MEAT;
- Workshop of work on the GILIF (Gestion Intégrée du Littoral et des Bassins Fluviaux) (Integrated Management of the Coast and of the River Basins) – PAP CAR; held in Malta and in which has partaken of Tunisia a framework of the ANPE (manager of the project);
- Different technical meetings that took place in Tunisia and at the level of the offices of the CARs themselves among others the PAP CAR, the Plan Bleu, the CAR TDE, the REMPEC,

b-9) Cooperation, exchange of experience, and put at the disposal of the results, of the methods and of the procedures in other regions of the world:

The PAC Sfax has allowed to make many contacts at different scientific and administrative levels. These contacts become by the workshops and the training courses in which the experts and Tunisian and foreign frameworks have participated and the meetings among Mediterranean experts of different nationalities.

Furthermore, in many of the training courses recorded in the previous paragraph that are considered as place of exchange of experience between participants, the project has permitted very important contacts amongst Tunisian experts and foreign experts working within or on behalf of the Regional Activities Centre. These contacts, present most of the time in the meetings to start the actions planned and of their development, have concerned the whole of the Centres and the experts that have committed to be on the Tunisian or the Mediterranean side.

Many researchers of different universities have been involved, of whom we mention among others and by subject: the Ecole Nationale des Ingénieurs de Sfax (ENIS) and the Ecole des Mines de Paris and the CEDRE for the action involving the atlas made by the REMPEC; the ENIS and the university of Alexandrie for the action relative to the climatic changes of the region; Faculté des Lettres et des Sciences Humaines (FLSH) and the university of Split (Croatia) and of Sophia Antipolis (France) for the action relative to the fulfilment of the charts and of the SIG at the level of

the PAC; Facultés des Sciences Economiques et de Gestion (FSEG) and the experts developers of the in what concerns the systemic and prospective studies of Sfax.

All the results obtained at the conclusion of the project being most of the time under the form of reports comprising: the diagnostic of the actual situation, the illusions and the proposals of replacements (future) and the recommendations for the implementation of projects of repair. Other results like for the SIG and the atlas being certainly in the form of documents in informatic supports or of training experience at the national and Mediterranean frameworks.

However, until now the impact of all these activities as much as their products on the other Mediterranean regions or even worldwide remains still very modest. It is through the meetings of the contracting parties of the PAM, the workshops or the publications of the CARs that everyone gets the news on the country having taken advantage of these experiences very rich and constructive. Indeed, the many countries of the Mediterranean basin seem to have had the experience, nowadays, of these methods and procedures in particular through the PAC that has lead them; other countries of the black Africa, of Asia or Latin America have also had the opportunity to accommodate the experts of the PAM, who have directed the works of development and of integrated management in particular for the domains of water and the river basins, of the coast and of the SIG.

c) Means and methods of monitoring of the project:

The National Agency of the Protection of the Environment being the project manager of the programme, has put the project at the level of the Management of the Studies and Projects (today Technical Department) and has put at the disposal of the Director of the Studies and Projects (doctor engineer of the processes) as Project Manager and Main Engineer (doctor in hydrology and Isotope Geochemistry) as the head of the project to assure him all the conditions of success. The ANPE has also put a the disposal all the logistics going in the framework of the participation in kind such as defined in the contract signed to this effect.

It should be remarked that the supplementary means of *hard ware* and *soft ware* have been put at the disposal by the PAP CAR and that within the framework of the financial participation in the project.

The role of the head of the project is:

- i- Choose and design the national entitled experts to do the work required by the CARs;
- ii- Coordinate between the Regional Activities Centres and the Tunisian experts appointed;
- iii- Coordinate between the CARs so that the information circulates and above all to avoid the double employment. This tak is capital for many actions, 2 or 3 CARs at the same time being called to propose solutions. The head of the project informs in time the concerned centres, puts them in contact and sees to the monitoring of the obtained results;
- ivquality of the work and at the same time try to bring together the ideas of all of them and play the role of moderator if necessary;

c-1) Financial aspects of the project:

This project is financed at the rate of 850.000 \$EU divided in 435.000 \$EU in the form of contribution of the PAM and 370.000 \$EU for the Tunisian participation in the form of nature.

We notice with satisfaction that all the implemented actions have developed in accordance with the planning drawn up to their effect and that thanks to the respect of the schedules and the costs defined and programmed at the level of the agreement and the terms of reference.

The Tunisian party has respected from its side, as well, the engagements on the subject and as it has been mentioned above, a whole team and existing logistics, acquired to that end, has been committed and used by the speakers.

The region enjoys nowadays a databank, of predifined actions and of equipments allowing it to programme and draw up the APS to realize the actions in a short, average, and long term.

d) General comment of the program PAC Sfax

d-1) Evaluation of the management of the PAC

The management of the PAC is in fact the responsability of all the speakers as much the nationals as those of the PAM. The role of the ANPE is the main link of this responsability confused because it consists, in addition to assuring the link amongst all the speakers, in passing them on time all the necessary information and the adequate logistics for the good development of the project.

For the speakers, this responsability represents the fact that they are all called to make a success of the project: the PAM must because is the project manager and has the moral and physical responsability of benefiting the countries of the Mediterranean basin of these new methods and techniques; the ANPE as project manager and of first responsible for the protection of the environment in the country has the obligation of making the project succeed and have at its disposal the new databank and the suggestions of repair; the consultants do not have this obligation under the angle of payment and of contract, but mainly under that of their joining in their town and in their dedication to suggested the best solutions to replace it within its original position.

So, apart from the delay accused at the reception of the project and at the non-success of the action of the MEDPOL relative to the presentation of a continuous research and surveillance programme for the area of Sfax, the programme has enjoyed good management and the reach of its objectives.

d-2) Relationship between the strategic matters and the local actions

As it has already been mentioned above, the national strategy of the country in what concers the environment has known a development at the level of the whole country. We witness today the creation of national parks, of strategic objectives, of projects of embellishment of the towns, of centres of collection and of reception of the used packaging (Programme ECOLEF, of a new centre of treatment of urban waste (waste controlled), etc. ...

In what concerns the PAC Sfax, the implemented strategies at the local scale concern more sectors among which we can mention:

- the controlled dumping of the Gonna that saw the light very recently;
- the programme of the new STEP North of Sfax as well as the extension of the network of urban cleaning up that is in Chaffar or in the ZI Sidi Salem and the other districts of Sfax and that within the framework of the improvement of the quality of the waste in the water and of the increase of the urban purification rate;
- The creation of the project Taparura and the creation of an administrative and technical entity and for its monitoring and its start up, etc. ...;

In short, all converges on confirm the good relation between the national strategy concerning the environment and the local actions undertaken within the Framework of the project PAC Sfax. However, it will be necessary to notice that for the SIAPE, which represents for the Sfaxian society the black point of the town, remains until the present without a clear and defined solution. Notice also that during the last interdepartmental meetings, the case of this factory has been discussed for a long time and we hope therefore to have news in a near future.

d-3) Integration of the activities

The action 7-10 of the PAC Sfax is titled: Plan de Gestion Intégrée du Litoral Sud de Sfax (Integrated Management Plan of the South Coast of Sfax). It is a matter of carrying out the key action of the programe as it integrates all the previous actions, their results, their comments and their implications at the level of a final document that synthesize the whole project.

At the level of the writing of this report, we have noticed with satisfaction that the team that is in charge and that has besides directed other actions, has not had many difficulties in collecting the data, integrate them and synthesize them in the form of a report including the whole of the future proposals pronounced by the individual actions mentioned at the beginning of this report.

There has also been a strong collaboration between the centres of the Plan Bleu and the CAR RAP (for the elaboration of the main charts and SIG of the PAC and to assure the cours of the SIG given to the members of the MEAT) and then amongst those and the REMPEC (for the creation of the atlas of fight and the preparation for the fight against the accidental marine pollutions by the hydrocarbons). At the level of these works two key people around whom the main of these works has been done; it is a matter of the geographer consultant and of the local SIG specialist, who has at his disposal both the main data and their treatment.

d-4) Cooperation between the national and local authorities

This work would not have succeded if the cooperation between the national and local authorities was not positive and profitable.

Indeed, as well as for the management of the PAC itself as for its fulfilment, a tight collaboration has been set up between the local team of the manager and the consultants and the rest of the speakers targeted and potentially national.

From their centralised aspect, certain authorities like the MEAT, the APAL, the Directions Générales du Sol, the forests and the water resources of the Ministry of Agriculture, of the INS (Institut National des Statistiques), Ministry of Culture and of the arts and crafts and its annexes like the INP (Institut National du Patrimoine) are represented at the local scale and at the regional and have participated possitively to the success.

The project PAC Sfax has been a chance to put together mass of information amongst many participants and besides, without their comprehension and their conviction of their utility and above all of the opportunity that it can give taking it as a model and being able to transfer it to other regions, this research would not have suceeded.

d-5) Participation of the public, of the media and of the NGO

The project is more a research project at least for the primary phase, than a project putting in practice urgent and planned decisions. Furthermore, for the big public this project has gone unnoticed; on the contrary for certain operators more concerned to know the academics, the administrators, the media and the NGO, this project has left good appreciations and many questions.

The project is moreover interactive for this category of the population and the NGO have participated well as the majority of the consultants called to take part in the project were members of the two main NGO of Sfax, which are the APNES (Association de la Protection de la Nature et de l'Environment de Sfax) and the Association des Amis des Oisseaux de Sfax. These two NGO have played at the same time their role as organization working in the same order of idea as the project and as bond between the ordinary citizen and the administration. Besides, without the APNES many consultants would have found many difficulties for the fulfilment of their works.

d-6) Implications of the economic sector and of the sponsors

The project has proposed a list of recommendations and mainly a group of planned feasible forms following a priority order.

Nor the time allocated to this project nor the terms of references do not allow present projects that the regional authorities could present directly to the sponsors to carry it out later. However, These planned forms are very useful as they are in some ways the studies of feasibility and allow already in the region to know the priorities of development and of pollution control of the main objectives of their region. So, we think that the role of the sponsors is not still requested at this stage of the regional projects.

However, for the projects of the 10th plan that have seen the light recently, like the project TAPARURA, the operations of rehabilitation of the cleaning up networks, of the STEP North or of the municipal dumping of the Gonna in Agareb, are projects that have attracted the attention of the sponsors, mainly German and Japanese, who have believed to be useful, and urgent to start them. So, in the framework certain business (mainly national ones) have been committed while others are still in negociations.

e) Assessment of the programme PAC Sfax

e-1) Advantages of the PAC Sfax :

The programme PAC Sfax has many advantages :

- i) At the local scale, it has :
 - Reaching the objectives in accordance with the initial reference terms;
 - Allows an exchange of information and the creation of a databank considered as the first for the region ;
 - Improves the scientific and general knowledge of the engaged consultants;
 - Assures the formation of a framework of local experts in many domains;
 - Gives solutions to sort out and to develop at a short, medium and long period of time;
 - Brings new management methods (water resources, river basins, coastal areas, etc...) with all the documents of support allowing like this the region to revise them, bring them up to date and to duplicate them for other places of the same region.

ii) At the national scale, it has :

- Allowed a transfer of information, of knowledge and of means ;
- Entrusted to the Government (MEAT and ANPE) the task of doubling these methods, of monitoring them, of improving them if possible and of considering them;
- At its disposal a model of ICZM;

iii) At the Mediterranean scale, it has :

- Participated in the creation of many formation cycles in which many Mediterranean frameworks have participated ;
- Participated in the promotion of the ICZM ;
- Contributed towards the implementation of the international and Mediterranean conventions on the subject ;
- Enriched the data banks of the PAM and allowed to compare the behaviours of the Governments and nations of a region in another encounter with the GIZC ;

Notice also that the ANPE has entrusted the project to a head of project installed directly in Sfax, which has allowed him to manage well the project and to choose very sensitive regional and social consultants of the environmental situation of the town.

e-2) Inconvenients of the PAC Sfax

In spite of the interests of the PAC as well as from the technical, financial, administrative and relational point of view, it has nevertheless included some negative points that we can sum up in the following:

i) Organizational inconvenients:

- At the very beginning, the project has known some difficulties because of the organization of the different actions and of the start of each one. Indeed, the CARs and the head of the project (aside ANPE) had a certain desorientation about how to start ;
- The delays accused for the foreign experts to come to Tunisia have coincided sometimes with the unavailability of certain Tunisian consultants necessary in the development of the action ;
- The estimated duration has two years for the fulfilment of the project was from the beginning wrongly estimated, notice that for the Mediterranean countries, the appreciation of the periods allocated to the development of the actions differs from one country to the other and it is according to the availability of the data required, of the proximity of the country, of the economic, sociological and political and of the availability circumstances of the consultants;

ii) Inconvenients of technical order:

- For Tunisia, French-speaking country, the few English-speaking experts that have participated in the actions and in the formation of the Tunisian consultants, has presented sometimes communication difficulties ;
- The documents suggested by the CARs by way of terms of reference to the Tunisian consultants to inform them, to try to guide them in the completion of their works, were repeating sometimes from one centre to the other or from one party to the other within the same action ;
- Certain actions could not be applied just in the area of study but also to the whole town or even to the Governorat itself. That has created discussions and remarks at the level of the consultants that are decided very often to position beyond the limits of the area of study.

iii) Inconvenients of financial order :

- Certain actions, like those of the creation of a surveillance network for the coast proposed by the MEDPOL, requires fairly heavy investments that neither the PAC nor the Tunisian government had anticipated;
- For a better management at the level of the Tunisian party, there was a lack of financial backing close to the management of the project. The engagement of Tunisia to participate in nature for an estimated amount 370.000 \$US has worked, but a financial backing of the PAM would have given a better start and monitoring of the project;

e-3) What should we retain of the PAC Sfax?

The PAC Sfax has left good appraisal at the level of all the participants, regional, national and international. It is besides, the regional and the local ones, who speak most and often demand news regarding the recommendations and the project forms that it has developed.

The PAC Sfax is considered a point of reference for many regional and national operators. The managers and the academics mainly are the most considerate to follow the news that one could expect of the PAC Sfax.

The PAC Sfax is a multidisciplinary programme that has shelled all the data of the region of Sfax, all the participants were public operations and target academics. These parameters have permitted the success of the programme and the presentation of valid and relevant solutions.

f) Suggestion for the improvement of the PACs

f-1) In what concerns the formulation of the PACs

To improve the formulation of the PACs, we have noticed the following:

- i) Make participate more actively the CARs at the level of the reference terms of the different activities; Each centre will have to present its theoretical proposals and its adaptations to the concerned country with all the necessary justifications. Thus, for that it will be necessary to make the concerned country participate at this level of discussion.
- **ii)** The CAR TDE that has joined the PAM in the creation of the PAC Sfax will have to define specially better its tasks and to direct them to the needs of the whole of the Mediterranean countries.
- **iii)** Taking into account mainly the geographical, morphological and socio-economic particularities of the Mediterranean countries, it will be necessary to suggest terms of reference responding to the demands of these countries following the three following groups:
 - The countries of the North shore of the Mediterranean ;
 - The countries of the South shore;
 - The countries in reduced coastal areas.
 - v) Absorb the countries in process of preparation of their PAC, the experiences of other countries and, if necessary, offer the project manager the possibility to visit the countries that have carried out the PACs in their home to take the maximum information and «lessons» with the purpose of updating them to their future PAC within their context and national circumstances.
 - vi) Discuss the period that it will be necessary allocate to each PAC according to the concerned country depending on the abilities of the country to receive such a project (legal texts), of the availability of the data and the consultants and of the general circumstances of it to contribute to the necessary changes for its improvement and mainly to integrate them at the level of the national and regional development plans.

vii) Establish the works of the PAC to fewer than the themes that are done nowadays with the purpose of carry out the projects in the fairly short periods.

f-2) In what concerns the implementation of the PACs

For the implementation of the PACs, and taking into account what has been present above (§ e-2), it will be useful :

- i) To make the most of the managers of the PACs as well as certain consultants of many formations and of training courses in the fields that they control the very least;
- ii) To assist the countries inhabitants in the creation of a micro structure that will be in charge of the management of the PAC through financial means appropriate for this task;
- **iii)**To demand the national organizers to get to participate as many regions as possible in order to attract them to the creation of PAC in their reciprocal regions ;
 - iv) At the level of the training courses and of the workshops, it will be necessary to make participant more non-Mediterranean as much at the level of the experts as at the level of the trainees to compare the international methods in this level and share the experiences of ones and others;

iv) To direct more the works of the CARs and the PACs on the themes, the individual cases and the sectors where they can materialize more easily the expected recommendations ;

f-3) In what concerns the monitoring of the PACs

To ensure a judicious monitoring of the PACs in their fulfilment, we propose:

To prepare, like for the reference terms and the contracts with the national consultants, the plannings for the interventions of the CARs with the purpose of programming them at the level of the cell of national management of the PACs and to respect moreover, to the maximum, the period allocated to each task; which will allow furthermore not to cross the targeted interventions of two CARs at the same time.

In what concerns the monitoring after the completion of the PAC, it will be necessary that the concerned country makes the maximum promotion of its PAC as much at the regional level as at the national level with the purpose of succeeding in the recommendations that it will have also to subscribe in the national development plans.

g) Summary

The project PAC Sfax elaborated at the request of Tunisia next to the United Nations Environmental Programme and the Action Plan for the Mediterranean, has taken place between 1994 and 1998 and has succeeded in the formulation of many recommendations touching the improvement of the environmental conditions of the region of Sfax Sud. These recommendations have touched the different aspects of development among others the generated pollutions by the industrial units located on the edge of the sea, the anarchic exploitations of the coastal territories, the improvement of the socio-economic conditions linked to the coastal and global domains of the Government of Sfax.

In the cours of this repport, we have started presenting the summary of the project itself, the goals reached, then the conditions in which it has developed; an accent has been put on the multidisciplinary team at the same time Tunisian national and Mediterranean international that has

been committed to this purpose. We have also tried to present the impact of the project on the region and of the region on it; it is necessary to tidy up the advantages and the inconvenients of such a project in the region of Sfax and the expectations of the different participants.

The project has consisted in teaching how to proceed to create a method of Integrated Coastal Zone Management (ICZM). Such a method needs the intervention of many specialists of different domains with technicians of the environment (pollution control mainly) the economists, sociologists, managers and developers.

The case of the PAC Sfax has been a reference of its kind for the region and for the country in a general way. We have also thought it opportune to draw up an evaluation of the project for all the participants as much at the level of its preparation as at the level of its execution or of its monitoring. Notice that for the projects with a regional character having as objectives to diagnose the actual state of an indiferent situation and to suggest the recommendations of improvement, many opinions can emerge and they may not be corroborating; however, for the project PAC Sfax, the development of the actions has presented a scientific methodology tested / proved previously and has succeeded in the particular recommendations expected, but also, it has permitted the collection of information and the creation of a database displayed for the area of study and for the region of Sfax.

The evaluation of the project has allowed also to release the advantages and the inconvenients of the project and subsequently to draw the recommendations and the necessary suggestions for the improvement of future PACs that the PAM counts on creating in the other countries of the Mediterranean.

h) Recommendations

The PACs, in addition to their direct interest for the targeted regions, allowing globaly :

- The exchanges of information and the creation of databanks at a local, national and regional (Mediterranean) level
- The improvement of the scientific and technical knowledge of the consultants engaged;
- The creation of frameworks and local operators in many domains;
- Give solutions to sort out and of management in the short, medium and long term of damaged areas;
- Provide new management methods (water resources, river basins, coastal areas, etc...)
- Ensure the exchange of information, of the knowledge and of the means;
- Allow the Governments to have at their disposal a model of ICZM in other regions of their country;
- Participate in the promotion of the ICZM in the Mediterranean and elsewhere;
- Contribute to the benefits to the application of the international and Mediterranean conventions and on the subject;
- Enrich the data banks of the PAM and to compare the behaviour of the Governments and of the nations from one region to the other of the ICZM;

Thus, to fully ensure these functions, the PACs will have to:

- Take a more important scale than the actual one and to have at its disposal a larger distribution with the purpose of contributing mainly to the reinforcement of the preventive methods and later curative that must be implemented for the Mediterranean basin;
- Be done over fairly short periods (two years or less) ;
- To have very important amounts with the aim to acquire better logistics and certain flexibility engaging the wished consultants ;
- Implicate a large enough local and national public with the aim to give responsibilities to the maximum of the governmental and non-governmental structures ;
- Multiply the concertation meetings between the CARs and the project manager with the purpose to avoid double employment and to contribute to the good execution of the project.

INTEGRATED MANAGEMENT PLAN FOR THE MENOR SEA AND ITS AREA OF INFLUENCE (MURCIA, SPAIN)

Francisca Baraza Martínez. Agriculture, Water and Environment Council.

Seminary on the Judiciary Instruments and the management for the conservation of the Mediterranean coastal areas. Mallorca, Balearic Islands, 6th to 8th of June 2002

1.- INTRODUCTION

The Menor Sea is a hipersaline lagoon of 135 km², which makes it the biggest humid area in Murcia and the biggest coastal lagoon in the Western Mediterranean. It has an avarage depth that goes from 3 to 4 m., and its maximum depth reaches 6 m.. In the lagoon there are 5 important islands of volcanic origin. It is separated from the sea by a sandy band of 22 km. in length, called La Manga, crossed by five canals more or less functional that communicate both seas.

The surrounding territory is defined by the influence area or drainage basin of the flowing waters towards the Mar Menor that comprises totally or partially the municipalities of San Pedro del Pinatar, San Javier, Los Alcázares, Fuente Álamo, Torre Pacheco, Cartagena, Murcia and La Unión. It is an extensive plateau interrupted only by volcanic outcrops (Carmolí, La Atalaya, Ventura, etc.), the Cabezo Gordo and by watercourses that flow into the lagoon.

It is an area of great importance from the environmental, economic, social, cultural and recreational point of view.

The environmental and cultural values of the Menor Sea and its surrounding area are very well known. The first, in particular the birdlife and the natural habitats satisfy different established criteria by protection rules of biodiversity at a regional, European and international scale (Red Natura 2000, RAMSAR Convention and the Barcelona convention. In the regional framework, the Law 4/92 of the Management and Protection of the Environment of the Region of Murcia declares as protected the Regional Parks of "Salt marshes and sandy areas of San Pedro del Pinatar" and the "Calblanque, Monte de las Cenizas" and "Peña del Águila"; the Protected Landscape of the "Open Areas and islands of the Menor Sea"; and the natural areas "Cabezo Gordo" and the "Islands and islets of the Mediterranean coast". At an international scale, in the framework of the Menor Sea 7 proposed areas are located by the regional government as Places of Communitary Importance that could be included in the Red Natura 2000 ("Menor Sea", "Cabezo Gordo", "Open areas and islands of the Menor Sea", "Salt marshes and sandy areas of San Pedro del Pinatar", "Calblangue, Monte de las Cenizas" and "Peña del Águila", "Submerged coastline of the Mediterranean" and "Islands and islets of the Mediterranean coast"); 4 Areas of Special Protection for the Birds, ZEPA, ("Salt marshes and sandy areas of San Pedro del Pinatar", "Menor Sea", "Grosa Island" and the "Hormigas Islands"). The "Menor Sea" was declared Wetland of International Importance by application of the "Convention Relating to the Wetlands of International Importance Especially as Habitat of aquatic birds" (RAMSAR). Recently it has been also included on the list of Specilly Protected Areas of Mediterranean Importance (SPAMI) as stated in the "Protocol on Specially Protected Areas and the Biological Diversity in the Mediterranean" (Barcelona Convention).

At the same time, it presents a high interest for tourism and fishing. Leisure activities (nautical sports), medical, military, transport, fishing and shelfish fishing are carried out with different intensities.

Tourism and mainly agriculture are the main economic activities of the area. The traditional agriculture has been replaced by intensive cultivation based on the great contributions of energy, water, fertilizers and biocides.

This leads the lagoon and its surrounding area to support an important variety of impacts such as the dumping of solid waste, alteration of the hydrolic regime, recreational pressure, crops and urbanizations, dredging, drainage and farming residues, urban liquid waste, flight paths, motorboat traffic, fillers and eutrophization. This situation makes evident the existing need to search for mecanisms or strategies that allow the compatibility between the pressures of development and the objectives of the conservation of the natural resources.



2.- TERRITORIAL FRAMEWORK OF THE PLAN

The area of study for the development of the plan comprises all the drainage basin of the Menor Sea, the coastal lagoon, a strip of the Mediterranean coast and its islands, occupying a total area of approximately 1764 km².

3.- OBJETIVES OF THE PLAN

The aimed objectives are: At a territorial level

- To promote a sustainable development of the area of the Menor Sea and its area of influence, Joining the protection and conservation of the natural resources with the socio-economic development and the quality of life of the area.
- To promote the inter-administrative coordination and the participation of all the social sectors involved in the area.
- To promote the application of the conservation, restoration and improvement of the measures of natural resources that require it.
- To Formulate the orientative criteria of the sectorial politics and planners of the economic and social activities, public and private, so that they are compatible with the conservation of the environment.
- To develop an integrated management model of the coastal area.

At a methodological level

- To describe the general structure of the territory of the Menor Sea and its area of influence defining the existing problems and the evaluation of different actions to treat them, such as the guidelines of territorial development shown or expected.
- Systematic description of the main uses of the territory and of the repercussions and impacts derived.
 - Description of the natural environment, including an inventory of the natural resources and their state of conservation to evaluate the possibilities of use and exploitation that they could have.
 - Inventory and analysis of the impacts derived from the actual use and the expected ones before the possible changes of use.
 - ✓ Evaluation of the risks that could produce the expected changes.
 - Inventory of the Protected Areas and their specific analysis in relation to the description of the environment and the possible intervention or sustainable development.
- To create an organ of Administrative Coordination, a Management organ, a participation organ and a scientific comittee. They will all have to be participants so that they are involved from the beginning of the project in the planning and management of the coastal area.

At the analysis and diagnosis level

- To determine the objectives and lines of action of the territorial politics that appear in the different territorial units described in the area.
- Establish criteria of action, compatibility and programme coordination amongst the different administrations that act territorially in the Murcian Community.
- To define the compatibility or adaptability criteria of the urban planning and other existing plans.
- Establish criteria for the location and execution of infrastructure, equipment and services in general.
- Specify the conditions to which the proposals must submit because of their structural character of the territory or supramunicipal effect, if they require it.
- Analysis of the interactions between the directives of the general economic planning of the Autonomous Community and the present Plan.
- Study of the future scenarios of the area, for the next 20-30 years, taking into account the effects of the Plan and the external factors to this project.

4.- PLANNING AND MANAGEMENT

From the analysis and diagnosis a catalogue of iniciatives or plans of action will be elaborated to make compatible, on one side, the use and the conservation of the natural resources, especially in the area declared ZEPIM and other areas of interest for the conservation and, on the other side, to promote and help the socio-economic development of the area, According to the the objectives marked in this Plan.

In these iniciatives the necessary corrective actions will be included depending on the detected problems to improve the conservation levels of the natural resources in the framework of the Plan.

The result of the analysis will materialize in a pilot-model of integrated plan of sustainable development, that includes directive and management models for the territorial framework in all and for the SPAMI area, the areas of Red Natura 2000, or other areas of interest for the conservation, through a planning in articulated cascade starting from a Director Plan of the Territorial System, which includes the following aspects:

a) the territorial structure: To determine the sustainable development strategy that has to be adopted, it is necessary to establish previously a territorial system of reference that allows us to implement the different measures, directives or action programmes and to limit their action framework.

The framework will be structured territorially, on the base of the diagnosis, in three areas in which action will be taken and different plans and programmes within this Director Plan will be set in motion.

- Nucleus area: SPAMI, Natural Protected Areas, Places of Community Importance, public domain, other areas of interest.
- Connection areas: between the different nucleus areas.
- Absorption areas: defined in the rest of the territorial framework.

The need of limiting or promoting determined uses and activities will be analized in each one of the frameworks obtained in the zoning, In agreement with the results of the diagnosis.

b) the objectives and general guidelines for the system (with regard to conservation, socio-economic development, exploitation of resources, sectorial politics, etc.);

- c) the management and planning instruments;
- d) the social agents and administrations involved;
- e) the necessary resources;
- f) the evaluation and monitoring.



From this level, the specific planning is considered at a smaller scale:

- Management Plans, directives and conservation measures for each one of the areas or group of areas defined as nucleus areas.
- **D** Zoning of the territory in each nucleus area and its aeras of influence.
- □ Regulation of uses, activities.
- □ Iniciatives for the protection and conservation of the natural resources.
- Sectorial Plans of application in the whole area, subdivided into programmes:

- Programme of conservation of the natural resources: species, habitats and plant communities, ground, landscape, wetlands and water resources, etc.;
- Programmes directed to the activity sectors: agricultural and livestock, fishing and aquiculture, public use, tourism, infrastructures, industry, cultural heritage.

These Plans and Programmes, will focus on the conservation of the natural resources and the promotion of uses and activities that in the framework of the sustainability allow the development of the area.

MANAGEMENT PLAN Table


PROTECTED AREAS IN THE MEDITERRANEAN. TOWARDS INTEGRATED LAND MANAGEMENT. (2002-2004)

Andrés Alcantara

All Mediterranean countries have now set up networks for protected areas in order to protect unspoilt, representative terrestrial and marine areas. Some of these areas are uninhabited, while others depend on the active involvement of the local population in the immediate or surrounding areas to ensure continuity of their natural value. Both incentives for the conservation of biodiversity and regulations for sustainable use vary in flexibility from one country to another. Many continue to apply a "protectionist approach", with very centralised legal control over certain territorial areas that provides poor linkage with the local populations, resource users or local economies, despite changes in legislation and attitudes. Often in such centrally controlled situations there may be no links with devolved authorities (i.e. regional governments or equivalent) or conflicts of interest may arise between the different ministries involved (i.e. when new Departments of the Environment are set up). As a result, the need for inter-ministerial co-ordination between the ministries responsible for existing protected areas, such as the Ministries of Agriculture or Forestry must be considered. Land-use policies outside the protected areas themselves, in both coastal and semi-mountain areas, are also acknowledged as factors contributing to unique Mediterranean landscapes.

The ability to perceive protected areas as an opportunity, rather than a limitation for local development provides scope for work in the region. Several countries have already gained experience in this area.

The IUCN Mediterranean Office – as an organisation with its members, commissions and presence in national, regional and international organisations as well as relations with donors and funding bodies – stands as the most appropriate body to launch and promote co-operation in conjunction with regional authorities who are responsible for direct management.

The World Parks Congress to be held in Durban (South Africa) in September 2003, WPC 2003, provides impetus for the process that has already been launched. This event will not only act as a showcase for achievements forged in Mediterranean protected areas but will also lend a voice to the experiences and needs of these areas to face the 21st century, as well as provide a reference point for active policies implemented after WPC2003.

The project has been devised in accordance with the following documents that have been endorsed by IUCN members and partners: Guide for the management of protected areas according to IUCN categories, Parks for Life, The Cilento Declaration (1999) and the Convention on Biological Diversity.

The potential areas for co-operation within the Mediterranean pinpointed by the experts meeting at Cilento have been considered for this purpose:

- Promote training for managers
- Devise legal instruments

- Set up management standards
- Develop tourism based on nature
- The use of protected areas as a means to revitalise rural and local economies.
- Promote the use of micro-reserves.
- The relationship between fisheries and marine PAs
- Enhance management capacities

This involves a long-term strategy comprising knowledge (K), empowerment (E), and governance (G):

1.To ensure that knowledge, information and experience on protected areas is at the disposal of conservation, sustainable use and rehabilitation work. (K)

2. To promote and support IUCN Partners and Commissions in the region in their endeavours in the fields of research, policy, management and conservation of protected areas. (E)

3. To promote Mediterranean policy on conservation and sustainable development in protected areas, both on a global and regional scale, and to support measures for policy implementation. (G)

Goal: To ensure that consideration is given to Mediterranean protected areas within all levels of decision-making on sustainable development.

Objectives:

- 1. To renew commitment to Protected Areas in the Mediterranean.
- 2. To launch strategic alliances with sectors relevant to PAs.
- 3. To link the CBD to PAs in the Mediterranean.
- 4. To assist in the planning and management of PAs and their integration into all sectors by providing strategic advice to policy makers.
- 5. To strengthen capacity and effectiveness of PA managers through the provision of guidelines, tools and information.

6. To persuade public and corporate donors, as well as governments, of the importance and added value that economic investment in PAs can generate.

Products:

1. Achievement of a consistent, representative system of Mediterranean PAs that is fully adapted to the 21st century.

2. Mediterranean models for alliances and associations within the various sectors involved.

3. Adaptation of protected areas to new needs, to new technical and political premises, as well as to international conventions, in particular CBD, for planning and connectivity.

4. Strengthening of management capabilities of those responsible for PAs.

5. Enhancement of data bases (at an institutional level, on organisations, experts and geographical data) and information exchange.

6. Setting up 3/4 areas for action in line with WPC2003 for PA s in the Mediterranean over the coming years.

Description:

The project will entail the following:

• Enhancement of the available data base on members and bodies with interests in PA s throughout the Mediterranean.

Work will be conducted through the Centre for Mediterranean Co-operation to ensure access to information through digital computer systems drawing on data bases set up during the process. Entries are to be identified according to priorities set by participants and to pre-existing criteria applied to WCPA data bases, so that immediate referencing is readily available for any expert, member, body or partner who wishes to access fast, accurate and reliable information.

• Organisation of seminars and panels

Panels, seminars and other meetings will be organised, co-ordinated and monitored as required, according to funding availability, to ensure a smooth work-up to Durban.

The aim is to gather experts at different venues around the Mediterranean, under the sponsorship of various bodies, to focus on four initially selected priority areas, namely: Connectivity (Links with the landscape); Governance (new forms of working together); Training (new skills for the new century) and Gaps in the system (developing representative systems).

• Organisation of a Mediterranean Meeting

A forum on the Mediterranean is to be organised in Murcia (Spain) in February 2003. Over one hundred members and bodies are expected to take part in this meeting that is to be the reference point for Durban in our scope of action.

• Producing material, documentation and know how for WCP2003.

The IUCN is to develop materials and documentation in a variety of printed and digital formats in conjunction with other bodies involved in the process to disseminate the Mediterranean experience. Particular emphasis will be placed on technology and knowledge specifically related to Mediterranean PAs and dissemination of this know-how.

• Enhance the existing organisation and co-ordination between WESCANA, ERO and CMC.

A series of focal points are to be set, together with co-ordinated actions throughout IUCN that will enable implementation of the KRAs and the four-year programme for the Mediterranean eco-region.

KEY RESULT AREA	PROGRAMME THEME	MEDITERRANEAN PROGRAMME RESULTS
Effective management and restoration of ecosystems	Biodiversity conservation Biodiversity conservation Sustainable resource use Islands	 The effectiveness of PAs at regional level is assessed and improved Multi-country/transboundary actions for biodiversity conservation are supported The role of marine PAs in supporting artisanal fisheries is assessed and promoted Experience on the management of island protected areas is shared
Key institutions, agreements, processes and policies	Biodiversity Conservation Biodiversity & Prot. Areas	 Refinement of legal instruments for protected areas is undertaken Mediterranean inputs to the World Parks Congress (2003) are promoted
Equitable sharing of costs and benefits	Biodiversity Conservation Sustainable resource use	 Protected areas are used to support and revitalise rural economies. Experience in integrating conservation and local economies is developed and shared
Assessment of biodiversity and of related social and economic factors	Biodiversity Conservation	 Information on species and PAs is made available to regional actors

The programme is to be run in co-ordination with the following regions: WESCANA, Europe; and in conjunction with ERO, CMC and WCPA.

Partners committed to the process:

IUCN-CMC has already set up links with environmental, co-operation and corporate bodies on a local, national, regional and international scale to implement activities outlined in the document. Among these are Town Councils, County Councils, the Regional Governments in Andalusia, Murcia, Catalonia and the Balearic Islands; the National governments of Spain and Italy; the European Union, the Council of Europe; Barcelona Convention, RAC/SPA, Universities, Spanish International Co-operation Agency (AECI), Europarc, IUCN Commissions. And we are discussing with the following partners: Scientific Institutes in the Mediterranean Basin, International Co-operation Agencies in Italy and France; national committees in Morocco, Tunisia, Egypt, Jordan, Lebanon, Spain, Syria, France, Italy and the WESCANA and ERO offices.

Possible Partners:

Local, national and international social, economic and financial bodies.

Duration

The work-up to Durban: 18 months. Overall process: 3 years

Budget

The total budget for activities for the first 18 months amounts to 370,000 Euros

Ctivities	March 2002	April 2002	May 2002	June 2002	July 2002	August 2002	Sept 200 2	Oct 200 2	Nov 200 2	Dec 2002	Enero 2003	Feb 2003	Marzo/ Sept 2003
Roses,Catalonia (March,2002) Marine Protected Areas Organised by RAC/SPA and the Regional Government of Catalonia	*												
WCPA monitoring committee meeting. Italy		*											
WCPA Europe-Austria (June, 2002) Meeting of European members of the Mediterranean				*									
Palma de Mallorca, June (Protected Marine Areas) PAM and Balearic Islands Regional Government				*									
Andalusia, (September, 2002) Connectivity, links in the landscape Andalusian Regional Government							*						
Catalonia, WCPA- Mediterranean (November,2002) Governance Barcelona Provincial Council and Regional Government of Catalonia									*				
Murcia (February,2003) Mediterranean Multi- workshop Meeting Caja de Ahorros del Mediterráneo												*	
(Other possible events, pending confirmation, in: Italy, Catania,) Gaps in the system							ż ₩?						

Key: Green, work on measures; Blue, monitoring. Event :*

SPECIALLY PROTECTED AREAS OF MEDITERRANEAN IMPORTANCE

Alfonso Polvorinos

Palma de Mallorca, 7th June, 2002

INTRODUCTION

With the intention to create a new figure of protection in the framework of the Mediterranean basin, the member countries of the Barcelona Convention start to work based on the Protocol of Specially Protected Areas and the Biological Diversity in the Mediterranean aproved in 1995 –which substituted the previous Protocole AEP of Geneva 82-, and they write the bases for the creation of a new figure that will allow, under the protection of the United Nations, the protection of the Mediterranean with the necessary approval, supervision and direct implication of all the member countries of the above mentioned Biodiversity Convention.

The new Protocol comes into force in Decembre 1999 and two years later, in Novembre 2001, and after a thorough analysis of the values and criteria argued for its protection, the first 12 Areas of the "List of Specially Protected Areas of Mediterranean Importance" or "SPAMI List" are declared. Therefore a new and interesting figure of protection of marked international character is born. Without going into the management, zonification, local participation and so on aspects, hereby the main characteristics of the Protocol and the necessary steps for the declaration of the above mentioned areas are shown.

PROTOCOL-SPA BIODIVERSITY

Article 1

CONCEPTS / DEFINITIONS

Without going deep into the definitions, it is necessary basically to point out a series of concepts that are dealt with frequently in the Protocol:

- *Convention* refers to the Convention for the protection of the Mediterranean Sea against the pollution. Agreed in Barcelona on the 16th of February 1976 and amended in Barcelona in 1995. - *Biologicas Diversity or Biodiversity* means the variability between living organisms including: terrestrial, marine and other water ecosystems and the ecological complexes of which they are a part: this includes intraspecific diversity, interspecific and of ecosystems.

- Endangered species.- any species that are in danger of extinction in their own territory.

- Endemic species.- any species whose territory is restricted to a limited geographical area.

- *Threatened species.*- any species that could become an endangered species in a predictable future and whose survival is improbable if the factors that cause their decline or the degradation of their habitat continue operative.

- *Status of conservation of species* means the total of the influencies acting on the species that might in the long term affect their distribution and abundance.

- Parties means the contracting parties of this Protocol.
- Organization refers to the organization referred to in article 2 of this convention.
- Centre refers to the Centre of Regional Activities for the Specially Protected Areas.

Article 2 GEOGRAPHICAL FRAMEWORK

The area in which this Protocol is put into practice will be the Basin of the Mediterranean Sea, refered to in Article 1 of this Convention and in which all the Mediterranean waters are included – thanks to the expansion of the geographical framework with the new Protocol-, including the bottom of the sea and subsoil, as well as terrestrial coastal areas.

Article 3 GENERAL OBLIGATIONS

1.- Each Part will take all the necessary measures for:

- a) Protect, preserve and manage in a sustainable way the areas of cultural and natural value for the establishment of the Specially Protected Areas (SPA).
- b) Protect, preserve and manage threatened or endangered species of flora and fauna.

2.- The Parts will cooperate directly or through the competent international organization in the conservation and the sustainable use of the biological biodiversity in the area in which the protocol is implemented.

3.- The Parts will identify and carry out an inventory of the components of the biological diversity which are important for the conservation and the sustainable use.

4.- The Parts will adopt strategies, plans and programmes for the conservation of the biological diversity and the sustainable use of the marine resources.

5.- The Parts will control the components of biological diversity referred to in the third paragraph of this article and will identify processes and activity categories that have or could have a negative impact in the conservation and the sustainable use of the biodiversity, as well as controlling their effects.

6.- Each Part will implement the mesures anticipated in this Protocol without prejudice to the sovereignty or the jurisdiction of other Parts and other States. Any mesure carried out by one of the parts to enforce these mesures, will agree with International Law.

Artículo 4 PROTECTION AREAS

OBJECTIVES

The aim of the Specially Protected Areas (SPA) is to safeguard:

- a) The marine and coastal ecosystems to ensure their viability in the long term and to maintain their biological diversity.
- b) Habitats that are in danger of disappearing in their natural area of distribution reduced as a consequence of their decline.
- c) Habitats of difficult subsistence and reproduction and recuperation of endemic endangered or threatened species of flora and fauna.
- d) Sites of particular importance because of their scientific, aesthetic, cultural or educational interest.

Artículo 5 ESTABLISHMENT OF THE SPECIALLY PROTECTED AREAS (SPA)

1.- Each Part could establish protected areas in the coasts and seas object of their jurisdiction and sovereignty.

2.- If object of their jurisdiction and sovereignty one of the parts tries to establish a SPA on the border or limit of an area under the sovereignty and jurisdiction of another Party, they will make an effort of cooperation with views to achive an agreement in the measures that will be taken to establish a SPA or to adopt some appropriate measure.

3.-If a Party tries to establish a SPA next to the border or within the limits of an area under the sovereignty and jurisdiction of another State that is not a party of this Protocol, it will try to cooperate with the State as in the previous paragraph.

4.- If a State that is not Part of this Protocol tries to establish a SPA next to the border or limits of a zone under the sovereignty and jurisdiction of a contracting Party of this Protocol, the latter will make an effort to cooperate with this State. The same as in paragraph 2.

Article 6

MESURES OF PROTECTION

The contracting Parties, in accordance with international law and taking into account the characteristics of each SPA, will take the required measures and particularly:

- a) The effort of the application of other protocols for the Convention and of other treaties in which they are parties.
- b) Forbid the dumping areas and other substances that directly or indirectly can impair the integrity of the SPA.
- c) Regulation of the passage of boats and any anchoring.

- d) Regulation and introduction of any aloctonous species in a particular SPA or of genetically modified species, as well as the introduction or reintroduction of species that are or have been present in the SPA.
- e) The Regulation or prohibition of any activity that leads to the exploration or modification of the soil or the exploitation of the subsoil, in the sea as well as in the land.
- f) Regulation of any investigation activity.
- g) Regulation and prohibition of fishing, hunting, animal and plant capture in the SPA.
- h) The regulation, and if necessary the prohibition, of any activity or act that could affect the species in a negative way, put in danger the state of conservation of the ecosystems or species, or damage the natural or cultural characteristics in the SPA.

Article 7

PLANNING

- 1. The Parties must, in acordance with the rules of international law, adopt measures for the planning, management, supervision and control (always with an integrated approach) of Specially Protected Areas.
- 2. Such measures must include for each Specially Protected Area:
- a) Developing and adopting a control plan that specifies the legal and institutional framework, and the applicable protection and control measures.
- b) the continuous control of the ecological processes, habitats, population dynamics, landscapes, as well as the impact of human activity.
- c) the active compromise of the local communities and population, in the control of the Specially Protected Areas, including assistance to the local inhabitants affected by the establishment of such areas.
- d) the implementation of mecanisms to finance the promotion and control of these protected areas, as well as the development of activities that guarantee a compatible control with the objectives of such areas.
- e) the regulation of activities compatible with the objectives by which these protected areas are established and the terms related with such permits.
- f) the formation of technically qualified personnel, as well as the development of an appropriate infrastructure.
- 3. The Parties must ensure that the plans of national contingency incorporate measures to respond to incidents that could cause damages or constitute a threat for the Specially Protected Areas.
- 4. Once these protected areas, either terrestrial or marine, have been established, the parties must make an effort to ensure the coordination of the administration and control of the Specially Protected Areas as a whole.

SPECIALLY PROTECTED AREAS OF MEDITERRANEAN IMPORTANCE (SPAMI)

Article 8

ESTABLISHMENT OF THE LIST OF SPECIALLY PROTECTED AREAS OF MEDITERRANEAN IMPORTANCE.

- 1. By virtue of promoting the cooperation in the control, management and conservation of natural areas, as well as in the protection of endangered species and their habitats, the Parties will draw up a "List of Specially Protected Areas of Mediterranean Importance" referring to it as the SPAMI List.
- 2. The SPAMI List can include places that:
 - are of importance to preserve the components of the Mediterranean biodiversity.
 - contain specific ecosystems of the Mediterranean.
 - are of special scientific, aesthetic, cultural or didactic interest.
- 3. The parties agree:
- a) to recognize the singular importance of these Mediterranean areas.
- b) to observe the SPAMI applicable measures and not to authorize nor start activities that could hinder the objectives for which the SPAMI was established.

Artículo 9 PROCEDURE FOR THE ESTABLISHMENT AND LIST OF SPAMIS.

- 1. The SPAMIs can be established following the procedure planned for this purpose in paragraph 2 of this article in:
 - a) the marine or coastal zones object of the sovereignty or jurisdiction of the parties.
 - b) areas in part or totally in deep-sea.
- 2. Proposals so that the inclusion in the list can be allowed:
 - a) By the interested party, if the Area is established in an area –already delimited- in which it has sovereignty or jurisdiction.
 - b) By two or more neighbouring interested parties, if the Area is located in part or completely in deep-sea.
 - c) By the interested parties in Areas where the limits of natural sovereignty or jurisdiction have not been defined yet.
- 3. The parties, when making the proposal for the inclusion in the SPAMI List, should provide an introductory geographical location, its physical and ecological characteristics, its legal status, its control plans and the means for its implementation, as well as a declaration justifying its importance in the Mediterranean:
 - a) when a proposal is formulated under sub-paragraphs 2b and 2c of this article, the neighbouring parties which are interested must consult each other with views to

ensure the consistency of the proposed protection, the control measures and the means for its operation.

- b) Proposals made under paragraph 2 of this article must indicate the protection and applicable control measures to the Area, as well as the means for its implementation.
- 4. The procedure for the inclusion of the proposed Areas in the List is as follows:
 - a) for each area, the proposal must be subjected to the National Focal Points, which will have to examine its agreement with the common directive adopted criteria in article 16.
 - b) If a proposal carried out with the sub-paragraph 2^a of this article is consequent with the directive and the common criteria, after the valuation, the Organization will call the meeting of the parts with the purpose of deciding on the inclusion in the SPAMI List.
 - c) If a proposal made in agreement with the sub-paragraphs 2b and 2c of this article is consequent with the directive and the common criteria, the Centre will have to communicate it to the Organization, which then will have to inform about the meeting to the parts. The desicion of including the area in the SPAMI List will be taken by the contracting parts.

As in short the intention is to protect areas where ecosystems, habitats, species, etc. that represent the Mediterranean are found, it seems logical for all these countries to be in charge of its protection and therefore that the approval is in consensus.

- 5. The parties that propose the inclusion of an Area in the List will have to put into effect the protection and the conservation measures specified in their reports as stated in paragraph 3 of the present article. The contracting parties compromise to observe the rules to ensure their observance. The Centre will inform the competent international organizations of the List and of the measures taken for the SPAMI.
- 6. The parties can revise the SPAMI List and the Centre will finally prepare a report. The frequency of revision of the List is still to be established to renew the continuity as SPAMIs.

RESOLUTION MEETING BARCELONA CONVENTION. (MONACO, NOVEMBER 2001).

Approval of the proposals to include in the List of SPAMIs the following areas:

- Island of Alborán (Spain). In this Andalusiann island and its marine depths, the abundance of flora and fauna stand out, with a great number of endemisms of Atlantic and Mediterranean character.
 - Eastern Area of Almeria (Spain). In these 6.000 hectares of submarine character (except two islate) is leasted a great diversity of types of marine betters and the best. Desidentia acception

islets) is located a great diversity of types of marine bottoms and the best *Posidonia oceanica* extensions of the Spanish coast.

- Cape of Gata-Níjar (Spain). Maritime-terrestrial Natural Park of volcanic nature with great abundance of marine depths and two wetlands. Extreme aridity and climatological characteristics which are unique in Western Europe

- *Menor Sea and Eatern coast of Murcia (Spain)*. It is the biggest lagoon in Spain. It is a salty water lagoon separated from the Mediterranean Sea by a littoral strip of dunes. The marine littoral strip and its islands are also included. Great benthonic importance.

- Cape of Creus (Spain). Eastern extreme of the Pyrenean mountain range with a very rough orography.

- *Medes Islands (Spain).* Group formed by seven islands and islets of carstic nature with great profusion of caves. Rich in marine fauna.

- *Columbretes Islands (Spain).* Group of islands and islets of small size with great ornithological importance as a breeding area.

- Port-Cros (France). Maritime-terrestrial National Park. Extraordinary abundance of submarine species and habitats.

- *Kneiss (Tunisia).* Insular archipelago located very close to the coast and representing a unique marine ecosystem in the Mediterranean.

- La Galite (Tunisia). Archipelago formed by six islands and islets of great importance in geological aspects. It includes the Mediterranean Monk Seal.

- Zembra and Zembretta (Tunisia). Islands with different types of marine soil: prairies of Posidonia, rocky bottoms and caverns.

- Sanctuary for the Conservation of marine mammals (Monaco, France and Italy). Enormous marine triangle of 87.000 square kilometres that includes the Tyrrenean Sea, the Corsican Sea, and the coasts of Toscana and of Provence. Great pelagical importance. Key site for dolfins and whales, the Sanctuary includes the common rorqual as star species.

THE NATURAL PROTECTED AREAS AS AN INSTRUMENT FOR THE PROTECTION AND SUSTAINABLE USE OF THE MEDITERRANEAN COAST. THE ANDALUSIAN CASE.

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1. Introduction.

From the estuary of the Guadiana river, border with Portugal, to Cala Cerrada, in the provincial limits between Almeria and Murcia, Andalusia has 812 Km of coast divided into two: the Mediterranean side (518 Km) and the Atlantic side (294 Km)

In the modeling and configuration of these coasts a varied group of processes take part which characterize the border between continents and oceans. From the natural point of view, the coast accomodates different habitats of species of ecological and commercial value, with high productivity and biological diversity. For the land, the coast performs besides a defensive function against natural risks caused by the storms. The dynamism of the sedimentary and erosive processes which shape the coastline and the physical and natural characteristics of the coast produce a great variety of physiographic units, amongst which the wetlands stand out, the beaches, the cliffs, the dunar systems and the eolic soils. The mouths of the rivers normally present stuaries where coastal wetlands and lagoons can be found. The fluctuations in the level of the sea in recent geological periods have produced a repeated modification on the coasts making them move forward or backwards on the continental surface, Converting the hills into islands and submerging coastal plains or abandoning beaches and cliffs inland and uncovering the bottom of the sea. Some emblematic landscapes of Andalusia like the Bay of Cadiz, the Bay of Algeciras, the Cape of Gata or the wetlands and dunes of Doñana, are the attractive result of a long history of geological construction and destruction, which are the last episodes of the neverending dialogue between seas and lands that shapes our coast.

However, the evolution of the Andalusian coast towards the actual landscape can not dissociate itself from its relative degree of anthropization, intensified from the 60's and at the same time as a sudden increase in the use pressure since the expansion of mass tourism. Until the XIX century, the main uses of the coast zones were concentrated in small fishermen enclaves and traditional commercial centres, whose close sorroundings are used as summer pastureland or to keep small orchards on favour of the close piezometric surface of the sandy areas. In some parts the trap-net sites traditionally remained, which are fisheries that take advantage of the migration of the tuna fish close to the coast like the one of Torre Carboneras in Huelva or the one of Barbate in Cadiz.

The exploitation of the salt marshes, intensified since the XVIII century meant the transformation of the wetlands for this use, until they were almost completely abandoned in the 70's. Beacon towers, fortifications, batteries, shipyards and military facilities have marked the Andalusian coast concentrating in the accesses to good natural ports like Sanlúcar, Cadiz, Malaga, Almeria and around the Gibraltar Straight, which for centuries has arouse the strategic interest of the great powers.

Out of the military and commercial enclaves, specific transformations were carried out in the provinces of Granada, Malaga and Cadiz with the introduction of tropical crops and the settlement of industries. Since the second half of the century the coastal development intensified with the appearance of industrial enclaves (Huelva capital city, Algeciras). With the tourist boom of the 60's the occupation of the coast by built-up urban areas took place and, from the Costa del Sol of Malaga, they impose a speculative model of low quality that is common to the whole of the coast. Simultaneously a new type of agriculture is introduced, more intensified, which exploits subterranean hydric resources and later the aquiculture. In the last decades the turist and leisure resources have been exploited in a massive way, developing a great urban infrastructure and the communications, which has meant a high cost for the coastal ecosystems in most cases.

In comparison to the low density of population today in the zones of the interior, the Andalusian coastal zone concentrates a third of the regional population, with a mean density of 267 inhab./Km2, reaching really important densities in some areas, like in the area between Torremolinos and the Rincón de la Victoria, with a demographic concentration of 1.381 inhab./Km2, or between the Puerto de Santa María and Chiclana de la Frontera (645 inhab./Km2). These densities show an extraordinary increase during the summer months, and in some cases, like in the municipality of Almonte for example, the increase can reach up to 171%.

2. Main Problem of the Andalusian coast.

All these groups of factors have generated an important deterioration of the Andalusian coastal landscape and of the quality of the waters, as well as a alteration of the coastal dynamics and of the coastal area. Table 1 summarizes the main human actions on the coast and their most important effects on the natural environment.

 Table 1. Actions on the coastal areas and their imminent effects.

Actions on the coast

- Control of the coastline.
- Construction of industrial port zones.
- Construction of marinas and wharves.
- Construction of promenades.
- Construction of reservoirs and dams.
- Mass development of the coast.
- Creation of access parallel to the coast
 and immediately next to the sea.
- Construcition of golf courses.
- Industrial sites.
- Creation of farming and forest areas.
- Extraction of sand.
- Extraction of water.
- Introduction of exotic species.
- Filling areas with earth.
- Over exploitation of the resources.

Effect on the coast

- Alteration of the sedimentary balance
- Alteration of the physical-natural balance.
- Fragmentation of the ecosystems.
- Loss of habitats.
- Degradation of the landscape.
- Contamination/salinization of the aquifer.
- Loss of biological diversity.
- Loss of landscape diversity.
- Loss of environmetal quality.

• Dumping of rubbish and rubble.

The effect of human activities on the Andalusian coastal environment, and the negative results observed, which are a consequence of them, has determined a change of conception in the management, making the concept of the Andalusian coastal management develop in the last decades from the economic and urbanistic approach towards the protection of the environment and of the natural resources.

Tradicionally, the management of the coastal zones has been identified as a sinonym of coastal engineering, aming at achieving the stability of the coast through great works of physical transformation of the environment. The actions of the different public administrations in the last decades, operating at different territorial levels and sometimes with contradictory objectives, have focused entirely on the exploitation of the coastal environment through the location of industries, the creation of commercial ports, fisheries and sailing clubs and the exploitation of the natural resources and of leisure.

In the last years the viability and efficency of the traditional coastal engineering model has een reconsidered, because of the resultant impact on the coastal dynamics and because of the economic burden that its maintenance means, as the application of isolated and unconnected politics that have greatly increased the degradation of the coastal zones. In this sense, a new philosophy of intervention appears, which has a deep knowledge of the processes, less agressive and focussed towards an integrated management of the coastal zones directed mainly towards an ecologically durable development.

3. Juridic instruments for the protection and planning of the coast.

Until the beginning of the 80's, the jurisdiction on the coast were exclusively a responsability of the State. The legal instrument was based on the "Ley de Costas" ("Law of the Coast") of 1969, with a jurisdiction character, and on the "Ley de Protección de las Costas Españolas" ("Law of Protection of the Spanish Coast") of 1980, with a sanction character. It was completed with the legislation on Ports ("Ley de Puertos" of 1880, "Decreto ley de Puertos" of 1928 and the "Ley de Puertos Deportivos" of 1969), the "Ley General de Obras Públicas" and the legislation on "Paseos Marítimos" (Laws of 1918 and 1957).

As a reponse to the great pressure and diversit of uses developed on the coastline and to the lack of an adequate legislation, in 1988 a new Law of the Coast was aproved refferring basically to the management and conservation of the natural heritage of the Maritime-Terrestrial Public Domain which, together with the Law of the Ground (1956), constitutes the basis of the actual management of the coast. The main objectives of this Law are the defense of the balance of the coastline, the protection and conservation of the natural and cultural values, the rational exploitation of the resources and the guarantee of the use and public use of the coast.

In 1991, with the Statute of Autonomy of Andalusia, the Autonomous Community received the jurisdiction in regulation and planning of the coastal area. However, the priority of the coastal zone is still of the State (Sentence 149/1991 of the Constitutional Tribunal) and the Law of the Coast (1988) constitutes the main legal instrument. From the 80's the main legal mesures focused

on making compatible the coastal development and the protection of the Andalusian coast were developed: Especial Plans of Protection of the Physical Environment and classification of Protected Areas of the different Andalusian provinces, Law of Protected Natural Areas (1989), Regional Directives of the Coast (1990) and Law of Environmental Protection of Andalusia (1994). The course of action is directed to the conservation of the ecosystems, limiting those activities that alter the natural dynamics and their geomorphological and ecological characteristics, through the classification of especial protection of these ecosystems in the urban planning and in the evaluation of the environmental impact of certain activities (eg. mining).

Implemetation Regulation of the Andalusian coast:

- Decree-Law 14/1996. by which the regulations of the coastal water are approved, of application to the waste, whatever its nature or state, that directly or indirectly are dumped into the public domain maritime-terrestrial from land.
- Law 8/1988, where the managing of the marinas is established, as tourism or leisure infrastructures, and it establishes the limitations of activities based on the rationla use of the natural resources, the conservation of the coastal ecosystems, the integration of the works and facilities in the physical environment, the absorption of the landscape and the compatibility with the general ecosystems and other urban determinations.
- Law 4/1989, on the conservation of the natural areas and the conservation of the wild fauna and flora. It aims at the estrablishment of norms of protection, conservation, restauration and improvement of the natural resources and, in particular, the ones relative to the natural spaces and to the wild flora and fauna.
- *Law 2/89*, by which the inventory of Protected Natural Areas of Andalusia is approved, and additional measures for their protection are established. It aims at organizing the management of the natural resources.
- *Decree 118/1990*, by which the Regional Directives of the Andalusian Coast are approved.
- *Law 22/1988* of the Coast, which aims at the determination, protection, use and police of the public maritime-terrestrial domain.
- *Royal Decree 681/1980* of plannig of the national fishing activity, where the figure of Marine Reserve is created.
- *Law 3/2001*, by which the state's marine fishing is regulated. The following areas are created with this law:
 - Marine Reserves
 - Marine Arrangements Areas
 - MARINE RESTOCKING AREAS

4. Environmental Plans and strategies in Andalusia with an impact on the littoral

The actions carried out on the Andalusian coast have focused so far on the correction of the urban and industrial waste and on the improvement of the infrastructures and equipments related with the use as holiday resorts. In connection with the first aspect, from the Autonomous administration several correction plans have been set in motion, which have contributed to an substantial improvement of the quality of the coastal waters in the Andalusian territory. In relation with the second one, we have to highlight the work carried out in the last years by the local corporations, which has resulted in a great number of blue flags given by the European Community to the Andalusian beaches.

Amongst the plans and strategies with direct or indirect implications on the Andalusian coast the following are included: the Andalusian Strategy of Biodiversity, the Andalusian Strategy of Geodiversity –due to the existence in the RENPA of coastal areas with a high geological value like the Cape of Gata-Níjar Natural Park, the "Plan Forestal Andaluz" ("Andalusian Forest Plan"), which contemplates amongst its objectives the conservation and sustainable management of the areas of the RENPA or the Environmental Plan of Andalusia (1997-2002). Amongst them, the Coastal Environmental Improvement Plan should be pointed out, which is included in the Andalusian Environmental Plan, and whose general objective is that of recuperating the deteriorated areas and the conservation of the coastal environmental quality on the littoral is hoped to improve, reducing the negative impacts produced by the urban built-up urban areas and by the productive activities, planning the uses adequately, combinig the protection of the maritime-terrestrial public domain and the use and leisure activities, preserve the coastal ecosystems, protecting the habitats and the associated biological resources; and recuperate and preserve the quality of the marine waters.

However, amongst the environmental Plans and Strategies of Andalusia, it is the process boosted by the General Management of the Network of Natural Protected Areas and Environmental Services of the Environment Council, *The Strategy of the RENPA*, the one of more incidence on the marine and coastal protected areas. The Strategy, which committed to an administrative and ecological net managed and planned at a systematic level and which intends to reconcile the conservation of nature with the exploitation of the assets and services, has been set in motion on the basis of the experience gained through the different stages of the management of the natural Andalusian heritage for many years. It has been considered as a dynamic, flexible and gradual process which will reflect its final results in an Action Plan agreed by consensus. Nowadays, the first stages of development of the Strategy have started and the preparation of Sectorial Plans has begun, such as the Andalusian Wetlands Plan and the Andalusian Marine Areas Plan, amongst others. On the one hand, the Andalusian Wetlands Plan intends to integrate and coordinate under the same conceptual framework and action strategy, the actions in the 114 water sites that constitute the natural heritage of coastal and inland wetlands of Andalusia, of which 89 are included today in areas declared under different figures of protection. However, the Plan for Andalusian Marine Areas has been concieved as an intrument for the implementation of the Strategy of the RENPA to the whole of the protected marine areas of the Andalusian coast.

5. Coastal Areas of the RENPA.

The structure of the RENPA, as referred to in the previous paragraph, is being carried out with an Strategy that tries to give consistency to a wide, interconnected and homogeneous net, with an only and agile administration in which the protection of the natural resources is guaranteed, making them compatible with a sustainable development of the municipalities in which these natural areas are located.

Nowadays, there is a great number of coastal systems included in the Andalusian Protected Areas Net, amongst which are included 1 National Park, 4 Natural Parks, 12 Natural Places, 5 Natural reserves, 2 Periurban Parks and 7 Natural Monuments.

In these coastal areas of the RENPA, which constitute the most important ecological reserve of our coast, on its terrestrial side, a great diversity of coastal ecosystems is found, woods, bushes, wetlands, lagoons, dune fields, cliffs and littoral sand spots, where vertebrated and invertebrated species live in one of the biggest zoological treasures of Andalusia.



Figure 1. Andalusian Protected Areas Net (RENPA), as shown in the figures of protection contemplated in the Law 2/89, by which the inventory of the Protected Natural Areas is approved and aditional measures for their protection are established.

The value of these protected areas lies besides in their importance as a tool in the territorial articulation and because they constitute ideal environments for the generation of new employment sources. This new vision of the protected spaces contrasts with the conceptual framework on which the management of the protected areas was based through most of the XX century, in which the conservationist point of view prevailed and any type of human activity was considered as a negative impact on the ecosystems. This recognition of the importance of the protected areas as a envigorating tool for the economical development of the local population, and as critical components of a general conservation strategy is framed in one hand in the Río Summit '92, where it was stated the need to promote management models in the natural protected areas in which the local population was the main figure of the area and the main beneficiary of the assets and services of it, and on the other hand, in the IV World Congress of the Parks, held in the same year, where new management models were proposed in which the protected areas were not considered as islands, but as nets of interconnected natural areas in which face together the conservation of nature and the sustainable exploitation of the resources.

In the framework of the RENPA, the concept of protected area has evolved towards a systematic approach, in which these natural areas are part of an ecological and economic system. In this ecological network that forms each protected area, the conservation objectives are presented at an ecosystem level, in relation to the biological diversity and at an anthropic level, in relation to the cultural diversity and the maintenance of the traditional use systems. Under this new perspective, the

management of the protected areas in Andalusia is based nowadays in the promotion of those socioeconomic actions of low impact that give value and preserve the natural resources, and the RENPA has strengthened not only as a network of areas where to preserve the natural resources of Andalusia but also as a platform from which to promote the sustainable development of the population involved. This new concept of conservation incorporates natural, social, cultural, political, economic and technological factors, which forces the need to adopt important modifications in the models of use of the protected areas. In this sense, one of the key tools for a correct management of these areas, where human settlements are included, are the Sustainable Development Plans (PDS). The final objective of these Plans is the improvement of the level and quality of life of the population living in the context of influence of the natural parks. This objective is achieved through the promotion of actions in which the conservation is favoured by the shared planning and management between competent administrations and the local population, and when the latter makes the best use of the opportunities of the natural area as strategic assets for the development. These plans mean an important effort of interinstitutional coordination between the different Councils of the Andalusian Government ("Junta de Andalucía"), the different territorial administrations and the local actors. In the drawing up of these plans it is fundamental to consider the local pre-existent iniciatives and the demands and opportunities that the environmental sustainability for the local economic development presents. In this sense the Sustainable Development Plans are participative plans, and their success will depend on the level of involvement of the local population in the different development iniciatives formulated in them. Nowadays, there are in Andalusia two natural parks where these tools of planning and management are being used, Los Alcornocales and Sierra Mágina and amongst the other eight that are in preparation are included the coastal natural parks Cape of Gata-Níjar and De La Breña and Marismas del Barbate.

On the other hand, in this same course of promotion of the sustainable development, and taking into account that the protected areas of Andalusia have suffered an important depopulation in the last decades, from the RENPA different iniciatives have been undertaken with the purpose of fixing the population involved in these natural areas. In this sense, the Environmental Council, within the communitarian support framework, has implemented in the last years different socioeconomic projects in protected areas. Amongst them stand out ADAPT (Adaptation of enterprises to the sustainable development of the Andalusian Natural Parks), Mediterranean Parks of the XXI Century (I.C.NOW) or the project Teleworking in Natural Parks, from which important achievements have been obtained about the population dynamics, with the improvement of the labour in the protected areas.

However, one of the iniciatives of great importance in the context of the coastal protected areas, which continues course to guarantee the generation change in the natural areas is the Southatlantic project, invigorateing work in the Natural Protected Areas of the Andalusian coast, in the framework of the European Strategy for the Employment, within the iniciative EQUAL. With this project, recently started and in the course of action of a group of municipalities integrated in protected coastal areas of Andalusia, the Environmental Council of the Government of Andalusia, as a member of the Development Association of such project, intends to improve the capacity of professional insertion of those groups with a special difficulty of access to the labour market, affecting specially the activity sectors linked to the endogenous resources with the greatest potencial and under the criteria of sustainable development.

This project appears as an answer to the socioeconomic situation that is characteristic of the municipalities of the Andalusian coast. In general, in the coastal context of Andalusia there are high

unemployment rate and a low income *per capita* for different structural reasons. In some cases the fishing activity has reduced enormeously because of the lack of available fishing ground, in others, the shipping rationalization has caused an increase in the unemployment that has not been absorved by any other sector, and ,on the other hand, the declaration of vast areas of the coast as protected areas, has stopped an unsustainable turistic model which was incompatible with the natural values of these areas, therefore the expectations of employment creation in this sense have been interrupted. Likewise, the strong dependence of agricultural activities of certain towns, together with the temporary work of this sector, originates problems of unemployment at certain times of the year, as well as an increase in the activities of underground economy. On the other hand, in these territories, where the main activity sectors are fishing and agriculture, there is a high percentage of illiteracy derived from the little value that is given to the formation and the abandonment of the studies to incorporate themselves to the labour market. This situation determines that before the impossibility to find a job in other sectors, which require an education, labour stagnation occurs in certain occupations, that in the case of the above mentioned sectors are marked by the seasonality, and in many cases, by the precariousness of work, the dependance on unemployment benefits and they are the cause of underground economy.

In this context, the protected areas can act as environments creating new working sites, basically associated to the endogenous resources, to the public use and to the sustainable tourism. The Southatlantic project, work dynamization in Natural Protected Areas of the Andalusian coast, which started at the beginning of this year will contribute to it, through a programme of intervention that will make easier the socio-labour dynamization of the groups with insertion difficulties or assimilation in the labour market following sustainable development criteria. Amongst the objectives of this project the following are included:

- Change of attitudes in front of the incorporation to the labour market.
- Creation of an orientation and accompaniment service for the labour.
- Adaptation of the formation to the labour vacancy/demand of the area.
- Favour the access to the formation in the activity sectors linked to the endogenous resources.
- Promote the labour market linked to the use of endogenour resources.
- Foster the appearance of enterprising profiles.
- Promotion of experience exchange between the enterprising members, using the new communication technologies.
- Equalization, at a type level, of the working opportunities.

Even when this project is concentrating on the Atlantic Andalusian coast, the local population that is part of the protected areas of the Andalusian coast presents a series of common socioeconomic patterns, that makes it singular and to a certain point homogeneous from the point of view of the development of a planning system that reconciles the use of the resources and the management and conservation of them. In this sense, the approach and the results obtained with this initiative of labour dynamics in the Southatlantic areas of the RENPA, can be extrapolated in the future to the whole of the protected areas of the Andalusian coast.

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THE PROTECTED AREAS OF THE CATALONIAN COAST AND THEIR MANAGEMENT MODEL

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1.- Introduction

The title of the Seminary refers to the "Mediterranean coast", but the one of the intervention that the organization has so kindly asked me to do is limited to the coast of Catalonia and, more precisely, to its "protected areas". It is convenient, therefore, that we agree in what we understand by "littoral".

It is possibly a debate that has arisen in many other occasions, but it does not seem to be solved. The terms "littoral" and "coast" normally coincide, at least amongst linguists, but there are authors that consider littoral as the part of land that borders the sea and for others it is the submerged part that is in contact with the land.

There are even some, who when considering the protected areas of the littoral, refer only to the terrestrial ones, and others talk about the Mediterranean littoral thinking only of the maritime areas.

Scientists understand it as a transition process from aquatic ecosystems to land ecosystems and viceversa. The (Spanish) jurists also contemplate a maritime part, a terrestrial one and a third one, maritime-terrestrial.

Considering, therefore, that we still do not have a cartography in which, graphically, are delimited the terrestrial and maritime boundaries of the Catalonian littoral, and that in the Seminary of the Action Plan for the Mediterranean organized in Seville between December 12th and 15th of 2001, I already had the opportunity to present the politics of the Government of Catalonia for its littoral and to explain the particular case of the management of the Marine Reserve of the Medes Islands, communications that have been recently been published by the Government of Andalusia, I have chosen to turn to the documents presented in the *Symposium on Mediterranean Protected Marine and Coastal Areas* that took place in Roses (Girona) in March 6th and 10th of this year as a result of an agreement subscribed between the government of Catalonia and the Regional Activities Centre for the Specially Protected Areas RAC/SPA of Tunisia and thanks to the collaboration of the Regional Activities Centre for Cleaner Production of Barcelona.

The announcement gathered 113 participants from 12 Mediterranean countries: Spain, France, Italy, Tunisia, Greece, Switzerland, Bosnia-Herzegovina, Albania, Malta, Turkey, Siria and Morocco. The representatives of the Administrations constituted 40% of those present: (13 of the central administrations; 25 of the regional ones and 6 of the local ones); followed by the managers of protected areas (24), researchers and university members (16), members of NGO and other associations (22). 4 representatives of the PNUMA-MAP and 3 of the

universitarios (16), miembros de ONG y otras asociaciones (22). También asistieron 4 representantes del PNUMA-PAM y 3 de la UICN (tabla 1).

	Adn	ninistra	tion	Managers		Research.	(Civil Socie	ety		
	Centr.	Reg.	Local	UICN	PNUMA/PA	PA	/	NGO	Assoc.	Others	Total
		_			М		Univ.				
Spain	2	25	6	2		19	8	6	4	4	76
France	3				1	4	5	3	1		17
Italy							3	2	1		6
Tunisia	2				2			1			5
Greece					1	1					2
Switzer.				1							1
BH	1										1
Albania	1										1
Malta	1										1
Turkey	1										1
Siria	1										1
Morocco	1										1
Total	13	25	6	3	4	24	16	12	6	4	113

Table 1. Origin (national and professional) of those present in the Symposium

The majority of the Spaniards came from Catalonia, but also from Murcia, Andalusia, Madrid, Valencia, Balearic Islands and Canary Islands. The majority were representatives of the regional administrations and the managers of the protected areas (table 2)

	Adm	inistration		Managers		Research./ Civil		Civil societ	ivil society Tot		
	Central	Reg.	Local	UICN	PNUMA/PA M	PA	Univ.	NGO	Assoc	Others	
Catalonia		17	5			18	4	5	4	4	57
Murcia		3					2				5
Andalusia		2		2							4
Madrid	2							1			3
Valencia		1					2				3
Balearic Islands		1	1			1					3
Canary Islands		1									1
Total	2	25	6	2		19	8	6	4	4	76

Table 2. Regional and professional origin of those Spaniards present

The Symposium was structured in five areas, and an introductory paper was read for each one of them before going to the communications. There was also the possibility of showing posters (table 3).

Day		Communications
	Subject	
7	Public access, Education and Tourism management in PA	19
7	Legal and institutional Framework	9
8	Scientific monitoring of PA	20

8	Management of PA	18
9	Inventory of Mediterranean PA	8

Table 3. Development of the sessions. -Subjects dealt with

A total of 74 communications were read and the whole text of 63 of them has been received up until now, which do not correspond exactly with the five working sessions initially anticipated and that, therefore, have been grouped according to the following criteria for a better comprehension of the totality: (table 4):

- Consequences of the protected areas of the marine littoral.

The communications grouped here deal with the advantages of the marine reserves as an instument to preserve fishing, with the effects of tourism, with an example of the incidence of a marine reserve on the regional economy and with the inconvenients that they create for the practice of underwater fishing.

- Legal framework.

They deal with the legal frameworks for the creation of marine reserves in Spain and in the French Mediterranean, with the applicable regulation to the areas of the Costa Brava and with the law of the Cape of Creus in particular and, also with the legal framework and jurisdiction in what concerns the planning of the littoral in Catalonia.

- Studies and projects.

They deal with the Andalusian system of protection of areas in which the marine protected areas of the region must be integrated, with the Albanian network and its expansion projects and also with the previous studies to the implementation of the protected marine areas in Malta and in the Punta de la Mora (Catalonia).

- Monitoring.

It includes the monitoring programmes of the ecosystems (Italian marine reserves; ecosystems of the Delta Ebre; the monitoring techniques of fish (visual census, submarine cameras, population genetics), the monitoring programmes for the prairies of posidonia and seabirds, as well as with other management instruments for fishing.

- Management of the tourism.

In the Delta del Ebro, Garraf; Port Cros and Hutovo Blato; monitoring (methods, Cape of Creus); and instruments (anlysis of cargo capacity; boat regulation, submarine path; role of the guides; Environmental education)

- Management of the areas.

Contains the management forms by the central Administration (Spain, Turkey); of the parks (Port Cros, Zakynthos, la Galite) and of other protected areas (Basses d'en Coll, Ses Negres, Cap d'Agde, Calanques, Montgrí-Medes), the local management (Torroella, Roses) and port management (l'Estartit). Management instruments: the SIG implemented in the management of the Reserve of Cerbère and of the Catalonian littoral; organizations for the staff formation.

	Areal of the terrestrial littoral	Areas of the marine littoral	Areas of teh maritime- terrestrial littoral	Others	Total
Consequences		5	1	1	7
Legal framework		3	2		5
Studios and projects		3	1	1	5
Monitoring	1	7	2		10
Management and tourism	2	5	7	1	15
Managementof the areas	3	4	8	6	21
Total	6	27	21	9	63

2.- The management of the protected areas on the Catalonian coastline

Here I shall stop for a while to comment on some of the communications related to the Catalonian littoral athat we have grouped in the paragraph of "Management of the areas";

The management of the marine reserves of the Spanish state, by Silvia Revenga.-

The Spanish state has declared eight marine reserves since 1986. The results, apart from the fishing field, are considered to be positive for the conservation of the marine ecosystems and to see that we are going in the right direction.

Management of the protected areas through collaboration agreements : the case of the Basses d'en *Coll, by* B.Parera and C. Barriocanal.-

A case is presented of shared management in a protected area through the collaboration agreement between the Environmental Department of the Government of Catalonia, the City Council and a private enterprise that owns the land. Amongst the advantages that have been achieved with this shared management system we can point out the participation and the decentralization and it is also believed to improve the efficiency.

Private management of a marine reserve: the example of Ses Negres (Begur), by Miquel Ventura.-

The marine reserve of Ses Negres was created in 1993 and it is managed by a private local company, through the agreement with the Environmental Department of the Government of Catalonia. With the collaboration of other public and private companies they have created and they are implementing a management programme that has allowed them to recuperate species and habitats that were in regression. On the other hand, they carry out scientific studies and formation, sensibilization and environmental education activities in the reserve.

The Trust Montgrí-Medes and the sustainable management of a marine area, by Arnald Plujà.-

The Trust for the Sustainable Development of the Areas of Natural Interest of the Massís del Montgrí and the Archipelago of the Medes was created in the year 2000 with the purpose of integrating and organizing the planning of the protected natural areas of the same geo-ecological unit, as much of the terrestrial littoral as of the marine littoral. The Trust defines the regulation of common protection and prepares the basis to turn it into a Natural Park. This Trust is formed by different administrations involved in the management.

A dinamization strategy in tourist areas in the municipality of Torroella-L'Estartit, by Josep Capellà.-

The town council of Torroella-I'Estartit has committed itself to a new model of tourist growth based on the consolidation of the beach tourism with a tourist offer of quality. With this aim it has designed a strategy based on the specialization of the villages of the municipality: music and culture in Torroella, and natural areas in the Estartit. So, they have carried out actions relating to the revision of the urban planning, the recuperation of wetlands and the management of the Ter river through a consortium.

The environmental management of the coastal municipality with protected natural areas: the case of Roses, by Jordi Cabot.-

With the aim of reconciling tourism and environmental management, the town council of Roses carries out a policy of information and planning of the tourist offer for the visitors. Through the edition of booklets, an adequate signalization and the improvement of paths and routes, it has achieved the participation of the resident population and the visitors' respectful behaviour.

The environmental management of the Estartit Sailing Club, by Jordi Carmona.-

The Estartit Sailing Club carries out, within a programme called "Navega en verde" ("Sail in green"), a series of actions that go from the selective collection of residues from the port to actions of environmental education, and sensibilization campaigns amongst its members. The port of the Estartit, managed by the Sailing Club, participates as a pilot port in the project "Ports Nets" ("Clean Ports"), that the Government of Catalonia, the Balearic Islands Government and the region of Languedoc-Roussillon are carrying out.

A geographic information system for the study and management of the Catalonian littoral, by Ramon Jordana and Carles Dalmases.-

Through the use of conventional informatic resources, different information theme layers that can interact have been structured. The result is a significant information and of interest that allows to access external databases and that is accessible to the public. This system allows to homogenize formats, reconcile different information, make sectorial reports and studies and to optimize the control of the productive water environment.

A new instrument for the management of the coastal areas: the underwater archaeological chart of Catalonia, by Xavier Nieto.-

The majority of the 760 underwater archaeological sites known in Catalonia are located in protected natural areas, like the Natural Park of the Cape of Creus and the marine reserve of the Medes Islands. At this moment they have the Underwater Archaeological Chart of Catalonia, which constitutes a useful instrument that can help in the management of the protected areas of the littoral.

3.- Conclusion.

By what we have seen, there is not only one management model for the protected areas of the Catalonian littoral. In each one of them, the different actors have agreed to their own model.

All the material presented in this Symposium, included the posters and some communications added out of programme, are currently in edition process as a monographic volume, and it is expected to be at the public's disposal in a few months.

When this happens, we shall have at our disposal all the "management models" that were presented in the Symposium and which will constitute, undoubtedly, a catalogue of examples from which to obtain ideas to manage the Mediterranean littoral.

BASES FOR A KNOWLEDGE OF THE MEDITERRANEAN

BIODIVERSITY.

Eduardo Galante Patiño

CIBIO, Latin American Biodiversity Centre University of Alicante

THE MEDITERRANEAN BASIN, A GEOGRAPHIC AREA WITH HIGH BIODIVERSITY

The Mediterranean basin is one of the most important biogeographic centres of the paleartic region and one of the areas with the highest biodiversity of the world. It has been considered as one of the so called "hot points" that should have priority for its conservation and to which we should dedicate more efforts to get to know its biodiversity and to establish plans for its conservation, as the alteration and degradation of the environment process is very high at present. On the other hand, many groups of animals and plants of the Mediterranean basin present a high number of endemisms, although the biodiversity of many Mediterranean regions remains still unknown to us. Also in the regions or countries where studies have been carried out, they are partial studies, and there are no data for many groups of organisms and specially for invertebrates.

Below, some well known data of the great number of known species according to the data provided by different authors.

Estimate of the Biodiversity of big groups of organisms nowadays described in the World, Mediterranean Basin and Iberian Peninsula.

	THE WORLD	MEDITERRANEAN BASIN	IBERIAN & BALEARIO REGION
	Number of Spec	Number of Species	Number of Species
Insects	1.000.000	150.000	47.000
Arthropods	125.000	16.900	5.300
not Insects			
Other invertebrate	116.000	15.680	4.900
Vertebrates	44.000	2.120	1.068
Vascular Flora	250.000	25.000 (13.000 ende	7.500

Known biodiversity of big groups of vertebrates in different countries of the Mediterranean basin. (2? = not available data)

				Julia
	Mammals	Birds	Reptiles	Amphibian
Spain	118 / 12 ende	368 / 5 enden	56 / 19 ende	26 / 9 ender
France	93 / 0 endem	267 / 9 enden	32 / 9 enden	32 / 3 ender
Italy	118 / 4 enden	232 / 0 enden	58 / 0 enden	38 / 12 ende
Ex Yugoslav	95 / 2 endem	245 / 0 enden	41/2 enden	ende ?خ / 23
Bulgaria	ender ?خ / 81	?خ / 242	ende? خ / 33	ende? خ / 17

Albania	ender ?خ / 68	ende ?خ / 215	ende ?خ / 31	ende ?خ / 13
Greece	95 / 2 endem	244 / 0 enden	51 / 4 enden	23 / 1 enden

The high biodiversity of the Mediterranean Basin is the consequence of its particular geographical position, as it has been the crossing and convergence point of European, African and Asian fauna, being for many groups of beings, like the insects, a refuge of relict fauna of the Tertiary, probably since the Oligocene (some 34 million years ago) and that today coexist with elements that remain of the alpine and boreal fauna and which found refuge in the Mediterranean Basin during the glacial periods of the Pliocene-Plistocene (periods that started 5 and 1,8 million years ago respectively). To all of that were added the later contributions of the Quaternary, process to which in many occasions, voluntarily or involuntarily, mankind has contributed. Besides these factors, we must also consider the strong climatic contrasts in the Mediterranean, as much in a space scale as in a temporal scale and that have obviously conditioned the structure of a territory with a varied landscape and subject to extreme environments.

We know that there is a very great number of species, endemisms and flora and fauna with biogeographical peculiarities throughout the whole territory of the Mediterranean Basin and nevertheless, despite the priority of conservation that we should give to this biodiversity, the knowledge that we have of it is very deficient. Very frequently there is the insistence to carry out studies and measures directed to groups of beings called emblematic, with special reference to some birds and big mammals, while many other living components of the ecosystems are not taken into consideration. We have not got real data on the number of existing species in the North of Africa and they are very incomplete in most of the Mediterranean European countries.

HISTORY OF THE MEDITERRANEAN BIODIVERSITY

To understand the Mediterranean biodiversity we have to know the history of the Mediterranean Basin in the last two million years at least, during which Europe was covered by ice on five occasions that affected deeply its BIOTA. However, the effect of the glaciations on the different groups of organisms was different. While the vertebrates were greatly affected, causing their extinction in many cases, the insects were not affected in the same way and it is very probable that many of the species that we find nowadays could have arrived to us from the Oligocene. Their great capacity of movement and mobility has allowed this group to respond with relative speed to the climatic fluctuation at a great scale through the colonization of new microhabitats. At a global European level the frequent changes of place of distribution that must have occurred in many organisms, allowed the contact between local subpopulations of small size species, avoiding in such a way the genetic isolation of species on many occasions, and therefore the existance of recent speciation in groups like the insects.

During the different glacial periods, the European continent kept losing a great part of its fauna and plants, either because it was covered with ice in its northern half or because of the drastic change in the plant communities and its accompanying fauna in the southern region. In some instances an extinction of species in the centre and North of Europe took place and in many others the species moved towards the southern lands where they found refuge in the warmer areas that sorrounded the Mediterranean sea, which had not been covered with ice. The paleontological data show that the geographical and climate diversity, in the Mediterranean Basin during the glacial and interglacial periods, allowed the coexistence at a regional scale of the plants that were previously in

many points of Europe and therefore of its associated fauna, as many paleontological and pollen remains were found that confirm this statement. Part of the "great African fauna" like the rhinoceros, hippopotamus, elephant, lion, crocodile, etc., was shared with Europe in the warm interglacial periods. The successive glaciation waves cornered them in the South of Europe -the North of the Mediterranean Basin- where they became extinct. We know that in the North of the Maghreb until well into the XIX century, populations of this great African fauna remained, while it had already disappeared from the Mediterranean North coast thousands of years before.

The last glacial period (Würm glaciation) started some 20.000 years ago, it covered with ice the regions of the North of Europe, and it ended some 10.000 years ago, although a series of intermediate periods took place, which were characterized by warm temperatures. During the initial phase of this last glacial period, the ice spread from the Arctic to northern half of Europe and the massif of the Alps, while the southern half of the European continent was covered by tundra formations, Arctic and steppes, and the ocean ice spread as far as the South of the British Isles cutting the way to the North of the warm Gulf Stream, which diverted it towards the Atlantic coast of the Iberian Peninsula. The result was that the forests spread to the South of approximately parallel 45°. The western and southern third of the Iberian Peninsula became one of the few refuges where the deciduous forests lasted within the European continent, spreading like a band through the North, East and South of the Mediterranean Basin, splashed by some isolated stains of typically Mediterranean formations, while a great part of what today is the northern half of the Iberian Peninsula was covered by forests of conifers which spread also in the South of the European continent like a parallel band on the edge of the Mediterranean.

On the other hand, the biggest Mediterranean islands suffered fluctuations during those glacial periods in what concerns their emerged surface, with intermitent connections with land masses during the coldest periods. These fluctuations undoubtedly produced processes of isolation and extinction, alternated by recolonization and expansion of non flying animals and plants. The colonization of the Mediterranean islands by land animals and plants, had taken place in several moments of their geological history. Some must have arrived between the Oligocene and the Miocene Inferior (between 34 and 12 million years). A second event of great importance was the so called Messinian crisis some 6,5 million years ago and during which the Straight of Gibraltar closed, blocking the input of ocean water and, as a consequence, producing the draining of the Mediterranean, which was reduced to a group of not very deep salty lagoons, sorrounded by an authentic salty desert from which the insular land masses stood out. During this crisis a new colonization of land animals and plants took place, that at the end of this critical period (5 million years ago) remained isolated in the archipelagoes that formed. Lastly in the Pleistocene-Holocene, species arrived to the islands close to the coast, though many of them were probably transported by man in this period.

Nowadays, we are in a interglacial period which started 10.000 years ago, and during which the bands of vegetation and many of the associated animals have moved again towards the North of Europe following the regression of the ice and widening again their areas of geographical distribution. This is a very interesting phenomenon from the Biology of the conservation of the species and habitats point of view, as the actual distribution of plants and animals, specially insects, that present isolated populations on tops of mountains and therefore without genetic exchange are the result of a colonization process in cold periods, in which there was a population continuity, however nowadays they constitute authentic glacial relics, witnesses of a past history. In these cases, although sometimes they have not produced new species during recent history, they have nevertheless generated numerous subpopulation differences as it has happened, for example, with

the butterfly *Parnassius apollo* L. (Lepidoptera Papilionidae), whose populations are located in many tops of European mountain ranges.

A typical Mediterranean example of the result of this process of group fluctuations of populations as a consequence of the last glacial period and the later regression of the ice is offered to us by the genus *Abies*. This genus has a very extended species in Europe called *Abies alba*, which found refuge in the mountains that bordered the Mediterranean basin during the glacial periods. Once the ice regressed, small isolated populations were left in the average Mediterranean mountains from 700 to 1200 m high and with an annual rainfall of around 1000 mm. The isolation and the low number of members facilitated the genetic derivation arriving to our time as differenciated species. This is the case of Abies pinsapo of the Sierra de Grazalema, Sierra de las Nieves in Cádiz and Málaga, Abies maroccana of the massifs of the Rif, A. numidica of Algeria, A. nebrodensis in the mounts Madonie of Sicily, A. cephalonica in the Peloponese, A. boris regis in the North of Greece, Bulgaria and the South of Albania, A. siciclica, A. equitrojani and A. bronmulleriana in Asia Minor. All these species are vicariant of the European fir tree which originated from the populations that found refuge in the Mediterranean mountains during the last glacial period.

In other cases, the consequence of the glacial period was a drastic reduction of the geographical distribution areas, therefore many species remained confined to real Mediterranean Pleistocene refuges, without having later a recuperation of their primitive area of distribution. The understanding of this process and its correct identification, is another important factor to take into consideration in the conservation policies, as the simple observation of the actual areas of distribution can induce mistakes if the given data are not taken into account by the paleoarchaeology. Therefore, species considered as endemic of a particular area for a long time, have been seen to be the last witnesses of an abundant and widespread population in a period previous to the last glacial period, forming the geographical distribution area that they occupy today, their last refuge in the evolutionary history of the species. So, we find species of Mediterranean insects that are real witnesses of a past history and that today are confined to enclaves of Mediterranean countries of the South of Europe. We know today, referring specially to coleoptera and to their capacity to preserve in Quaternary deposits, how species that today are only found in small geographical areas of Mediterranean countries were however distributed in areas all around Europe and going as far as Asia during the warm periods of the Pleistocene.

Another factor to take into account in the interpretation of the Mediterranean biodiversity is the fact that in the last phase of the glacial period a new agent of transformation of the environment appeared in Europe. Some 40.000 years ago Homo sapiens arrived to the European continent from the eastern African savannas and they soon spread along the Mediterranean Basin and the whole of Europe. We were the Cro-Magnon that arrived from the outside and we found another hominid species that had arrived before, Homo neanderthalensis, with whom we lived for some 10.000 years as some 30.000 years ago it became extinct, probably amongst other factors, due to the pressure our species exerted on it. The history of humanity until some 10.000 years ago, was characterized for being a nomad period, with the formation of small family clans of hominids that went through Europe hunting and eliminating the great fauna of mammals and birds that was there with the purpose of obtaining food. The practice consisted most of the time of throwing the prev off the cliffs and that is why the impact on the fauna was very pronounced. Although the climatic changes could have contributed in part to the massive extinction of the great vertebrates, nevertheless we know that the hunting activity that mankind carried out was undoubtedly a key factor for their disappearing. The ecological effect of the extinction of this vertebrated fauna has been compared by some authors to the extinction of the dinosaurs, as the lack of herbivores deeply modified the

landscape because the absence of herbivore activity caused a closing of the plant formations and a change in their composition. We still have today some examples of that vertebrated fauna that existed then and that conditioned the vegetation and landscape. Therefore we find species of woody plants that have persisted, like the case of *Acer* that though it is defenseless on the continent it has thorns at its base in the specimens of the island of Crete, a fact that is interpreted as a case of co-evolution with herbivore mammals like the dwarf forms of elephants and rhinoceros were, or cervids like the case of the small Balearic antilope *Myotragus balearicus*, extinguished by man. The result of that action is that nowadays the mammal and bird fauna of the Mediterranean islands is very poor if we take into account that we only know three endemic bird species of these islands and three of mammals, two insectivores and one rodent.

10.000 years ago, at the end of the last glacial period, appeared a new and definite stage in the human history, the learning of domestication of animals and the cultivation of vegetables. It was the revolution of the Neolithic and then, the hunting man of the Paleolithic, collector of fruit and vegetables in general, of nomad habits that until then had only established temporary settlements, gave way to the man of the Neolithic that started a much more sedentary type of life. From that moment on, a continuous transformation of the landscape took place in the Mediterranean Basin, going from great forest zones to open zones formed by pastureland, farmland and urban settlements. This activity introduced again the herbivore processes in the Mediterranean ecosystems when domestic mammals were incorporated where the wild ones had been previously eliminated by man.

In all the Mediterranean Basin appeared similar ways of exploitation of the territory; such activity was favoured by the continuous exchange of people and food in the Mediterraneana Sea. Although after the last glaciation formations of shrubland only remained in some Mediterranean areas as a consequence of its edaphologic and climatic characteristics, nevertheless, in general, the Mediterranean Basin characterized itself by its climatic forest formations. The Mediterranean sclerophilous forest has always been dominated by hard leaf species and even thorny ones, with species of trees or bushes that produced very nutritional fruits (acorns, olives, strawberry trees, carob trees, almonds, etc.). This sclerophilous forest characterizes itself by its tree species of slow growth and which constitute thick formations. Since the beginning of the Neolithic, in the whole of the Mediterranean the forest clearing was a normal practice, developing crops and pasture land. More than 7000 years ago a severe destruction of the Mediterranean forest had started, to the point that we can state that it was totally transformed already 5000 years ago.

This process undoubtedly caused the appearance of a mosaic landscape in which big areas formed by deforestation environments were colonized by many herbaceous and bushy plants alternating with forest masses more and more transformed by man. This is how a type of typical anthropic landscape developed and spread all around the Mediterranean basin, but has sadly been in regression since 50 years ago. This landscape characterizes itself by the presence of native trees descendent from the original forests that were selected by mankind, generally due to the interest that have presented their fruits in the history of the Mediterranean food. At the beginning, the slow transformation of the original forests lead to the selection of tree and shrub species that covered the feeding needs of man, as for many other Mediterranean mammals, causing the fruitation of the Mediterranean forest. Even so, the real transformation of the Mediterranean landscape took place in the Greek-Roman period and in particular since the expansion of the Roman empire, formed by the descendents of farming tribes that gave agriculture a capital importance. From the beginning, these first Mediterranean civilizations gave priority to three crops that have marked and still mark history: wheat, vine and olive. Outside the famland, sheep and goats were introduced as the only
exploitation means of marginal and natural areas. The vegetables that complemented the diet were also cultivated, but always limited to small areas. These Mediterranean civilizations undoubtedly transformed very much the ecosystems of their surroundings since more than 5000 years ago, cutting tree species like the oaks, establishing crops and obtaining wood, and using the fire normally as a quick way of destruction of the forest, at the same time as they established crops on ashes. In that way, they dedicated growing extensions of terrain to the farming and cattle production, starting dry-farmed crops with trees whose fruits were easily stored like the almond trees, olive trees and carob trees.

In any case the civilizations of the North of Africa, formed by islamic peoples, brought important technological innovations in what refers to the management of the water and organization of watering infrastructure that are still in use today. Their knowledge of the Philosophy and wisdom of the old civilizations of Eastern and Asian Europe, and the knowledge of the classical Greek culture boosted their farming activity, launch of the citrus crops and the use of the medicinal and aromatic plants for the kitchen.

As a consequence of the non-stop human activity, in the Mediterranean Basin, since thousands of years ago, a big extension of cultivation fields, pastureland and herbaceous or shrublike vegetation strips of land that border such fields, has slowly replaced the original plant formations producing the traditional mosaic landscape that we observe in many regions of the South of Europe and the North of Africa. So we can see zones dedicated to agricultural and livestock activities that alternate with forest and srub zones, which have been manipulated by mankind since thousands of years ago. Many zones have been totally deforested and have been put into production until they were exhausted of the nutrients of the soil, followed by their abandonment because of low yield, what caused the so called processes of desertification, which in reality are processes of drastic destruction of the Mediterranean habitats. This transformation process has undoubtedly conditioned the composition of the fauna and the plants that we find in the Mediterranean nowadays. A consequence of this historical transformation of the Mediterranean forest is the scarcity of species of vertebrates particularly forest animals within the Mediterranean world. In the case of the mammals, a biodiversity fall took place, which did not occur with birds; although the substitution of some forest species for others typically of open areas did take place. As a consequence of the elimination of the original forest, species common to arid environments, steepe and of shrubland appeared and so, for example, of approximately a total of 343 species of nesting birds in the Mediterranean Basin only 8 (2% of the total) are common to forest environments and half of them are common to insular environments. However, 36 Mediterranean endemic species (77% of all Mediterranean endemic species) are exclusive to open and shrub environments.

An important component of the Mediterranean biodiversity, as it happens in all the land ecosystems of the world, are the insects that represent nowadays 81% of the animal diversity. In this group, the species that are directly linked to the vegetation due to their trophic habits, present a higher percentage of endemisms in the transverse mountainous systems, occupying generally open shrub environments or forest clearings. On the other hand, the species linked to the edaphic environment and with trophic requirements related to the organic matter left on the soil, present their highest grade of endemisms in the coastal areas subjected to an extreme climate, characterised for being open environments with little shrubland like dunes, salt marshes, or bush without trees or with great clearings.

BIODIVERSITY CONSERVATION AND MANAGEMENT OF THE ENVIRONMENT

The conservation based on politics that consider exclusively the designating of protected areas by way of National or Natural Parks, has given its fruits for more than a century, but they are not the applicable politics in the XXI century. To be able to face successfully the obliged task of preserving the natural heritage, it is necessary to start actions within a sustainable development at the level of the whole Mediterranean Basin, avoiding acting exclusively through politics of protected areas and conservation of isolated species. The people responsible for carrying out environmental programmes will have to start considering the need to carry out a global action on the whole territory. We can not believe today, with the data we have, that isolated ecosystems in the middle of deeply transformed lands can be kept preserved from all human intervention, at the same time as it is allowed to act with impunity in the rest of the territory, gravely modifying it. The consideration of the interconnection of areas and of taking into account the agriculture-forest-pasture activity traditionally developed by mankind is an unavoidable need. We have previously seen how the history of the Mediterranean Basin, and of Europe in general, is the history of the modeling of the landscape by human beings and this fact has greatly conditioned the actual biodiversity. The traditional farming landscape, as a result of a local diversification of crops, by pastureland that alternates with untransformed environment, is in many places the support of a rich biological diversity that has arrived to us. The increasing abandonment of these areas of traditional agricultural and livestock activity, the change of uses of the soil imposed sometimes as a consequence of national or supranational politics as in the case of the European Union, the transformation of farming zones into supposedly forest zones, is taking big areas of the Mediterranean territory to the loss of the cultural and landscape diversity and of a rich biodiversity that has arrived to us associated to a traditional agricultural and livestock activity.

We must add to all of that the increasing loss of extension of wetlands and coastal areas of dunes and salt marshes, which are areas that have arrived to us as a result of the little interest that historically mankind has had to establish crops, at the same time as they have been considered in many occasions as areas for the cause of public health problems like malaria. These zones, that nowadays present a high interest from the point of view of conservation, are nevertheless undervalued and they are subjected, as a consequence of it, to a high urban and touristic pressure. Today a continuous and irreparable loss of biodiversity is taking place, even though many of them have been designated as ZEPA (Areas of Special Protection for Birds) areas and RAMSAR zones. However, all the zones of the Mediterranean Basin, as well as the islands and islets, are environments that should have a special consideration as areas of reception and rest of many migrating species. Although, in what concers the birds, certain areas are taken into consideration, it is not the same with the insects, which are generally ignored in the politics of the conservation of the territory. This ignorance is the cause for not taking into account the areas of international importance as the Mediterranean areas for the passing and the resting of the migrating species of European and African insects. These areas are sometimes islands of small size and coastal zones, subjected to an unsustainable and growing transformation and occupation of the ground for urban uses and tourist resorts. However, the conservation of the natural heritage that insects constitute is something absolutely necessary, as much for the high percentage of biodiversity that this group presents as for being the insects a key and necessary group to keep in good working order the ecosystems. In this group of small animals, the migrating species are in many occasions the keepers of the plant biodiversity of the Mediterranean coastal environments, due to their role as pollinating agents. Lets take into account that more than 60% of the Mediterranean flora depends on the survival of the existance of pollinating insects and even so, the efforts to preserve species of plants are carried out without starting studies about the agents that pollinate them. This lack of consideration and protection of this group of animals, united to the increasing use of insecticides, the abandonment of

traditional agricultural and livestock activities and the increasing transformation of the uses of the ground, is leading towards an irreparable loss of the Mediterranean entomological diversity and, as a consequence, also of the flora in this geographic region.

For all that and to resume, I wish to insist once more that we must start an integral distribution of the territory in the framework of a sustainable development, and not to practice only politics of protected areas in the middle of an environment highly transformed and subjected to environmental agressions. In the same way, the management of the environment based only on a partial vision of the biodiversity, almost exclusively focused towards some vertebrates or flora, are politics that can save one species in an isolated way, but not safeguard for the future the Mediterranean biodiversity as a whole. Finally, I wish to remind you that, to protect, it is necessary to know the historical processes to which the environment has been subjected and in which mankind has played a key role. Nowadays, politics of conservation that are not within a framework of sustainable development in which human activities compatible with the environment, like the traditional agricultural and livestock activity, are carried out are not understood. The communities are changeable and the parties that take part in them can be replaced with more or less difficulty, but only by preserving the ecological processes shall we be able to save our natural environment for the future.

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REMOTE SENSING AND ADVANCED TECHNIQUES AS SUPPORT INSTRUMENTS FOR THE PROTECTION OF MEDITERRANEAN COASTAL AND MARINE AREAS

Giovanni Cannizzaro, Monique Viel

FOREWORD

Mediterranean coastal areas and relevant sea pollution, its control, its understanding and the research of integrated remedies are important issues which have involved the Mediterranean Community for many years.

The Regional Activity Centre for Environment Remote Sensing (ERS/RAC) – based in Palermo (Italy), one of the six Regional Activity Centres within the MAP - Mediterranean Action Plan, contributes to the planning processes in Mediterranean by using advanced techniques. In particular, its aim is to cooperate with and assist MAP components and Mediterranean Countries in improving the monitoring of Med environment status and changes through the use of space and advanced technology (e.g. Remote Sensing, satellite navigation, GIS, modelling)

In these days, the need is arising to improve suitable integrated monitoring - using also advanced techniques - in order to support sustainable coastal planning and efficient control of sea pollution.

In this document a general survey of capabilities of satellite remote sensing to support monitoring of coastal areas and sea water quality and dynamics is presented.

INTRODUCTION

The main coastal monitoring issues are:

- Pollution
- Urbanisation
- Protected Areas
- Indicators for sustainable development
- Integrated Management

Satellite remote sensing can contribute to coastal zone monitoring through the assessement of the following basic parameters:

- Land use and Land Cover mapping - Feature, infrastructure, Land use and land cover change over time - Forestry - Water pollution	-	manning	basic topographic and geographic objects
change over time - Forestry - Water pollution	-	шарріну	Land use and Land Cover mapping Feature, infrastructure, Land use and land cover
- Forestry - Water pollution		change over time	
- Water pollution	-	0	Forestry
	-		Water pollution

Due to the particular high relevance of pollution, a fundamental factor also for the other monitoring issues mentioned above, in the next chapters more details are given on the use of remote sensing for that specific monitoring.

In summary, although they can provide a relevant flow of accurate and updated data, Remote Sensing (RS) techniques should be used in an integrated fashion with other data and models within Geographic Information Systems. In particular, the approach in the use of RS vs in situ data should be based on the following:

- a) the strong points of Remote Sensing, that are: the provision of a spatial dimension; synopticity, repetitivity, continuity and homogeneity in collecting data.
- b) Remote Sensing to be used in conjunction with other environmental or cartographic data
- c) observation capabilities from Space are improving thanks to new sensors and satellite missions: new generation of high revisit satellites; hyperspectral; Synthetic Aperture Radar; very high resolution (0.5-1m)

In summary the benefits of the use of Remote Sensing are the following:

- **Quick and updated overview or detailed mapping** RS data are available in short time
- Gaps in time series of in situ data. Satellites are always orbiting. RS time series are generally consistent
- Remote and difficult to access areas (e.g wetlands)
- Areas undergoing rapid changes
- Transnational standardisation often difficult with ground networks only Satellite RS is intrinsically homogeneous
- Facilitate exchange of information among various actors (eg,P.A.,NGOs, private sector)

SATELLITE REMOTE SENSING POTENTIALITIES

As a matter of fact, the typology and extent of the impact of industrial or urban discharges on a coastal marine ecosystem are the result of a complex interaction - not always well known - of numerous anthropic and natural variables. Firstly, the chemical characteristics of the discharge itself determine the reactions with the sea environment and its possible degradation or not. On the other hand, other parameters determine the vulnerability of the "receiving" marine coastal zone, such as:

- physico-chemical (pH, Temperature), chemical, biological and microbiological characteristics of the marine water in the discharge area;
- hydrodynamics of the coastal area which are playing a role in the accumulation or dispersion of pollutants;
- topography, sedimentological and biological characteristics of the bottom which influence the fixation and accumulation or not of a pollutant;

• etc.

The sea is a complicated system characterised by movement and variability on time and space scales. The traditional monitoring of sea characteristics is carried out through *in situ* measurements, from research vessels, for physical, biological, chemical, radiochemical and sedimentological parameters and laboratory testing. These traditional surveys provide neither a time series at a fixed point nor a synoptic chart at a *stated* time, moreover their realisation needs time and relevant laboratory analysis and consequently, involves considerable costs. The recent arrays of instrumented moorings and drifting buoys allowed, on the contrary, continuous measurements and detailed observations in a vertical column of the sea but they can cover only a small area of the sea surface and are expensive.

Thus the potential application of remote sensing techniques appeared in the last decade, especially in the 1980's, as an attractive complement to *in situ*, airborne or model data for the efficient monitoring of large areas. As a matter of fact satellites can provide a two-dimensional synoptic view in low-frequency time series over long periods ranging from weeks to years and, in some cases, with high spatial resolution.

With the introduction of new sensors (especially, microwave sensors), at the beginning of the 1990's, the potential for application of remote sensing has been enhanced for measurement of dynamical parameters in all weather conditions and of the surface and bottom topography. In some cases, it was proven also the usefulness of such sensors for identifying and monitoring pollution events, in particular oil spills.

Parameters

Sea water characterisation

The potential for application of optical remote sensing for water characterisation is relevant to the surface (or near surface) values of few parameters:

- Water temperature (SST). The surface temperature as measured by space sensors is
 representative of the water/atmosphere interface. Remotely sensed temperature may be more
 or less representative of the skin (most frequent case), or the bulk, or the air near the surface,
 depending on sea wind/roughness and on the spectral band used to perform the observation
 (IR [Infra-Red] or microwave).
- Water constituents (optically active constituents)
 - algae chorophyllous pigments, namely chlorophyll-a;
 - coloured dissolved organic matter, known as yellow substance. It characterises the terrestrial discharge as well as the organic decomposition level in surface waters;
 - inorganic suspended sediments relevant to land and river discharge as well as resuspension of sedimented material through hydrodynamic processes.
- **Optical properties**. The water optical properties are fundamental parameters that define the physical characteristics of the water column, with regard to light, in particular:
 - diffuse attenuation coefficient (K_d), as a measurement of the turbidity of the medium;

- volume reflectance;
- Secchi depth;
- water colour.

Other parameters relevant to water characteristics could be indirectly derived, namely:

- photic depth which is derived from the diffuse attenuation coefficient K_{d} ;
- net organic matter production (daily primary production rate) from measurements of chlorophyll-a;
- **detritus concentration** (measurement of such parameters is the fruit of recent research development, it is expressed as a % of chlorophyll-a in surface waters).

As for the assessment of sea pollution, no current sensor allowed measurements of chemical pollution, except for the detection of:

• **oil slick extent** on the sea surface, through microwave sensors.

Nevertheless, since some heavy metals have a strong relationship to suspended particles, it is of high interest to monitor suspended matter as a proxy for all substances, which are bounded to it.

Sea state and coastal platform description.

Microwave satellite sensors are a good alternative to provide:

- wind (direction and velocity);
- waves (height, period, direction);
- water level. Water level is derived from the averaging of wave heights as measured by altimeters, and with regard to a reference surface, generally taken as the geoid.

Combined with meteocean models, they provide useful information at large and meso scales for the knowledge of ocean global dynamics. As for coastal zones studies, satellite observations can be used mainly as background or boundary conditions for dynamical processes in the coastal zone. However, coastal sea state could be derived from offshore directional wave spectrum using specific modelling.

Other parameters such as:

- **bathymetry** (absolute water depth);
- **bottom topography** (variation of bathymetry due to bottom shape);

could be derived using integration of microwave and optical sensors. These parameters are useful descriptors in the framework of coastal water management.

Further information useful for the definition of the ecological state of the coastal area under observation could be also acquired through optical satellites, as a matter of fact it is possible to derive evidence on:

- macrophyte stands;
- mangroves extension.

Satellite sensors and their applicability scales

There is an inverse correlationship between spatial sensors resolution on the one hand, and their swath width and period of sample on the other. As a matter of fact, higher resolution produces greater quantities of data, which lead to a necessary reduction in swath width and therefore in the frequency of observation of the same area, limiting the application for monitoring processes with high temporal fluctuations.

The following table (4) provides information on the interaction between scale of observation, the current satellite data and the applicability of such sensors to provide information on processes in coastal waters. This information is useful to understand which kind of sensors could be better used for one specific application.

Scale	Example of	Relevant available satellite	Applicability for processes in sea waters.
	areas	sensors	
1. Global and	Atlantic Ocean,	Scatterometer, altimeter, passive	Primary application is in oceanography: wind,
large scale	Greenland -	microwave radiometer (PMW),	waves, sea level, currents.
oceans	Norwegian	Side-	
	Seas	Side-looking Radar (SLR), SAR	
> 1000 km			
2. Regional	Baltic Sea,	same as above, but with limitation	Wind, waves and currents observed on a
scale oceans	North Sea,	near coasts:	regional scale will have impact on processes in
and larger	Mediterranean.	scatterometer: approx. 50 km	the coastal zone. Water quality, oil spill, SST,
coastal		altimeter: approx. 10 km	waves, eddies, upwelling, fronts and bathymetry
areas:		PIVIVV: approx. 20 km	can be observed near the coast at 1 km
1 1000		More important are optical and	resolution or better.
I- 1000 km		Infrared radiometers (AVHRR,	
		Seawif-S) with I km resolution,	
		SAR With 100 m resolution, and	
		SLR With T Km resolution	
3. Local scale	Harbour areas,	High resolution optical and	Several parameters and processes near the
coastal areas	estuaries,	microwave images (SPUT,	coastal waters can be observed by these
and large	channels,	Landsat, SAR) are most	satellite data: coastilne, inter-tidal zone, shallow
lakes	wetlands, tidal	appropriate.	water topograpny, water colour, sediment
1 m - 10 km	flats, etc.	New, very nign-resolution images	transport, piumes, etc.
and small		with 0.6-1m resolution are	
lakes and		becoming important (e.g.,	
1 – 50 m		AVHRR and SeaWiFS are useful in	
		some cases to assess boundary	
		conditions	

Table: Spatial scales of study and applicability of satellite EO data for water characterisation (from [4]]

As a first conclusion, it could be stated that:

• As for processes with temporal resolution of a few days (floods, algae blooms and ocean currents) and spatial resolution of 1 km, several satellite optical sensors are useful. For wave and wind climatology, cloud-independent microwave data from altimeter and scatterometer provide valuable information at large scales since data can be systematically collected over several years.

It has been demonstrated that the SAR instrument (microwave sensor) during the three-day repeat cycles, and during the ERS-1/2 tandem operation with 1-day interval between two consecutive images of the same area, could be used for monitoring some processes like ocean fronts, sea state, surface slicks.

 As for coastal characteristics, optical and microwave remote sensing could provide direct information helpful for the characterisation of coastal processes: inter-tidal zone, shallow water topography, water colour, sediment transport, plumes, etc. For the coastal sea state, SAR images together with specific modelling has helped to improve coastal wave measurements derived from altimeter and scatterometer data.

The scheme reported in figure 1 shows the relationship between the monitoring requirements as for different environmental issues (i.e., eutrophication, anthropogenic hazards, natural resources management, etc.) and the present capabilities of spatial observation (expressed as spatial scale) and frequency (from hour to day) relevant to different satellite sensors.



Figure 1. Monitoring requirements [of different users] compared with EO capabilities (modified from [4])

The actual trends followed by the space and research organisations for improving spatial and temporal resolution are:

- planning of dedicated missions that aim to cover specific regions at high frequency. Low
 orbit can be considered to enhance the spatial resolution;
- launching of constellation of micro-satellites on complementary orbits;
- improving mathematical techniques and synergy between missions.

FUTURE DEVELOPMENT AND IMPROVEMENTS

Several new sensors are in operation, which should partly overcome the current limitations of EO sensors. Hyperspectral sensors, very high resolution instruments, multi-satellite constellations and application-dedicated micro-satellites are aimed to improve drastically the capability of remote sensing for serving operational monitoring of coastal waters. Besides these new sensor technologies, efforts are presently focused on the implementation of better algorithms and new methods for deriving water quality parameters.

Foreseen instruments

The new optical sensors are, the MERIS instrument which will fly onboard the European ENVISAT (European Space Agency mission) and the MODIS one relevant to a NASA mission. In particular, the MERIS instrument has been designed to better match requirements for coastal water applications. It is an imaging spectrometer with 15 spectral bands - a larger number compared to the present situation (i.e. 6 spectral bands for the SeaWiFS)- with a spatial resolution of 300 m. As for the microwave technology, it could be mentioned the ASAR instrument which is on board of the ENVISAT satellite, which is an Advanced Synthetic Aperture Radar (ASAR), operating at C-band. It ensures continuity with the image mode (SAR) and the wave mode of the ERS-1/2 AMI. It features enhanced capability in terms of coverage, range of incidence angles, polarisation, and modes of operation. It is designed to continuously acquire SAR products in the coastal and ocean areas. It will be possible to use more reliable data for coastal applications and for monitoring coastal dynamics issues.

Moreover, today the miniaturisation technology would allow to build small satellites, ten times lighter and cheaper than the traditional earth observation satellites, while performing identical missions.

With reference to the Mediterranean area, the COSMO/Skymed project for the survey of the Mediterranean basin should be mentioned: the constellation will be made of satellites equipped with optical sensors and others with radar sensors. It has been planned by Agenzia Spaziale Italiana – A.S.I. (the Italian Space Agency) and CNES (The French Space Agency). It has been conceived, among other, for tracking oil spills and supporting an operational monitoring.

CONCLUSIONS

In monitoring and protection of coastal areas it has been shown that satellite remote sensing data, integrated with in situ data and models in Geographic Information systems, can be a very useful tool to obtain updated, frequent, homogeneous and accurate monitoring and forecasting data and

information. In the near future Satellite Remote sensing capabilities will increase thanks to the increase in the number of satellite constellations. Important actions to be carried out in order to improve the use of Remote Sensing are the set up of pilot projects with the active participation of the users, the awareness of the users and the decision makers about the technology; the training of the experts; the increase in the capacity to handle such data in a number of Mediterranean Countries.

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THE REDUCTION OF LAND-BASED POLLUTION AS A KEY ELEMENT FOR THE PROTECTION AND SUSTAINABLE USE OF THE MEDITERRANEAN COAST

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1. LAND BASED PRESSURES

Concentration on the coast and in big cities

The resident population of the Mediterranean coastal states almost doubled in the last 40 years, reaching 450 million in 1997and is expected to reach approximately 600 million in 2050 and possibly 700 million by the end of the 21st century. At present, one third of the Mediterranean population, around 145 million people, is concentrated on the narrow coast. At the same time, the rural areas of the Mediterranean are increasingly being abandoned in favour of the large urban agglomerations on the coast. This is particularly evident in the southern and eastern Mediterranean .

The Mediterranean urban population, 40 % of which is currently concentrated on the coast, is expected to double by the year 2025. The pressure resulting from this population load is not equally shared between the northern and the southern Mediterranean countries but has shown a shift in the last 50 years from the North which accounted for two thirds of the Mediterranean population in 1950 to the South which at present accounts for 50% of the Mediterranean population.

The pressure exerted on the Mediterranean coast from the heavy resident population load, is dramatically amplified by the intensive seasonal increase in the population from tourism, which in some countries represents up to 90% of the total population. At least 50% of the tourists arriving in the Mediterranean are concentrated on the coast. The pressure of mass tourism, which is heaviest on the north-western coast of the Mediterranean, translates into further stress on the already burdened natural resources, further land-use conflicts and further deterioration of historic sites, fragile natural habitats and coastal and marine ecosystems. The pressure is likely to increase in the future, with an estimated doubling of tourism related development in the Mediterranean, escalating from 135 million arrivals in 1990 to a projected 350 million in 2025.

The dense human settlements established along the Mediterranean coast produce large amounts of municipal wastewater, which is usually, though not always, conveyed to municipal sewer systems. These systems may, or may not (as is the case for a large number of small and medium size communities in the Mediterranean) be connected to wastewater treatment facilities so hat wastewater is discharged into the sea either untreated or after various degrees of treatment. It enters the sea through outfalls, or by seepage resulting from leaks or other faults in the sewerage system. At major tourist resorts with intense, short-term population pressure during the peak summer season, the sewage treatment plants are frequently totally unable to cope with the additional loads, discharging water into the sea that is still highly polluted. Improperly discharged

sewage carrying increased loads of nutrients, such as nitrogen and phosphorus, a heavy load of micro-organisms and a variety of chemical wastes, impacts heavily on marine and freshwater ecosystems, on human health and on fishing and other economic and recreational activities.

Wastewater treatment plants serve around 55% of 545 coastal cities with more than 10,000 inhabitants, in 19 Mediterranean countries reviewed by WHO/EURO as part of the MED POL Programme (UNEP/WHO, 2000). Figure 1. shows the cities that are served by wastewater treatment plants according to the resident population density. Figure 2. illustrates the treatment facilities situation of the Mediterranean coastal population by country. Abound 30% of the population of the coastal cities surveyed is served only by a sewerage network.

Figure 1. Number of Mediterranean cities served by wastewater treatment plants



Source: UNEP/WHO, 2000





Source: UNEP/WHO, 2000

Agriculture: the largest non-point contributor of pollutants to the Mediterranean

In most Mediterranean countries all agricultural practices and land use including cultivation, irrigation, dairy farming, pastures and animal feedlots are considered as non-point sources of pollution. Agriculture may be only one of a number of non-point sources of pollution through run-off water, sediment transport and leaching, carrying phosphorus, nitrogen, pesticides, metals, pathogens, salts and trace elements, but has become the largest non-point contributor of pollutants to the Mediterranean. These pollutants gradually find their way, through groundwater, wetlands and rivers to the sea in the form of sediment and chemical loads.

With the intensification of agriculture the use of pesticides has greatly increased in the Mediterranean in the last twenty years, threatening the quality of ground and surface waters, human health and ecosystems. This is most evident in the northwestern region, especially in Spain, Italy and France, closely followed by Turkey in the northeast. Aerial transportation makes a considerable contribution of pesticides to the marine environment, particularly organochlorinated compounds. Agricultural run-off through rivers (notably the river Rhone in France, the Ebro in Spain, the Po in Italy, the rivers Axios, Loudias and Aliakmon in Greece and the Nile in Egypt) is the most important point-source source of pesticides to the Mediterranean.

By 2025 countries south and east of the basin are expected to show a five-fold increase in their agro-food activities. These countries will therefore be the most vulnerable to increased pollution and environmental pressures from the development of the agro-food sector. Land-based pollution from the increasing use of large quantities of fertilizers is the most obvious possible outcome in the countries to the south and the east of the Mediterranean basin.

The industry in the Mediterranean region

More than 200 petrochemical and energy installations, basic chemical industries and chlorine plants are located along the narrow Mediterranean coast and catchment basins of rivers, including at least 40 major oil refineries, in addition to cement plants, steel mills, tanneries, food processing plants, textile mills and pulp and paper mills.

The activity of these industries exerts pressure in a number of ways on the Mediterranean environment. These include competition with other land uses such as agriculture and housing for an expanding urban population, a high demand on water resources, air pollution through emissions of sulphur oxides, nitrogen oxides, carbon dioxide and carbon monoxide, land, air and water pollution from industrial solid wastes consisting of slag from coal mining, coal processing and steel making, sludge from the processing of ores, dust and combustion ashes and mine tailings.

Industrial wastewater is an important carrier of pollutants, including oils, heavy metals, detergents, solvents and organic chemicals as well as heated cooling water to the Mediterranean aquatic environment. Industrial wastewater is either discharged directly to the sea or through municipal sewerage systems, outfalls, uncontrolled disposal sites and rivers. There is documented evidence of contamination of the Po, Ebro and Rhone, large rivers draining into the Mediterranean, with polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and solvents (Meybeck and Ragu, 1997).

Of the substances that are produced by industry or released as a result of its activity, the most harmful to human health, marine ecosystems and biodiversity are the toxic, persistent and bioaccumulative pollutants known as TPBs. These include the heavy metals mercury, cadmium and lead, some organometallic compounds (compounds where one metal atom is bound to at least one carbon atom, tributyltin being the most widely known) and numerous organic compounds, called Persistent Organic Pollutants (POPs). POPs have been grouped together as a result of their important toxic effects, including effects on the function of the endocrine system, their propensity for long-range transport and deposition and their typical low water solubility and high accumulation in fatty tissue. All these properties combined translate into serious potential adverse effects on the environment, wildlife and human health at locations near and far from their source.

Looking at the export specialization of the Mediterranean countries, which is a fairly accurate reflection of their industrial activity, provides an insight into the most important sources of pressure currently exerted on the environment from industry, on a country basis. There is still a considerable gap in industrial development between the northern and the southeastern countries of the basin. A different picture is likely to emerge in the course of the 21st century. well into its shift south and eastward. These likely shifts in industrial production imply a potential increase in industry related environmental pressures in the southern and eastern part of the Mediterranean basin in the new millennium.

Rivers: an important source of all types of land-based pollutants to the Mediterranean

The Mediterranean river flow regime greatly influences the timing and extent of the input of significant pollution loads, which are carried to the Mediterranean Sea by around eighty identified large and small rivers (UNEP/MAP, 1997).

The heavy metal load of Mediterranean rivers is generally lower than in most western European rivers. This may be the result of the dilution of urban and industrial loads by the high levels of suspended solids in Mediterranean rivers in combination with a highly erosive environment. Natural variations can sometimes account for even a doubling of heavy metal concentrations in comparison to reference values, but above this level, pollution is the most likely explanation. This is the case for Pb concentrations in many rivers (Rhone, Tevere, Herault, Brenta, Martil), as well as for Zn (Adige, Herault, Martil, Po, Tevere), Hg (Po, Rhone), Cu (Ebro, Herault, Orb, Rhone, Tevere) and As (Orb, Herault). Hundreds of reservoirs from the damming of rivers of the Mediterranean basin are probably retaining much of the sediment-bound metals originating from human activities (UNEP/MAP, 1997).

The load of organic micropollutants carried by Mediterranean rivers has not been thoroughly assessed even though rivers are an important source of input of these chemicals into the Mediterranean (UNEP/MAP, 1997). Industrial chemicals such as polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and solvents are known to contaminate large rivers draining into the Mediterranean such as the Po, Ebro and Rhone (Meybeck and Ragu, 1997). Rivers carrying agricultural run-off (notably the river Rhone in France, the Ebro in Spain, the Po in Italy, the rivers Axios, Loudias and Aliakmon in Greece and the Nile in Egypt) are the most important point source of pesticides discharged into the Mediterranean. A number of small Mediterranean rivers running close to land used for intensive agriculture have been found to contain elevated levels of pesticides (> 1mg/l). Residues of the new generation pesticides atrazine, simazine, alochlor, molinate and metolachlor have frequently been detected in important rivers draining into the Mediterranean, though only up-to 3% of the quantities of these pesticides applied to cultivated land are exported by rivers (UNEP/MAP, 1997).

The levels of nutrients in Mediterranean rivers are about four times lower than those of western European rivers. Nevertheless, nitrate levels in Mediterranean rivers are on the increase and the trend in ammonia levels is variable, depending on the degree of sewage collection and treatment.

The level of bacterial contamination of rivers is not well documented in the Mediterranean. It ranges from negligible in rivers running through sparsely populated land to quite severe in some southern rivers. With a few exceptions of some major rivers in Greece and Italy, the situation in EU Mediterranean countries has improved in the last two decades owing to improved sewage treatment and disposal (UNEP/MAP, 1997).

River discharges can carry important amounts of the radionuclides caesium-137 and plutonium-239, 240 to the adjacent continental shelves, especially in areas where the deposition from the Chernobyl accident was significant on the hinterland (northern Adriatic and Liguro-provencal areas). Riverine geochemical processes may delay the output to the sea of the effluents from the Mediterranean nuclear facilities that are located along rivers. In any case, river input, along with the input from the nuclear industry and exchanges through the straits amount to no more than 10% of the total ¹³⁷Cs and ^{239,240}Pu delivery to the Mediterranean Sea from fallout. The constructions of dams and the diversion of river flow for irrigation have severely reduced the river inputs into the

Mediterranean over the last 40 years. The highest retention of river water (probably more than 90%) is for the Nile. The current estimated reduction in river water discharge for the Mediterranean basin as a whole is between 30 and 40 per cent.

2. THE RESPONSE OF THE MEDITERRANEAN COUNTRIES: A COMMON STRATEGY TO ADDRESS LAND BASED POLLUTION

As early as the 1970's it became obvious to the countries surrounding the Mediterranean Sea that although human activities at sea led to marine pollution, its origin was mainly to be found in land based activities. As a result, the countries devoted particular attention to the preparation of an appropriate legal instrument to cover this aspect of marine pollution. Shortly after adopting the Mediterranean Action Plan (MAP) and the Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution, the Contracting Parties adopted and signed the Protocol for the Protection of the Mediterranean Sea against Land Based Sources (LBS Protocol).

The LBS Protocol entered into force in June 1983 and a calendar of activities for its implementation was set by the countries in the period 1985 to 1995 through the MED POL Programme (the pollution assessment and control programme of the Mediterranean Action Plan).

The 1992 Earth Summit in Rio signaled a change in the pace of events that eventually consolidated the shift in the direction of the MED POL Programme towards action for the prevention and control of pollution from land based activities. Shortly after the Rio summit the Mediterranean States, wanting to give effect at the Mediterranean level to the Agenda 21 resolutions, approved an Agenda MED 21 promoting the integration of environmental concerns in environmental policies in the Mediterranean. This was closely followed by the revision of the Barcelona Convention in 1995, to give legal status to the commitments made at Rio. In the same year, 108 countries and the European Commission adopted the Washington Declaration, a commitment to protect and preserve the marine environment from the impacts of land based activities through *inter alia* giving priority to the implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA). The subsequent events in the Mediterranean in the field of land based pollution control show that the Mediterranean countries are putting into practice the goals of the GPA on a regional level.

In 1996, the Contracting Parties to the Barcelona Convention signed a revision of the Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources (LBS Protocol).

Under the revised LBS Protocol, the Mediterranean States agreed to take measures to prevent and control the degradation of the Mediterranean Sea area caused by land based sources and activities originating in their territories, including discharges from rivers, outfalls and coastal establishments. Substances that are toxic, persistent and liable to bioaccumulate are placed first in the list of priority substances to be phased out.

The amended protocol, under the new title of "Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources and Activities" covers not only the Mediterranean Sea itself, but also the entire watershed area within the territories of the riparian states draining into the

Mediterranean Sea, the waters on the landward side of territorial boundaries as well as communicating brackish waters, marshes, coastal lagoons and ground water.

The signature of the amended LBS Protocol, is a milestone in the history of the Mediterranean Action Plan, as it sets the legal framework for a progression from land based pollution assessment to taking strong action on pollution control.

The new approach to combat land-based pollution: the Strategic Action Programme (SAP)

One of the major breakthroughs in the Mediterranean countries' efforts to combat land-based pollution, which was prompted by the signature of the revised LBS Protocol, is the formulation and adoption by the Contracting Parties of a Strategic Action Programme (SAP) to Address Pollution from Land-based Activities (UNEP, 1998).

The SAP is an action-oriented MED POL initiative identifying priority target categories of substances and activities to be eliminated or controlled by the Mediterranean countries through a timetabled schedule for the implementation of specific control measures and interventions. The SAP, adopted by the Contracting Parties in 1997, is the basis for the implementation of the Land Based Sources Protocol by the Mediterranean countries in the next 25 years. In addition, the SAP represents the regional adaptation of the principles and aims of the Global Programme of Action (GPA) to address pollution from land-based activities, adopted in Washington in 1995.

The key land based activities addressed in the SAP are linked to the urban environment, (particularly municipal wastewater treatment and disposal, urban solid waste disposal and activities contributing to air pollution from mobile sources) and to industrial activities, targeting those responsible for the release of toxic persistent and bioaccumulative substances into the marine environment, giving special attention to persistent organic pollutants (POPs).

Also addressed are the release of harmful concentrations of nutrients into the marine environment, the storage, transportation and disposal of radioactive and hazardous wastes and activities that contribute to the destruction of the coastline and coastal habitats.

The SAP has built-in scope for the review of detailed operational timetables at two to three year intervals and a detailed work-plan and time-schedule for the first biennium has been prepared by the Secretariat and approved by the countries. The activities earmarked for the first biennium create the infrastructure for the implementation of the SAP and are essential to equip all the countries with the necessary tools (regional guidelines, strategies, plans and programmes for sharing technical information and advice, priority capacity building and preparatory public participation activities) that will allow them to eventually fulfil their priority objectives under the SAP.

The adoption of the SAP and the initiation of activities for its implementation even before the entry into force of the amended LBS Protocol, is a clear indication of the determination of the countries to take concrete action to combat land based pollution and at the same time contribute to maintaining and restoring marine biodiversity, safeguarding human health and promoting the sustainable use of marine living resources.

Shortly after its adoption, the SAP was recognised by the Council of the Global Environment Facility (GEF) as an important programme dealing directly with some of the major concerns relating to international waters. As a result of this recognition the GEF Council approved in 1998 a three-year Mediterranean GEF Project, started in January 2001, entailing a contribution of six million US\$ for the realization of a number of important groundwork activities of the Strategic Action Programme that are essential for the Programme's long-term success.

One of the main expected outputs of the first years of implementation of the SAP is the formulation and adoption of National Action Plans specifically designed to tackle land-based pollution. The National Action Plans (NAPs) are intended to follow on from the adoption in each country of all the targets and activities of the nationally relevant components identified in the SAP. Funds from the Mediterranean GEF Project will be used to support national inter-ministerial committees in the development and implementation of NAPs in countries. The concrete implementation of country specific National Action Plans to combat pollution from land based activities is the operational longterm output of the SAP.

One of the most important components of the SAP which is expected to lead directly to a reduction in polluting inputs to the Mediterranean Sea from land based activities is the package of actions which accompany the evaluation of the impacts of pollution hot spots (Figure 3.) and the environmental audit of pollution-sensitive areas (i.e. those areas of natural or socio-economic value at risk of becoming future pollution hot spots) in the Mediterranean, taking into consideration their regional and trans-boundary significance.

Figure 3. The distribution of the identified Mediterranean pollution hot spots



Source: UNEP/MEDU, 1999

Pre-investment studies are being conducted in the most important hot spots and detailed environmental assessment reports will be soon ready for the most important pollution sensitive areas from a regional perspective. This package of actions is expected to lead to investments by countries and donors in projects aiming at the elimination or reduction of trans-boundary pollution from the priority hot spots as well as in environmental protection projects and comprehensive integrated management plans in the selected pollution-sensitive areas. GEF funds are being used for the preparation of pre-investment studies in GEF eligible countries.

The development of economic instruments for the sustainable implementation of the SAP

When the costs for the SAP remedial actions are considered (**Table 1**.), it becomes evident that the success of the SAP will largely depend on the sustainable financing of its individual components on a national level. The goal of the Secretariat is to develop administrative, legal and fiscal mechanisms for the sustainable financing of the SAP and to assist the governments in implementing these mechanisms by adapting them to meet their national requirements. This will involve setting priorities for financing and mobilizing the financial community and international donors. In a first stage pilot projects will be implemented in six Mediterranean GEF eligible countries.

	Estimated cost (million USD)
Hot Spots	6,453.00
Sensitive Areas	195.25
Cities (air pollution, transport, solid wastes, etc.)	2,800.00
Capacity Building	13.00
National Action Plans	11.2
Clean Production	460.7
Monitoring and Enforcement	37.14
Information and Public Participation	2.98
TOTAL	9,973.27

Table 1. Estimated costs of priority pollution remedial actions in the region

Source: UNEP/MEDU, 1997

Setting the administrative, legal and technical groundwork for the implementation of the SAP by the countries is steered through regional guidelines and plans, which should be integrated into the National Action Plans. Funds from the Mediterranean GEF project have been allocated for their preparation. The selected guidelines and plans address those processes and activities for which the MED POL Programme identified the need for further assistance, including sewage treatment and disposal, disposal of urban solid wastes, industrial wastewater treatment and disposal, riverine and estuarine pollution monitoring and environmental inspection systems. A number of guidelines and plans are intended to strengthen the technical capacity of the countries to take on board the principles introduced by the amended LBS Protocol such as the application of clean technology and best environmental practice.

In addition to adequate financial and technical resources, combating pollution from land based activities also requires specific competencies in areas such as environmental policy formulation and enforcement, scientific capability in the assessment of pollution, for example river pollution monitoring, as well as technical and managerial capabilities for the implementation of clean production techniques and environmentally sound technologies, for example the proper operation and maintenance of wastewater treatment facilities. The SAP makes provision for a series of regional training for trainers that aims to enhance the capacities of Mediterranean countries in the above fields as well as to assist countries in overcoming existing inadequacies. Funds from the Mediterranean GEF project will support a number of SAP training courses earmarked for 2001-2003. Modern training techniques are deployed and the training package delivered to the trainers at the end of regional courses includes transparencies and explanatory notes in hard copy and software form, prepared in a way that facilitates translation and desk top publishing in any of the Mediterranean languages.

MAP is actively involved in the distribution of information material on all its projects and carrying out public information campaigns and special activities involving the public in environmental protection. MAP has recently set up an ambitious international information and public awareness strategy, which will reach out to broader audiences such as consumers, the private sector and youth, using multilingual literature and modern dissemination methods such as the Internet. Funds from the Mediterranean GEF project will be used to organise a workshop in 2001-2002 on the role the public and non-governmental organisations (NGOs) in particular can play in the implementation of the SAP.

Apply cleaner production

The amended LBS Protocol and the SAP state as one of the general commitments of the countries the obligation to take into account the best available techniques and the best environmental practice including clean technologies when adopting action plans and taking measures to control land based pollution.

Through the cooperation of MED POL with the Clean Production Regional Activity Centre (CP/RAC) based in Barcelona, Spain, MAP is currently assisting businesses in applying cleaner production by giving priority to pollution prevention at source and the minimisation of waste flows. Businesses are encouraged to adopt these alternatives as a preferable strategy to end-of-pipe treatment. Over 20 tailor-made case studies on pollution prevention have been prepared and implemented by small Mediterranean industrial enterprises in Spain, Malta, Croatia, Turkey, Israel, Lebanon, Egypt, Tunisia and Morocco.

At the same time businesses are being informed of useful tools for the assessment of their industrial activity to detect potential opportunities for preventing and reducing pollution at source and for providing them with sufficient data to orientate their policy towards cleaner practices and technology that are technically and economically viable. One such tool is known as the Minimization Opportunities Environmental Diagnosis (MOED). The CP/RAC has prepared a manual on the MOED containing a specific work methodology and guidance for experts who work in the environmental sector and intend to carry out the diagnosis for businesses in Mediterranean countries.

Tracking the pollutants

A priority ongoing MED POL initiative that stems from the commitments in the Strategic Action Programme is to encourage the Mediterranean countries to introduce public tracking and reporting systems of pollutants, known as Pollutant Release and Transfer Registers (PRTR). A PRTR is an environmental database or inventory of potentially harmful releases or transfers to air, water and soil as well as wastes transported off site for treatment and disposal. In addition to collecting data for PRTRs from stationary sources, industries in particular, PRTRs are also designed to include estimates of releases from diffuse sources such as agricultural and transport activities.

A first pilot MED POL PRTR project is presently being launched in Egypt, in cooperation with the Alexandria branch of the Egyptian Environmental Affairs Agency (EEAA) and ICS/UNIDO in Italy. A defined number of industries in the Alexandria region will be reporting on specific industrial activities and chemical releases and making this information available to interested parties. A successful

outcome of this project is expected to accelerate the launching of similar activities throughout the Mediterranean.

In addition to continuing providing assistance to countries with the preparation of compliance monitoring programmes, the MED POL Programme is introducing inspection and legislation enforcement initiatives to complement the actions for pollution control in the Mediterranean. MED POL has set-up an informal regional network aimed at creating contacts and the exchange of information with regional environmental protection professionals and other networks involved in compliance. The International Network for Environmental Compliance and Enforcement (INECE) is cooperating with MED POL in the preparation of guidelines for environmental inspectorates in the Mediterranean to assist countries in checking compliance with nationally adopted authorisations and regulations.

To optimise the campaign against land-based pollution and to thoroughly integrate environmental concerns with as many aspects of social and economic development in the Mediterranean as possible, MED POL is working closely with the Mediterranean Commission for Sustainable Development (MSCD). Set up as an advisory body to MAP in 1996, the MCSD is a think-tank for the promotion of sustainable development policy in the Mediterranean, making recommendations to the Contracting Parties on future actions for the promotion of sustainable development, tourism and urban management. "Agriculture and rural development", "Desertification and soil erosion", Urban waste management", Energy and transport", "Natural risks" and "Regional cooperation" are examples of some recent themes on the agenda of the MCSD.

The implementation of the SAP as a contribution to achieving sustainable development

The SAP is an ambitious undertaking, spanning a lengthy period of 25 years and addressed to countries with different dearees of socio-economic development, technical, scientific and administrative competencies, different cultural values and environmental priorities. To increase the prospects for the success of the SAP, a mechanism has been set up from it onset which takes on board issues such as the nature of the body that will coordinate the SAP activities at the national level, the effective conveyance and assimilation of all the "support structures" of the SAP at the national administrative level, the successful dissemination and assimilation of the tasks by the local stakeholders in each country as well as the nature of the body which will monitor the progress of all the activities that are being carried out in each country and of the body which will evaluate the outputs. In addition, the SAP operational plan tackles important practical issues for achieving the financial sustainability of the SAP in the long-term. Equally importantly the operational plan provides detailed instructions for the countries on how to address the technical concerns that are being raised in the deliberations leading to the updating of the SAP. As an example, detailed instructions are provided to the countries on how to calculate the national budgets for individual targeted pollutants and the actual pollutant reductions required on a national basis, to reach the targets stated in the SAP. To achieve this, the operational plan also provides directions for the identification of the baseline values against which the pollutant reductions should be estimated. These are just some of the crucial issues that are tackled by a SAP implementation operational plan that has been developed by MED POL and adopted by the Contracting Parties in November 2001 in Monaco (UNEP, 2001).

The reduction of industrial pollution: the process has started

When elaborating the SAP operational details, the Secretariat and the Mediterranean experts were faced with a real challenge in finding the appropriate strategy to translate the regional binding commitment to reduce the releases of pollution from industrial sites into a package of realistic actions for the Mediterranean countries.

It is in fact worth stressing that the SAP is implemented in a region where social, cultural differences are prevailing between countries, a region where 75% of the countries belong to the developing world, with heterogeneous environmental policies and priorities, that considers the economic development as the first priority to improve the quality of life.

In view of the above, in proposing a methodology for the reduction of pollutant releases, should the Mediterranean countries adopt a "flat rate' or "differentiated" approach as the basis for the implementation of the SAP and the compliance with their commitments?

At first glance, the concept of "differentiation" in its different forms of application based on volumes of releases, volumes of reduction and on the cost of reduction, would seem to be preferable. This would allow to partially take into consideration the national situations of every Mediterranean country regarding their releases of pollutants into the Mediterranean and their relative shares in the degradation of the marine environment.

However, as a result of a complex calculation of the different criteria of differentiation based on releases/inhabitant, GDP/inhabitant and releases/GDP, it was concluded that this approach cannot be adopted in the actual Mediterranean context, mostly because it is not quantifiable and untraceable neither at national nor at regional levels. In the present situation, with data and information still scarce, it would be almost impossible to reasonably estimate the share of each Mediterranean country in the degradation of the Mediterranean region and its environment. In addition, one of the results of this exercise was that the costs associated to the reduction of releases were not in favor of the developing countries in the region.

The "flat rate' approach which was finally agreed upon consists of adopting for all the Mediterranean countries the same rate of reduction of releases that is indicated under the SAP provisions. Obviously, at the national level, an "internal flexibility" instrument was introduced and, as a result, different rate of reduction could be imposed among stakeholders according to the individual records (e.g. to favor industries that have already reduced their releases at acceptable levels). In other words, any country may transfer internally release targets between different activities generating the same-targeted pollutants. In this context, the estimation exercise carried out by the Secretariat shows that the adoption of the "flat rate" approach would enable the Mediterranean countries to fulfill their SAP commitments in a much more reliable and equitable efforts.

The adoption of the "flat rate" approach requires the definition of the basis on which the Mediterranean countries would achieve and track the reductions in order to comply with the SAP binding commitments. It was decided to consider the year 2003 as the base year for the establishment of the national "Baseline Budget of emissions/releases" for each substance targeted in SAP. The methodology was prepared and was based, whenever data was not available, on emission factors commonly used. The Secretariat is organizing a number of missions and meetings

to assist the countries in this challenging initiative that could represent a turning point in the history of the pollution control in the region.

The adoption of the SAP operational strategy by the Contracting Parties in Monaco in November 2001 is therefore creating new opportunities for the national environmental administration to take in hand the effective control of pollution, for the industries to improve the quality of production and sustainability, for the local population to track the trends of the quality of their environment and finally for the MAP to participate actively in the regional process of the environmental management of the Mediterranean region. A comprehensive process which will substantially contribute to the sustainable development of the region.

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CLEANER PRODUCTION: REDUCING THE CONTAMINATION IN THE MEDITERRANEAN ACTING AGAINST ITS MAIN CAUSES

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The industrial activity in the Mediterranean Basin, represents⁵³ the 33% of the economical activity occupying the second place, after tourism.

This activity, as it happens with the distribution of population, concentrates in the coastal areas, what "approaches" the effects of its emissions and dumping to the sea⁵⁴. Besides, in many cases its localization superimposes and mixes with population, urban areas and inhabited areas.

Other aspects to consider and that difficult dealing with the relation between the industrial sectors and the environment in the framework of the Mediterranean Region, can be found in the differences in the levels of economic development amongst the countries of the North shore and the South shore of the basin, the different degrees in the implementation of environmental regulations, the age of the enterprises, the degree of identification and penetration on the environmental displays and a long etcetera that must gualify any global statement to be announced⁵⁵.

In any case, the industrial sectors must face, more or less, the challenges that arise from a scenery that evolves progressively towards a global treatment and that, in the case of the enterprises, makes advisable to adopt production guidelines:

- Respond to the requirements of the society and of the markets.
- Optimize the costs of environmental management,
- Avoid the administrative and/or criminal responsabilities, present and/or eventual,
- Manage in the best possible way the raw materials and the products,
- Uses the most appropriate processes.

The challenge can result in the integration of the environment as one more of the management policies of the enterprises and, in consequence, of their level of competition, keeping in sight the global challenges that the Region has planned⁵⁶.

 $^{^{53}}$ "Promoting a Cleaner Production in the indestrial sectors. Towards a sustainable development of the Mediterranean Sea". RAC/CP 2002

⁵⁴ It is estimated that 66 million m³ of not treated water is dumped into the sea every year. 30% of the DQO, 92% of the phenols, 37% of the lead or 40% of the chrome that are detected in Mediterranean waters can be identified in that dumped water. (Source: the identification of the prioritary hot points and the sensitive zones in the Mediterranean. Mediterranean Action Plan, 1999)

⁵⁵ The Mediterranean Action Plan has identified (through its MEDPOL programme and the Strategic Action Programme) a series of "hot points" in which the generation of pollution is specially serious.

⁵⁶ It is prime, for the incorporation of the protection of the Mediterranean Sea by the industries, the Protocol that contemplates the pollution of the sea caused by sources situated in land (LBS Protocol). 206

Therefore, we can state that <u>the management of the environment in the Mediterranean Region will</u> <u>not be efficent, if it does not constitute an element of the own development of the Region</u>. And it can not be understood without incorporating the world of the enterprises in this common task.

Nevertheless, to identify the benefits that come from a better environmental management, it is important to fix the sequence⁵⁷ in which the enterprise deals with its relation with the environment (fig 1).



fig 1

This sequence incorporates inherent principles to the own essence of the concept of enterprise:

- The *Prevention* and the *Reduction* are in the essence of the concept of saving of the production factors,
- The reuse and the *Recycling* can be compared with the maximum use of the production factors,

⁵⁷ So that it does not happen like in the case of a meat-processing enterprise which, after investing in a sewage treatment plant and after making an Environmental Diagnosis of Minimization Opportunities (DAOM), it found out how, with small changes in its processes, it could avoid generating an important volume of polluted waters. As a consequence of that, the sewage treatment plant turned out to be bigger than if they had started by analyzing the options of reduction in origin.

- The increase in value would be the equivalent to the obtention of "atypical benefits",
- The correct final regulation would be linked to the legal security.

These are the stages that must be combined in the election of the "mixture" of environmental management.

For that, it is of capital importance that the environmental costs (present and foreseeable) are correctly assigned. Otherwise, the decisions could be wrong and they would not have the desired results.

From a cost-benefit approach, this proactive attitude that is not limited to achive the implementation of the environmental obligations as a simple "added cost", but that integrates them in the management of the business, It has a special sense when reduction strategies in the origin of the pollution are adopted⁵⁸.

The Cleaner Production (C+L) allows overcome the paradigms of the politics of "command & control" in integrating concepts that the enterprises can visualize using the usual mechanisms to evaluate the profitability and competitiveness.

We understand as Cleaner Production: "the continuous application of a preventive and integrated environmental strategy, implemented to the processes, products and services, with the aim of increasing the global efficiency and reducing the risks for the humans and the environment"

As it can be seen in its definition we are not talking about a particular "technique", but about a "strategy", understood as the implementation of technical and technological options, at the same time as with changes in the behavior guidelines and ways of working.

It allows, also, to identify savings and increase of productivity and quality, to incorporate innovations in the productive cycle, to reduce the risks and, all in all, to identify the business opportunities that offers a better and more efficient protection of the environment.

In this sense and to understand the viability of the proposals of cleaner production, it is specially useful the introduction of the "sustainability" concept (which combines the environmental needs with the social ones and the economical ones), specially if we compare (fig 2) its environmental and economical effectiveness regarding the politics of end-of-pipe treatment, known as "end of pipe" (eop).

⁵⁸ We find here a series of concepts of almost identical meaning: "Reduction at origin", "Reduction at the source" "Cleaner Production", "Minimization of the waste and dumping", "Ecoeficiency", etc. Many times the difference of meaning comes, simply, from the institution that promotes this type of iniciatives. 208



fig 2

The implementation of a business strategy of reduction in origin of the pollution entails (as the group of interactions between enterprise and environment) a cultural change. It is a matter of changing the paradigm "how my enterprise must help the protection of the environment" to "how can I help my enterprise protecting the environment".

Even with these reasons that show a series of business advantages in the application of prevention and reduction in origin of the pollution strategies, the fact is that, even though there have been advances in this sense, in the Mediterranean Region there is still a long way to go.

This statement of a general character must be qualified, as we said at the beginning, depending on the country that we are analyzing and taking into consideration, while assessing the progresses of these proactive attitudes, the differences in the starting point that we find in the different countries of the Action Plan for the Mediterranean (APM)⁵⁹.

Amongst the factors that stop this implementation, we could mention a combination of technical reasons, mixed with others of a conceptual character or, even, external to the enterprise itself that many times makes difficult the perception of the advantages that it could present. Amongst them and in general:

⁵⁹ To this respect, the publication of the RAC/CP "State of the Cleaner Produciton in the countries of the Action Plan for the Mediterranean" (2001) analyzes the differences in the situation and grade of introduction. 209

- The change of materials and energy are not well known by the enterprises.
- The negative environmental external matters are not correctly made internal and, as a consequence, the functions of cost of the products are not defined in the correct way.
- In several cases, the prices of the water and of the energy are subsidized.
- The viable alternatives (technical and economically) are not sufficiently known.
- The end of pipe "eop" solutions are preferably chosen.
- There are not enough legal regulations to boost the cleaner production.
- Economical instruments (driving and deterrent) are missing.
- Budgetary funding to boost the cleaner production are missing⁶⁰.
- The routine in the procedures and processes and a resistance to introduce changes.

In the specific case of the small and medium-sized business (PYMES), majority and dispersed in all the countries of the Region, we should add to these factors:

- Lack of environmental departments and of knowledge that allow to introduce ecoefficient alternatives.
- Limited access to sources of information about applicable technologies.
- Limitation of the available resources.
- High rate diversification of processes and procedures.

This plurality of processes and procedures makes difficult the establishment of specimen programmes for the promotion of the cleaner production.

Therefore, the path that facilitates the incorporation of the sustainability concepts in the enterprises must incorporate:

- Identification instruments of viable opportunities of reduction of the pollution in origin.
- Instruments of information, formation, sensibilization, etc.
- Actions to facilitate the transfer pf apropriate technologies.
- Control⁶¹ and monitoring⁶² instruments.
- Economical instruments.
- Instruments of consensus that strengthen voluntary agreements.
- etc.

⁶⁰ Only half of the Focus Points of the RAC/CP have a budget assigned to cover, totally or partially, the information activities and introduction of the Cleaner Production.

⁶¹ Permits, inspections, legal requirements, etc.

⁶² Improvement indicators



fig 3

In the Mediterranean there is, as mentioned above, a diversity in the grade of introduction of the prevention in origin of the pollution from the industries (fig 3).

Likewise, the instruments and actions that, in each case, have been implemented with that purpose are very different. The fig 4 shows some of them with the degree of implementation in the Region.





With the aim of promoting the concepts of prevention of the pollution and the cleaner production between the business sectors of the Region, the Mediterranean Action Plan established⁶³, in 1995, the Regional Activity Centre in Cleaner Production (RAC/CP) located in Barcelona.

EI RAC/CP counts with a National Focal Point in all and each of the countries of the PAM with which it establishes a Mediterranean network for the exchange of knowledge, assistance and advice, formation (specially trainers training), preparation of regional studies and methodologies for the pollution prevention, etc.

The Centre is included in the structure of the PAM, collaborating amongst others with its Coordination Unit, with the MEDPOL Programme and with the Mediterranean Comission fot the Sustainable Development.

The RAC/CP accumulates an experience in its work with Catalonian enterprises that has allowed it to develop a diagnosis tool with the objective of being able to visualize the opportunities that can offer a better anvironmental management in the enterprises⁶⁴.

⁶³ The Regional Activity Centre in Cleaner Production (RAC/CP) is the Centre for the Enterprise and the Environment that the government fo Catalonia created in 1994 through the agreement between the governments of Spain and Catalonia, this Centre of PAM was offered to develop the functions of RAC/CP. The activities that it carries out as such, are financed by the Spanish government.

⁶⁴ The actions of the Centre for the Enterprise and the Environment, as much in Catalonia as working as a RAC/CP, can be known with a visit to their Webpage: http://www.cema-sa.org

This Environmental Diagnosis of Minimization Opportunities (DAO M)⁶⁵, is a useful tool for the enterprises in decision-making process in what refers to its relationship with the environment and the environmental politics to adopt and that has proved the efficiency of the cleaner production proposals, as its use in the implementation of other environmental management tools, like the certified systems (ISO14000 or EMAS).

The methodology of the DAOM (fig 5) is not very different to the implementation of a quality system and does not take for granted any preestablished option type, what allows its use to be valid in any country and industrial sector, although the viability conditions (energy costs, of water, employees and materials, etc.) or the legal obligations, are different between them.



fig 5

In all, the management options of the environment in the enterprises being based on the prevention or reduction in origin of the pollution are viable, whenever the instruments that allow their identification are available, as well as the analysis of their technical and economical viability.

⁶⁵ In Catalonia more that 350 DAOMs have been carried out. This methodology is being used in other countries of the MAP.

This preventive and continuous environmental strategy, the cleaner production, has to allow the industries to adapt their processes and procedures for the progressive reduction of the industrial pollution in the Mediterranean, helping them, at the same time, to gain competitiveness.

Therefore, the cleaner production and the prevention in origin of the pollution are discovered as a key instrument for the incorporation of the industrial component in the integrated management of the coastal zones and the protection of the Mediterranean coast.

ENVIRONMENTAL CONFLICTS, TECNHNOLOGICAL RISKS AND PUBLIC PARTICIPATION

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ABSTRACT

In this paper, I approach public participation as a social problem, as a widely used expression, and as a tentative concept that may allow us to bridge the gap between the polar categories of social conflict and consensus. Such uses of this concept may unable us to mitigate the problems of trust which are now facing the conventional organisations for public participation. My empirical information comes from my research on the field of social movements during the 1990s and on specific environmental conflicts that I have studied at the end of that decade under the auspices of the European Commission.

While highlighting some social dynamics of environmental and social conflicts, I focus on the relationship between participation, social conflicts and technological risks and suggest we need a dynamic conceptual framework on public participation to which the sociologies of risk and social movements can contribute a great deal for the reasons exposed in this paper. Due to their relevance for this subject, I will face these arguments with the help of several notions that are being increasingly used by social scientists, such as 'social reflexivity', 'goal displacement', 'technological risk', and 'trust'.

The protection of the environment as a social issue

The main goal of this paper is to defend a central assertion for sustainable policies: the issues involved in the protection of the environment are not only technical but also social. The basic reason for this is the central role that human beings play both in the production and the solutions of environmental problems. For many policy makers it is quite clear that, to cope with current environmental changes, the participation of citizens becomes a precondition for success. However, this is no a simple issue that can be approached from some of the models currently applied, which stand from uncontrasted assumptions emphasising rational action. To be effective, these policies need to consider man not simply as a 'tool producing' (*Homo Faber*) but as 'symbol producing' human being (*Homo Pictor*). The latter acquires a central relevance in human forms of social organisation, which are characterised by the central role played by symbols. The symbolic interaction of man becomes essential for his capacity to adapt to the changes in his environment and survive.

The importance of human communities in the ecosystem has been emphasised by biologists and informs a paper on biodiversity presented in the United Nations Conference that laid the basis for this book. That paper approaches environmental issues the result of a social-historical process and emphasises the relationship between historical and biological transformations (Galante, see chapter

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in this book). Galante relates the first technological revolution in the social history of humankind—a topic widely studied by social scientists— with the end of the last glacial period and the elimination of the Neanderthal man by our precursors of the Cro-Magnon species. A central fact is that such elimination was not done directly, through war or physical competence but through *competence* in the biological sense of this concept, which refers to the survival of the fittest species to environmental changes, as emphasised by a series of widely diffused novels on this period (Anuel 1980).

Another frequent view contends that the brain structures of the both aforementioned human species made a biological difference from which inferences are drawn in reference to their capacity of communication, memory and adaptation to environmental changes⁶⁶. According to this view, the larger brain structure of the Cro-Magnon man would be the source of a higher adaptive capacity at the end of the last Glaciation. This structure is also viewed as a physical instrument for a higher capacity of producing symbols which is the essence of human communication as suggested by a classical sociological theory (Mead 1939). Communication is a precondition of the cooperative activities that have been essential for the capacity of social groups to become adapted to the environment and survive. Anthropologists have emphasised the linguistic capacity of our ancestors, as well as their capacity for knowing and applying syntax as essential for their survival. However, a combination of both types of factors, biological and cultural is likely to be the reason for the survival of the Cro-Magnon man, while the lack of them accounted for the elimination of the Neanderthal man. In his book on this topic, Arzuaga denies the fact that this specie had a smaller brain capacity and claims that the average Neandertal man had a superior capacity to our contemporary humans and some of them had one of the largest ever found in palaeontology (2002: 106).

The same can be said about environmental protection and the need to approach such problems from perspectives which are not only grounded in the natural sciences. This has important implications for environmental protection. In the first place, it implies a revision of the prevailing approaches to these problems, which depart from the assumption that environmental protection is a technical problem and the natural sciences provide the valid knowledge for designing and implementing sustainable policies. For instance, while the laws regulating studies of environmental impact emphasise both the physical-natural and social dimensions of the projects under scrutiny, the first have been the grounds for their evaluation, while their social impacts have had little influence upon them (Pardo 2002: 32). My argument highlights the need for trans-disciplinary teams that would enable us to cut across the narrow boundaries of specialization to which environmental protection is often restricted and to undermine the hegemony of the natural sciences in it. The urgency to find solutions to environmental problems does not justify such approaches because the implementation of technical solutions is always a social process, as it usually happens with their causes.

My second assertion in this paper is that the analysis of processes of social communication are central for environmental protection. This may sound as common sense but it is neither actually recognised, nor implemented while studying these problems. The existing relations between social conflict and public participation illustrate my point. To highlight these relations and to account for

⁶⁶ Eduardo Galante and Alfonso Polvorinos suggested part of this argument to me in personal communications during the aforementioned PNUMA conference.

their integration is another goal of this paper. The participation of citizens in sustainable policies requires cooperative activities, the capability to work in teams, and social communication through signs and symbols. This is why the analysis of public participation also involves that of the situations in which communication either becomes distorted or does not take place. My point is that the analysis of social participation needs to comprehend the social dynamics of conflict, which is the opposite form to cooperation, as well as the phenomena of goal displacement taking place in conventional channels for social participation.

For these reasons, I will approach such participation as a social problem, emphasising the problems of trust which are now facing some of these conventional organisations. While highlighting some social dynamics of environmental and social conflicts, I will also focus on the relationship between participation, social conflicts and technological risks and suggest that we need a dynamic conceptual framework on public participation, to which the sociology of social movements can contribute a great deal for the reasons exposed below. Due to their relevance to this subject, I will face these arguments with the help of several expressions that are being increasingly used by social scientists during the last two decades, such as 'social reflexivity', ' goal displacement', 'technological risk', and 'trust'.

Public participation as a social problem

The purpose of what follows is not to make problematic something, which is not, but to highlight the importance and the complex nature of social participation, a topic that is related to the origins of sociology (Durkheim 1985). Part of the difficulties of this topic arise in attempts to view this from a simplified perspective and to reproduce well-known problems of bureaucratic organisations in those instituted as the basic means for citizens' participation in affairs that affect their lives. These attempts tend to arise from organisations which do not take into account the complex character of current social process in western societies. The analysis of such organisations and those which claim to be alternative channels for social participation provide strategic information for the topic of this paper, as I argue below.

My first argument consists in highlighting that the complexity of the social participation processes requires approaching them as a problem, as much in its formal as in its substantive aspects. Formal aspects refer to the difficulties that the study of this subject creates by only employing the quantitative methods traditionally used for it; the substantive aspects focus on the forms of social participation in Spain since the transition to the democracy. The interpretation of this matter is based on two classical theories on social participation and the formal organization.

To the extent that participation is a form of social action that consists in "taking part in something or being part of something", the inherent problems to the study of social movements' organizations manifest itself also in the ways of social participation. The study of these collective phenomena does not always fit to the conventional operations of measurement in the social sciences which can have a relative relevance in their investigation, as I tried to show in a book on this subject (Laraña 1999). My argument highlighted that the data that are normally used in studies on participation come from polls and statistics aiming at measuring the attitudes of the population towards these organizations, and usually focus on the analysis of the characteristics of the social context where the movements

appear⁶⁷. An explanatory character is usually attributed to the latter, as social scientists tend to work with the assumption that the economical and political characteristics of the context where the movements emerge constitute basic data to explain why the citizens participate in them. This traditional sociological assumption, by which social structure determines collective action, has prevailed in the specialized literature on this field.

However, this assumption, and the procedure to which it leads, has frequently posed problems of interpretation to explain the emergence of contemporary social movements (Melucci 1996). It also has exempted the analyst from doing the ethnographic work that I consider necessary to know the processes of social participation. Based on direct observation, this kind of work allows him/her to penetrate in the groups in which the people participate actively and to analyze the way in which arouse that kind of compromise. From a widely diffused perspective on this topic during the eighties (resource mobilization), movements' grievances, and the reasons to participate in public life through social movements, were considered to be given by the configuration of the social structure, they were translated to selective interests and incentives, and their study was relegated to a secondary plan. Nowadays, those reasons are not taken for granted, and the processes of persuasion leading to their resonance in the publics are placed at the center of the explanation of these collective phenomena. Since the end of the eighties, social constructionist sociologists like myself have questioned the line of the previous explanation and emphasized on the need to study in detail the processes of collective persuasion, showing that the information about the conditions of the social movements is not sufficient to understand why people participate in movements. Through such persuasion and framing activities, social organizations succeed to define some matters as collective problems in the solution of which the affected individuals become central actors (Melucci, 1996; Snow and Benford, 1994). The need to distinguish between two different stages, of visibility and latency, and their relevance in processes of collective mobilization has contributed to a deep revision of the explanatory logic of the social participation that has prevailed until the Nineties (Melucci 1989, 1994). This Italian sociologist highlighted the central relevance of the period of latency for the emergence of the movement's collective identity, which empowers it to undertake mobilisation.

This argument is also related to mine about the problems of measuring social participation with quantitative studies, which cannot be applied to this latency phase.

The aforementioned logic (structure determines action) seems to inform the *public instruction model* that tries to promote changes in the daily patterns of the citizens in relation to the environmental problems. The gravity of these problems is considered sufficient to motivate the citizen participation in sustainable politics and to produce a change of attitudes in the direction of sustainable development.

Social participation in Spain

My previous argument about the problems of measurement of social participation through quantitative studies is based on the theoretical and methodological considerations that I have just stated as well as on data on the fluctuations of the indicators of social participation in Spain during the last two decades. The analysis of this topic needs to take into account the contrasts between

⁶⁷ Or collecting opinions of a sample of the population on controversial subjects related to collective mobilizations.

the results that some surveys on the participation of the population in voluntary associations. These surveys usually measure membership (or affiliation) and collaboration (or provision of voluntary work) in those organizations within the whole of the Spanish population, following the normal procedure of identifying representative samples (Orizo, 1991; González Blasco and others, 1989; Díaz-Salazar, 1997). At the beginning of the nineties, one of the most widespread surveys⁶⁸ showed a situation that was considered paradoxical: a pronounced decrease in participation had taken place during the previous decade, in which the analysts expected the opposite to happen, since it was the following decade to the approval of the our constitution which had produced a drastic change in the opportunities to participate in public life. That fact clashed with the prevailing approach to explain social movements during the nineties, which views the structure of the political opportunities as the determining factor of the participation in social movements (Mc Adam 1995a and b; Tarrow 1994). Since the possibility to legalize voluntary associations in Spain was recognised by the 1978 Constitution, the change in that structure was the ground for the expectations of that analysis, which stood in sharp contrast with the following facts.

The data obtained in 1990 were contrasted with others of the same survey done ten years before, the Survey on European Values, in which the author of the publication grounded on the most recent data also took part (Orizo 1991). The conclusion was that during the years of the political transition a big decrease of the *associative rates* had taken place in Spain. The rates of membership and provision of voluntary work showed that the Spanish population in 1990 participated in voluntary associations less than at the beginning of the eighties. The percentage of people affiliated to an association went from 31 to 22 percent of the population, and that of those who work for free dropped from 23 to 12 percent. That meant that the 78 per cent of the whole population did not participate in any type of association after the transition decade. The ones that attracted more people were those situated further from politics and had a cultural or religious⁶⁹ character. Political parties were placed in the last position, with only 1 per cent of the participation, which implied a decrease with the 3 per cent of participation in these associations in 1981.

That conclusion came to reinforce an idea that has a wide tradition in studies of political sociology: the Spanish society is one of the least participant and most prone to rely on the State⁷⁰ of the West (Wert 1996: 147). Since the eighties, one of the first conclusions of the above mentioned survey in the twelve European countries highlighted the tendency of the Spanish people to expect from the state the solution to their problems as a basic difference between Spain and the rest of Europe (Linz 1984).

However, these statements also stand in contrast with what has been happening since the middle nineties, as new events started to take place that make difficult to state that this lack of initiative is

⁶⁹ Despite experimenting a strong decrease, religious associations attracted a higher percentage of the population (6 per cent), sports associations were ranked after them (5 per cent), and then educational, artistic, musical or cultural ones (4 per cent).

⁷⁰ According to the poll made by Wert in 1995, 72 per cent of the citizens think that the State is responsible for the well being of all and it should take care of anybody who has problems.

⁶⁸ I refer to the European Values Research Poll, carried out in twelve European countries in 1981, that allowed a compared analysis on what happens in them

still a characteristic pattern of Spanish citizens. I have argued that those facts constituted a change in the tendency of the previous decades, and this had taken place in some non-governmental organizations dedicated to cooperation tasks with Third World countries (Laraña 1999). The documentation about this change came as much from my fieldwork in the area of the social movements as from surveys and data published in the press. In the middle of the nineties, the growth of the main ten Spanish NGOs was estimated at 375.000 members, and their global budget was estimated at 55.000 million pesetas in 1995⁷¹. According to the Platform of the associations for the development of the Third World countries, 800.000 Spaniards collaborated with them in the middle nineties, of which 6.000 were working as voluntaries (Díaz-Salazar 1996: 43). The pattern of membership affiliation to these associations grew exponentially according same source, which estimated it in 200.000 people more between 1994 and 1997 (Calle 1998: 69).

These data make it difficult to sustain the previous statement about the State-oriented character of the Spanish citizens and their withdrawal from social participation. In Spain, the increase in participation in organizations of international solidarity comes close to other European countries that have a long-standing democratic tradition. However, those optimistic figures must be reconsidered taking into account that the main indicator of participation, the percentage of *voluntaries*-people that physically participate in them doing free work--have been estimated in 40.000 people, of which 32.000 belong to the Red Cross, that can not be considered as an organization working for Third World development in a strict sense (Calle, 1998: 110)⁷².

A basic datum to explain this change is that it took place after the campaigns promoted by the "0,7 Platform", the camping out on the streets in several Spanish cities in the Autumn of 1994 in support for the demand that this percentage of the Gross National Product should be granted to these countries by the Spanish government. As I have pointed out in my elsewhere, those mobilizations were able to play the role of *initiator* movement —the one which opens a new cycle of mobilization (McAdam 1995)— for those of international solidarity which have proliferated since then in Spain (Laraña 1999). Surveys made in the following years showed the influence of this movement in public opinion, and portraved it as "a remarkable increase in the concerns of Spaniards for the developing countries" (Díaz-Salazar, 1996: 39; Del Campo 1995). The change in the perception of the problem became obvious when comparing it with the previous studies. As Del Campo (1995) has pointed out, in 1991 and 1992 the majority of the Spaniards considered themselves satisfied with the help that they gave to the countries of the Third World, but they modified their opinion after the camping out promoted by the "0,7 Platform". This change illustrates a central aspect of contemporary social movements regarding their influence in social participation: its social reflexivity⁷³ or its capacity to act as agencies of collective signification and to spread out new ideas and values in society (Snow and Benford, 1988; Melucci, 1989, 1996; Gusfield, 1994).

⁷¹Among them, Cáritas, Cruz Roja, Médicos del Mundo, Médicos sin Fronteras (*El País*, February 6th, 1996).

⁷² Such estimation differs from that which the previously mentioned communication media makes, which says 80.000 the people are enrolled as voluntaries in different types of non-lucrative associations, the majority of them in countries of Africa and Latin America.

⁷³ This expression is here used with a different meaning—as the capacity to produce public debates that generate new ideas in society which may change the established ones in reference to controversial subjects—to the one that I use further on to conceptualize the reflexivity problems of the conventional organizations for participation in public life. It is 220

To interpret these facts, an approximation that maintains singular interest is the theory of the *mass society*, as it contains a theorization about modern society based on the forms of social participation in different countries, which I view as forerunner of the current theory on *social capital* (Putnam 2000). The status of the former as a classical theory of social participation (that is to say, whose validity persists) is related to its empirical dimensions, its grounds on the relevance of secondary groups (or voluntary associations) in modern society, an argument that was initially theorized by Durkheim (1985). Mass society theory claimed that the efficient participation of citizens in public affairs required the existence of multiple and strong independent voluntary organizations which mediate between the individuals and their primary groups and the State, empowering the former to participate in decision-making at the level of the latter. The influence of these groups was viewed as essential for modern democratic society since they provide the actual channels for public participation (organizational aspect) and they contribute to shape public opinion through the social interaction within these groups (cognitive dimension).

In mass society theory, the meaning of social participation is based on a typology that differentiates societies depending on the presence and the vigour of the intermediate groups or voluntary associations. The basic difference between a mass society and a pluralist or democratic one lies in the strength that those groups have in the latter, whilst its weakness or its absence are the main characteristics of the mass society. These groups are considered essential to prevent the formation of movements that attempt against the system of liberties that distinguishes modern society from all the others (Kornhauser 1969). In classical theory about mass society, these groups have the following characteristics: 1) they are independent from the State, of its influence and power of cooptation; 2) participation in them is voluntary, unlike what happens with the relations operating at level of the state like political elections, military service and the payment of taxes; 3) They are local groups, close to individuals and primary groups.

The validity of the analytical typologies in the social sciences depends on their connection with the facts and their capacity to help us to interpret them. The aforementioned theory was formulated on a macro-sociological level of analysis that is useful to distinguish between different societies, but to verify its validity we must look for the ground of this distinction in what the citizens think about those groups. The opposite implies explaining social facts by theoretical assumptions that are not contrasted with reality. That can lead to produce a strong contrast with the facts, as it happened when the expectations of the analysts about the strong increase of the associative life that was going to take place in Spain during the first years of the transition. The legalization of voluntary associations did not have the expected social effects because it is not a reason to motivate the participation of the citizens in them, as well as the approval of a democratic constitution does not imply the emergence of a political culture similar to the one that exists in the countries where there is a long tradition in that sense. These processes of cultural change usually are the result of more complex historical, structural and cultural factors. Cultural factors have a basic cognitive dimension, that becomes manifest in the *public identity* of these associations. That is why the processes of collective mobilization provide basic information to the analysis of the social participation, as they contribute to our knowledge of the processes through which citizens assign meaning to their commitment with such associations. The analyst can get to know these complex processes much

a different but complementary meaning to the one spelled latter on, as this word has two meanings (Laraña 2001; Lamo de Espinosa 1998). 221

better if his analytical focus moves from the quantitative indicators of social participation to the framing activities and persuasion processes promoted by the mobilizing associations, and to the factors that boost their impact in the public opinion.

My previous argument is illustrated by what happens in our country with the political organizations and trade unions, to which mass society theory attributes the three aforementioned characteristics of voluntary groups. However, the relationships that normally appear between the big workers' unions, the political parties and the state organizations make it difficult to maintain the assumption about their independence, which shows the need to revise the theory of the mass society. The widespread public image of the unions as subordinated to political parties seems to have a negative influence on the attitudes of the citizens towards participating in them. During the years following the approval of the Constitution, the affiliation to the unions in Spain has been one of the lowest in Europe (Pérez Díaz, 1987; Prieto, 1994: 232). This fact seems related to rates of participation in the political parties, which was estimated at 1 per 100 in the middle of the last decade. Between 1987 and 1994 they occupied systematically the last place in the sympathy of the citizens towards any kind of association (Wert, 1996: 135).

There is another classical theory I consider very useful to interpret these facts. At the beginning of the last century, Robert Michels (1984) formulated its iron law of the oligarchy to conceptualize the tendency of the parties and unions towards the centralization and accumulation of power in their leadership, and to follow this goal above, and frequently against, its public claims and the interests of its electors.

"Robert Michels was the first--but hardly the last--to observe that the representational character of the party, and the professionalization of its leadership, created an almost inescapable tendency toward "oligarchy." The more that party leaders became career politicians, the more stake they had in maintaining their control of the party and using it as a vehicle for their own well-being. The result: bureaucratic, top-down control, the depoliticizing of the mass membership, the fostering of a privileged elite, corruptions of various kinds, and a growing tendency for the party to abandon its transformative goals" (Flacks 1994: 4).

A central topic in this chapter is what has been viewed as a form of *social reflexivity* by which the social and political organisations which are considered as the basic means for public participation not only become unable to fulfil this role but stand against it. This is also a phenomenon of *goal displacement*, which has long been seen as a recurrent pathology of bureaucracies and social organisations (Merton, 1964; Goffman, 1959; Collins 1994; Crozier 2000). This notion of social reflexivity, has two complementary meanings, which have acquired central importance for the sociology of the environment and the theories on the risk society: i) as the evidence of the unintended and negative effects of certain technologies and patterns of organisation which are characteristic of Western modernisation and have promoted it (reflexivity as *reflection* and recurrence); ii) it is also used to emphasise the growing importance of the debate on these processes of modernisation and technological transformation (reflexivity as *reflexion*). Processes of reflexivity imply a relation between an action of return (reflection) and the debate on it (reflexion) (Lamo de Espinosa 1998). Both forms of reflexivity inform the emergence of many current social conflicts⁷⁴ and controversies on environmental policies, as the one I have recently studied in Spain.

⁷⁴ There is an inner relationship between both meanings of the word because, in order to promote a debate on the relations between technological developments and patterns of 222

The organisational pathology mentioned before can be approached from Max Weber's analysis on the tension between formal and substantive rationality, between those modes of reasoning which focus on the search for the most efficient means of organisations and those which are centred in goals considered prior since they give *meaning to these means*. By so doing, he was aiming at the relations between a central cultural process in Western society (the search for meaning) and basic organisational aspects of many commercial firms. This conflict between formal and substantive rationality has become essential for the analysis of social organisations. It is pushed forward by the tension between those modes of reasoning I have just mentioned, which focus on the search for the most efficient means of organisations and those which are centred in goals that are viewed as prior to them. This has been a constant in the contending discourses over new technologies and policies for waste treatment that I have investigated in Spain and England (Laraña 2002).

The aforementioned organizational pathologies help us to understand the withdrawal of the participation in those conventional organizations established with that purpose in the western democracies. In the case of trade unions, the goal displacement problem is directly associated to their public identity and it is at the root of the issue of trust they raise among considerable sectors of the public opinion. As it happens with the political parties, the credibility problems of these associations are related to their widespread image of organizations that respond to a traditional conception of politics, the same one that informs the former. The unions' actions to reach higher levels of power are but a mean destined to allow the effectiveness of that action in defence of the interests of its members. However, that mean tends to take over from the previously mentioned legitimating goal, in compliance with the law enunciated by Michels. The goal displacement is caused here in a slightly different way (in its results) from the one Michels emphasised. Regardless of the fact that the interests of the leadership in power come into conflict with those of its constituency, the interests of unionists tend to become the goal of action. This may happen regardless of the fact that such action prevents the exercise of civil rights—as happened with relevant social conflicts in Spain (Laraña 1987)--, goes against general interests, or pushes them to a secondary level. This reinforces a sectarian image of the unions, which can increase it when they follow endogamy practices under the cover of formal discourses, in which the logic of the legal procedures and the topos of the defence of the 'rights of the workers' usually become the legitimating factors. The latter illustrates the prevalence of formal rationality in these forms of collective action.

The widespread public image of the workers' unions as politicized subordinate organizations to political parties increases their credibility problems. Such subordination does not allow them to carry out the mediator role of the secondary groups (amongst the primary groups and the state institutions) that is conferred on them in a pluralist society by that theory. Such public identity does not seem to lack foundation and it is based on historical facts and practical reasons, on which the meaning of participation is grounded. These credibility problems propel the search for alternative channels of participation and the formation of contemporary social movements. In many of them, horizontal structures have become a self-referential element on which their collective identity is grounded, as well as their capacity to recruit their supporters. The repeated expression 'social

social transformation, these subjects ought to be defined and posed again as issues which are problematic because of the impact they have on the biospheres, producing effects which demand further analysis.

organizations of base' emphasizes this search for an organizational model that dilutes the weight of the bureaucratic structure, and the application of the principles of decentralization of decisions and autonomy of local sections. There are frequent characteristics in the contemporary social movements (Johnston, Laraña and Gusfield 1994), which try to reach a balance in the contradictory tensions between organisation and democracy. Those tensions inform the law formulated by Michels more than eighty years ago⁷⁵. In Western societies, the structure and functioning of political parties and workers' unions seem to confirm this law for a sector of citizens that never participates in those organizations, but that looks for different channels do it through social movements.

However, for Michels' movements are fated to develop the same oligarchic structures when they are institutionalized and acquire continuity in time. This aspect is illustrated by a criticism of Greenpeace by the environmentalist groups that follow the organizational characteristics of contemporary movements. Due to its organizational form, which is similar to that of a private company and a political party, GP has been publicly defined as a 'multinational of the environment' ⁷⁶. Despite that, Greenpeace has experiment a strong increase of the affiliation: since the creation of its first national office in Madrid in 1984, its affiliation reached 65.000 members ten years later; nowadays, with more than 75.000, it surpasses the membership of some political parties in Spain.

This fact seems to question my preceding analysis on the search for conventional channels of association. However, the independent character attributed to Greenpeace seems to be a powerful factor for its capacity to get public support. It a characteristic of the public identity of the voluntary associations—as independent from the political parties--, which is also a central feature of contemporary movements, which was already highlighted in the mentioned theory of the mass society (Kornhauser 1959). During the last decade, I have found this feature in Spanish student organizations in which this type of independence has acquired a central importance to thrust participation and counteract the problems of trust (Laraña 1999). The opposite seems to happen with the unions in Spain despite their efforts to differentiate themselves from the political parties. The public image of the unions, as subordinated organizations to the political parties, has been reinforced by a historical tradition in which the two main ones, "Comisiones Obreras" and the "Unión General de Trabajadores", are linked to the two main left-wing parties, and they promote amongst their followers a *culture of class unionism* that reinforces such a link (Pardo y Fernández, 1994: 446; Prieto, 1994).

Since this paper emphasises Michels' theory in order to grasp the complexity of social participation, it seems to be entering rocky way due to practical goals of the book where it is published and the number of politicians participating in it. My purpose is to do something which I not only view as helpful, in the traditional sense of using social research to understand social problems, but as necessary to cope with the changes that are taking place in the last decades in Western societies. Part of these changes have been conceptualised by a leading theorist of the risk society as the *unbinding of politics* from the conventional channels to which they were bound in modern society (Beck 1992, 1996). He claims that, to face current social situations in complex societies, we need an entire new way to understand politics and to approach the role of other types of organisations for public participation. Social movements take the lead in the contentions over public issues and provide politicians with the main ideas on how to act.

⁷⁵ The idea that an intrinsic conflict exists between both of them comes from Max Weber's theory about the bureaucracy and informs that of Michels about political parties (Linz, 1983).

⁷⁶ Environment and Society Congress, Universidad Pública de Navarra, Pamplona, 1997.224

The importance of the increasing lack of trust in conventional channels for public participation is manifested in the problems facing many democratic societies and political establishments in the Western world. The rates of abstention in local and federal elections in the US and in other Western countries, the wide support obtained by former marginal parties, as the National Front in France, or the Northern League in Italy illustrate the dimensions of this problem of trust. It implies another form of social reflexivity. To the extent the National Front is not a democratic party in its goals, as it is publicly framed, the unintended effects of the iron law of oligarchy⁷⁷ can also be manifested as a threat to the system of civil rights which are the essence of modern societies. Protecting this structure against the social forces that tend to rise against it was the main goal of the classic theory on the mass society mentioned above. It is also a reason why it is still a useful approach to understand social participation. The study of social movements provides basic information to revise this classic approach and to develop a comprehensive theory of social participation, which is on the making nowadays. The other side of this problem of trust in conventional channels for public participation is the emergence of contemporary social movements.

Participation and social conflict

To understand how participation in environmental issues arises, we need to focus on the process of persuasion promoted by environmental organisations. These processes tend to be linked to public contentions and collective mobilisations in new ways, the knowledge of which is very relevant for that task. The specialised literature on contemporary social movements provides useful information about these collective phenomena. Since this line of analysis has acquired special relevance to understand patterns of social participation and conflict in Western societies, I refer to this information below.

My argument is that social conflicts taking place between environmental associations and trade unions tend to reinforce the problems of trust in conventional organisations for public participation and to illustrate a new dynamic of conflict that was foreseen long ago. In his influential work on the emergence of a post-industrial society, Bell (1976) argued that such dynamic consisted in the decline of industrial conflict and the emergence of new contentions on social problems that did not have their current relevance before. Among the groups enacting such conflicts, he emphasised the ethnic ones but could not foresee the role of environmental organisations, probably due to his saint-simonian belief in the unquestioned rule of technicians in a postindustrial order⁷⁸. However, the scientific authority of these experts becomes increasingly questioned in current environmental contentions, in part due to the emergence of counter-experts who provide alternative diagnosis on the effects of environmental problems and their technical solutions, as it happened with my research on this the risk of waste incinerators that is described below.

Bell's work did identify a new pattern of conflict arising among contending groups, part of which cannot be classified along class positions. The latter is viewed as a central feature of contemporary social movements (Melucci 1989, 1996; Johsnton, Laraña and Gusfield 1994). The

⁷⁷ In spite of the Le Pen's defeat in the second round of the 2002 presidential elections in France, a recent survey indicated later on that the support for his ideas reaches a 25 % of the population (*El Pais*, 5-30-2002)

⁷⁸ Such faith seems to be the product of the theories on modern society, which he got from Comte and Saint-Simon and the idea that the control of technological development by politicians, who follow the advice of technicians, becomes a central characteristic of postindustrial society. This is the opposite of what Beck (1992) has argued in his theory on the risk society.

new pattern is that the proliferation of new conflict groups produces situations in which they often interfere with the demands posed by each other and render success very difficult. A long-standing conflict over the pollution of the Saja-Besaya River in northern Spain by the chemical waste produced by a paper industry exemplifies this pattern. Several neighbours' associations of villages located at the banks of this river mobilised themselves against the continuous waste disposal of Sniace and demanded regional authorities the enforcement of the EU regulations to protect their environment. When this firm was asked to introduce the technology needed to avoid polluting the river, it contended that the high cost of such investment would put the firm out of business. Then, the demands of neighbours' associations dashed with the power of trade unions, which also mobilised (**mobilized**) in order to protect the jobs of more than one thousand workers of Sniace, and with the ambivalence of political authorities. At present, the firm continues to dump its chemical waste on the river, but it has built a dam to avoid doing it during the summer due to its visibility (the river becomes covered by a white scum) and the increase in the population in the surrounding villages. In August 2001, the dam broke down and the problem was again an issue in the local press.

Therefore, the pollution of the river became an issue not because the problem posed a threat to human health but due to the mobilizations of these associations in order to *frame* it as such in public opinion and to break the passivity of local authorities by demanding a solution of the problem. The social dynamics producing the transformation of a problem into and *public issue* are central for sustainable development, and citizen's intervention makes the difference, while highlighting the relationship between social participation and social conflict. But there are many kinds of mobilisations and the existence of an environmental movement also makes a difference between them. The Saja-Besaya case shows a low level of empowerment of local organisations remains interesting for future analysis by showing different degrees of citizen's involvement and its effects in the protection of natural resources.

Public participation and risk perception

The guestioning of the scientific authority of experts was the ground for a contention over waste incineration that arose in Spain during the last decade, in spite of the fact that these are waste treatment technologies increasingly used in Western societies and advocated by the European Union. The divergence between technical descriptions of their effects was the ground for this contention in Spain and England. For many of those who mobilised against the incinerators being built in their surroundings, those descriptions were not considered as technical diagnosis but as different reality definitions promoted by people belonging to the three different types of organisations we have studied (waste industry companies, environmental organisations and public administrations). Reality definitions are elements of consciousness, which is an essential subjective element of social reality that can be objectively described, since it is shared by a number of people and can be observed by the analyst (Berger et al. 1973). Due to its utility to approach the relations between such definitions and the emergence of what has been named risk consciousness (Beck 1992, 1997), I use this concept in that sense. Its relevance for the sociology of risk stands from the fact that an environmental consciousness is a precondition for the participation of citizens in sustainable policies, as documented by our research on the risk of waste incineration, whose empirical work was funded by the European Commission (1996-2000) 79.

⁷⁹ Coordinated by myself, with Chris Rootes and me as the main researchers, it was funded by the Research Directorate of the European Union (Environment and Climate RTD programme--see htp://www. CORDIS.eu).

In the contention over waste incineration we studied in Spain and England, two different groups posed these reality definitions. On one side, company representatives, politicians and public administrators framed these technologies as the most efficient solution to the problem of domestic waste and as harmless for human health. On the other hand, environmentalist organisations questioned the efficiency of incinerators and declared human health to be under serious threat due to their toxic carcinogenic effects. The latter, and the collective mobilisations they promoted, have had a strong impact in the development and application of environmental policies on waste management in Spain, in the will and interests of politicians and private firms to afford the risk to promote waste incinerators and to invest in an attractive economic field. This divergence in the diagnoses promoted by people belonging to different groups produced the kind of symbolic contention that has been viewed as a constituent pattern of the risk society (Beck 1992). In our effort to contextualize and expand this important theoretical assumption, we approached such contention in terms of contending discourses (Laraña 2001, 2002). Their analysis provides important insights about the symbolic dynamics of environmental conflicts and the way the impinge on public participation. Another conclusion of our study consists in highlighting the relevance of these public contentions for developing both environmental policies and knowledge of the processes of persuasion through which environmental consciousness arises in the publics. These is why analysing these discourses becomes central for the sociology of risk.

Due to the spread of mass consumption and the problems posed by its growth⁸⁰, waste treatment has become a central issue for environmental policies, and especially those dealing with the protection of the Mediterranean Sea. Due to the importance of new technologies which have been framed as a threat for the health of the population, this is also a strategic field to observe and interpret collective and individual behaviour in reference to risk issues. This is not only due to the effects attributed by different groups to waste incinerators but also to the nature of the controversies they have motivated, which provide very useful information to understand other recent controversies over risk issues, such as the mad cows disease and a variety of events which are being continuously reported by the media in countries like Spain.

Between October 2000 and May 2001, the discovery of an increasing number of cows infected by the mad-cow disease in Spain caused a drop in the consumption of this meat and severe losses to the farmers who make their living out this type of production. During the same period of time, two other risk issues acquired high visibility in the media. The permanence of a British nuclear submarine at Gibraltar in order to get repaired caused several mobilizations in this area and a diplomatic upheaval between the governments of Spain and England. A third, and also highly visible, issue concerned reports on an elevated number of cases of leukemia among the Spanish soldiers that had taken part in the Kosovo campaign against the Yugoslavian army. This was attributed to the type of uranium contained in the missiles with which the allied air forces bombed their enemy's positions.

In summary, to increase our knowledge of risk perception among the publics, we need to approach them from the different perspectives contained in the sociologies of knowledge, social movements and economic organisations. This is consistent with the complex nature of technological risks and their perception by the public. The need to comprehend different scientific fields in their evaluation is a central argument in Beck's theory of the risk society, together with the claim that the natural sciences have lost their monopoly in this field. This claim leads to the proposal of interdisciplinary scientific teams, which include social scientists for this task of risk evaluation (Beck

 $^{^{\}rm 80}$ In Spain, estimates of waste production range from 1.2 to 1.6 kilos per each person daily.

1992). A central task in this paper has been illustrating that this is not is not merely a fashionable argument promoted by social scientists but an epistemological requirement for producing more balanced relations between society and nature. This claim is manifest in different fields, which are interrelated by the nature of the problems posed by the search of that goal, such as the ones referring to social participation in sustainable policies and in the evaluation of the impacts of certain technologies that have been portrayed as a real threat to people's health.

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