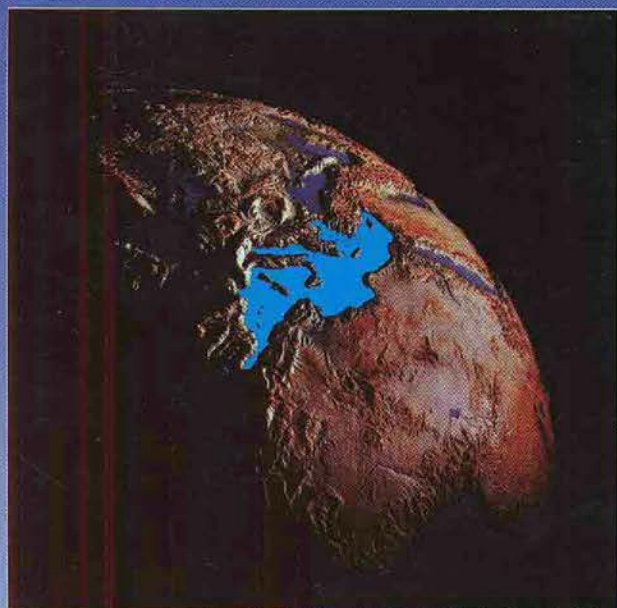





A BLUE PLAN



*From thought
to action*

*for the
Mediterranean
people*



THE MEDITERRANEAN ACTION PLAN

In 1975, at Barcelona, the Mediterranean coastal states adopted a Mediterranean Action Plan (MAP) under the auspices of UNEP.

MAP, the co-ordination unit of which has been installed at Athens since 1982, and which is financed by a special trust fund financed by 18 coastal states (in proportion to their GNP) and by the European Economic Community, consists of three components:

- assessment of Mediterranean pollution (the scientific component) with the programme MEDPOL, a scientific research and monitoring programme aiming at obtaining exact information on the various forms of pollution with a view to harmonizing quality standards for the Mediterranean environment;

- integrated planning (socio-economic component) with:

- the Blue Plan and the Priority Action Programme (PAP);

- the institutional component which covers all legal activities concerning the implementation of the Convention for the Protection of the Mediterranean Sea against pollution, signed in Barcelona in 1976, and its protocols, of which four have already been adopted (prevention of pollution by dumping from ships and aircraft, in 1978; co-operation in combatting pollution by oil and other harmful substances in cases of emergency, in 1978; protection against pollution from land-based sources, in 1980; Mediterranean specially-protected areas, in 1982).

- Several countries decided to host centres which could implement certain aspects of MAP:

- the Regional Activity Centre for the Priority Action Programme (RAC/PAP) in Split, Yugoslavia (Croatia);

- the Regional Activity Centre for the Blue Plan (RAC/BP) in Sophia Antipolis, France;

- or to ensure the co-operation called for by certain protocols:

- the Regional Oil Combatting Centre (RAC/REMPEC) in Malta;

- the Regional Activity Centre for Specially Protected Areas (RAC/SPA) in Salambo, Tunisia.

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Summ.

AROUND the Mediterranean, the sea “in the midst of land”, geography and history have intertwined to give birth to, and to put an end to, civilizations which have shone throughout the world. In this region blessed with an unparalleled climate and scenery, men have met or confronted each other to a greater extent than anywhere else. Here, more than anywhere, they are bound by an unrivalled heritage and a common environment.

Despite their political, economic and cultural differences, in this area of the world where North and South stand face to face, the Mediterraneans have understood the urgent need for concerted action in order to curb the deterioration of their living environment. All the bordering countries have come to an agreement, under the auspices of the United Nations Environment Programme, to develop together ways and means of working towards a better future.

The Blue Plan is one of the major components of this joint effort. Its approach consists of exploring, from a future-oriented and systemic point of view, the evolving relationships between populations, natural resources, environment and development for the whole of the Mediterranean basin. By building up possible images of the future of the countries involved and of their coastal regions, taking into account all factors of change, it can enlighten the decision-making which must be made without delay in favour of today's and tomorrow's Mediterraneans.

The Blue Plan, then, is intended for decision-makers, planners and research workers as well as for the general public in the coastal countries.

Beyond the Mediterranean, because this region, through its very complexity, is representative of the entire Earth, and because this is the first attempt of its kind and on such a scale, this pioneering work also reaches out to other parts of the world which, in the momentum provided by the Rio Conference, are trying to reconcile the imperative needs of environment with those of development.

The wish to provide information has led us to publish this brochure, which briefly outlines the methods and conclusions of the Blue Plan.

Michel Batisse

President of the Blue Plan for the Mediterranean

A BLUE PLAN FOR THE MEDITERRANEAN PEOPLE

FROM SEA TO EARTH

About twenty years ago, the Mediterranean was described as a sea which was already dead or almost so. It was not dead, only wounded by the particularly intense and harmful pollution on its shores; more than anything, it had caught its sickness from the land.

As a result of the first United Nations Conference on the environment at Stockholm in 1972, the United Nations Environment Programme (UNEP) was set up. It was instrumental in launching, in 1975, the Mediterranean Action Plan (MAP), a voluntarist and exemplary programme of regional cooperation between all the bordering countries to save their common asset.

Whereas MAP concentrated first on assessing and then reducing the amount of pollution in the Mediterranean through implementation of the 1976 Barcelona Convention and its various protocols, the Blue Plan, which is the future-oriented, socio-economic component of MAP, was assigned the task of providing insights into this safeguarding approach and of studying the dangers actually threatening the whole of the region, in the medium and long term. An exploration of the different possible futures open to the Mediterranean basin, based on the dynamic study of interactions between human populations, their activities and their natural milieux, was therefore undertaken.

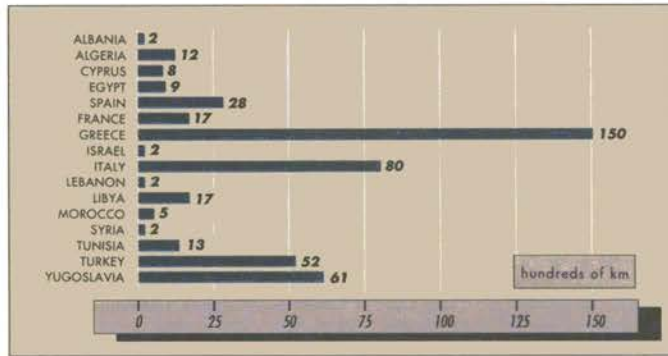
The Mediterranean basin forms an area of exceptional originality, due as much to its geography as to its history. Nowhere else has nature to such an extent moulded men and have men, in turn, been such a burden to nature.

The sea is the permanent asset which is common to all the countries around it. Formed from the ancient Tethys, it is made up of a real complex of smaller seas, each with their individual features and distributed between two deep basins separated by a threshold running between Sicily and Tunisia. It is almost closed off and is subject to heavy evaporation which is mainly compensated for by water entering at Gibraltar. The absence of any significant tide has facilitated activities connected with navigation but, at the same time, has aggravated problems of pollution on the coastline.

Placed, as it is, at a veritable crossroads of tectonic plates, a situation which generates a high amount of seismic and volcanic activity, the Mediterranean basin shows a fragmented relief. The mountains drop abruptly into the sea; they are present almost everywhere and have always played an essential role. They capture the snow and rainfall and regulate the water cycle; they have been an obstacle to overland communication between men, to whom they provide only feeble resources, whence the deterioration, erosion, fires and desertification. They have watched as those of the populations that

they were unable to feed went away. Mastering the plains, which are few and rarely extensive, has meant long drawn-out efforts to transform stagnant water into water for irrigation and insalubrious areas into highly productive land. On the 46,000 km which make up the Mediterranean coastline, of which 18,000 km belong to the numerous islands, four large deltas (Ebro, Nile, Po and Rhone) represent unstable areas which have undergone changes on a historic scale. Everywhere around the basin, man has become an active geological agent, contributing towards deforestation and erosion as much by his building and large-scale projects as by his agricultural activities and the animals he keeps.

COASTAL LENGTH BY COUNTRY



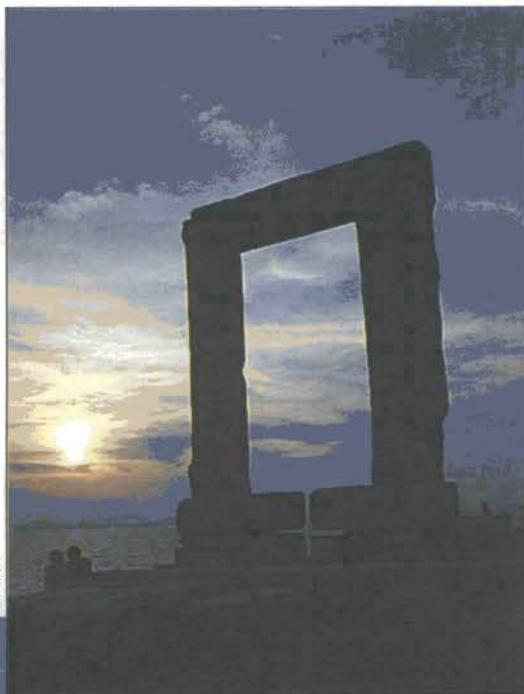
Source : Blue Plan

The climate is a specific feature of the Mediterranean environment. It is also to be found in California, Chile, Australia and South Africa. It is characterized by hot summers with dry periods of varying severity, wet winters and violent irregular rainfall. Although the Mediterranean climate as a whole can be considered as a fundamental entity, there are

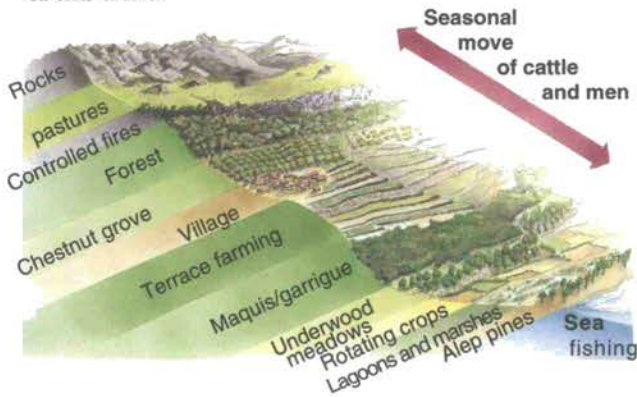
however marked contrasts between the north, with its heavier rainfall, and the south.

The Mediterranean ecosystems also form a permanent and typical characteristic of the region. The marine fauna is extremely varied but not very abundant because the waters have a low productivity. The terrestrial flora is rich, with some 25,000 species of which more than half are endemic. Human activity has profoundly shaped and modified these ecosystems. The Mediterraneans have cleared forestlands, dried up marshes and shaped landscapes which are now remarkable owing to the extraordinary diversity of their monuments, villages and cities. This blend of natural and cultural heritage is the true wealth of the Mediterranean basin; today it is under threat.

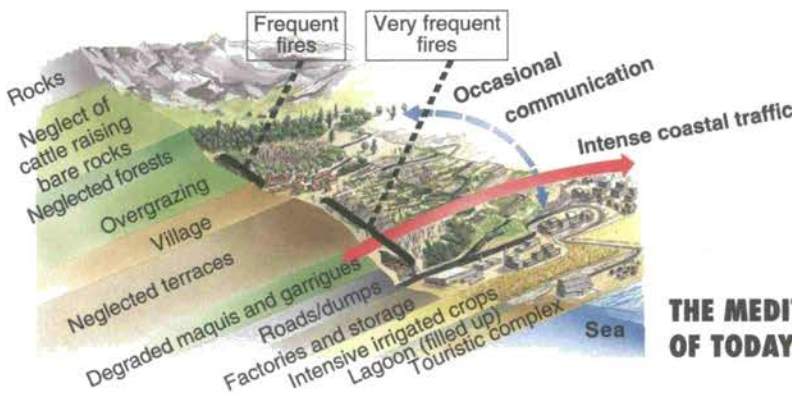
A cultural heritage



For thousands of years, the Mediterranean sea was “the centre of the world” but over the last few centuries its global importance has been overshadowed by the developing drive of countries around the Atlantic and then the Pacific oceans. Yet over recent decades, a new impetus has emerged and the Mediterranean is in the process of regaining a major position. The building up of the European Community and its opening up towards the south, the fact that certain countries to the south and east of the basin have become independent and have, at the same time, experienced a sharp increase in population, the stimulus given by their oil and natural gas resources, and the development of tourism along all the coastlines are the combined causes of this trend.



THE TRADITIONAL MEDITERRANEAN SLOPE



THE MEDITERRANEAN SLOPE OF TODAY

However these very fast changes, in demographic, social, cultural, political, economic, and ecological terms, have brought with them increasing difficulties. Over the last forty years, the rise in population and the setting up of developments have been concentrated along coastal areas, as much in the north as in the south. On the whole, this situation is resulting in uncontrolled urbanization, an upheaval of coastal landscapes, various sectors such as farming, industry, tourism, transport and housing all competing against each other for the use of land and water, and lastly an increase in the amount of pollution and waste ending up in the sea. The Blue Plan was conceived as an attempt to find an answer to the questions put by Mostafa K. Tolba, Executive director of UNEP, when establishing a framework for the project: “What future lies ahead for the Mediterranean countries? How can they reconcile environmental quality with development needs? How should they organize themselves in order to face up to their mounting difficulties?”

A TOOL FOR EXPLORING FUTURE TRENDS

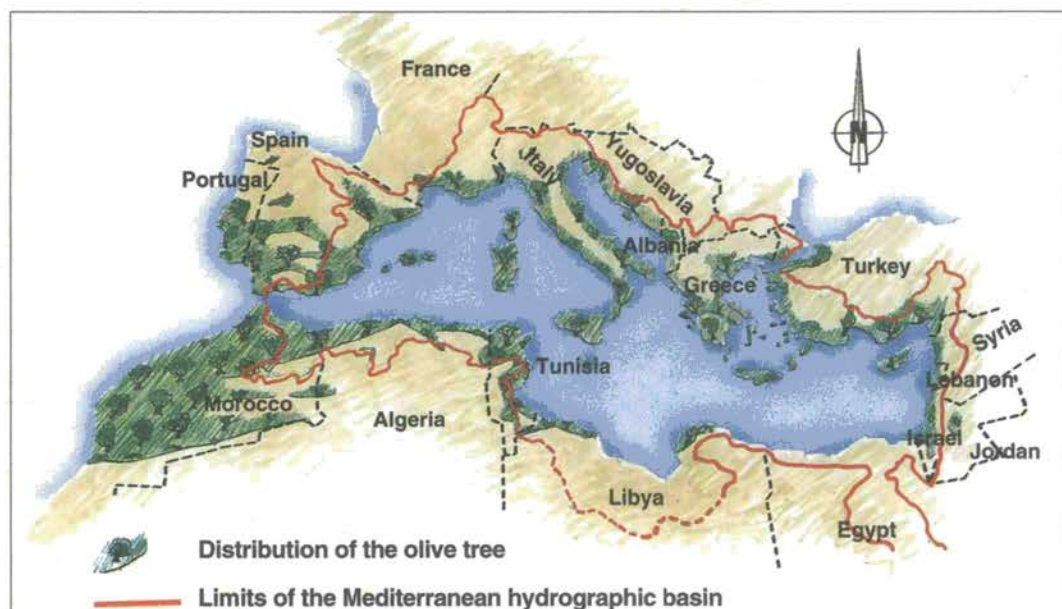
As the component of MAP dealing with prospective and systemic aspects, the Blue Plan set out to pinpoint the different possible futures open to the Mediterranean basin, as much from an economic standpoint as from an ecological one. Its name could lead to some confusion. Indeed, the Blue Plan was never intended as a compelling instrument for economic planning but rather as a tool for investigating and clarifying the evolution of systemic relationships between population, natural resources, environment and development. In view of this, it is far more concerned with what happens in the countries involved than in the sea itself and is only named "blue" to symbolize the Mediterranean as a whole.

By identifying future prospects in socio-economic development and medium and long-term changes in the environment (2000 and 2025) for all the countries bordering on the Mediterranean, the Blue Plan in no way claims to predict what is going to happen. Its aim is to look into the interactions between the various sectors of activity and the main geographical milieu of the region and at the same time, using common and coherent reference bases, to assist decision makers in the different countries in their attempts to achieve optimal development without harming the environment.

The framework in terms of geography and time

The approach laid down for the Blue Plan was structured on the scale of the entire Mediterranean region. It is a region which cannot be defined solely according to climate as the latter stretches to countries

NATURAL LIMITS OF THE MEDITERRANEAN BASIN



Source : Blue Plan

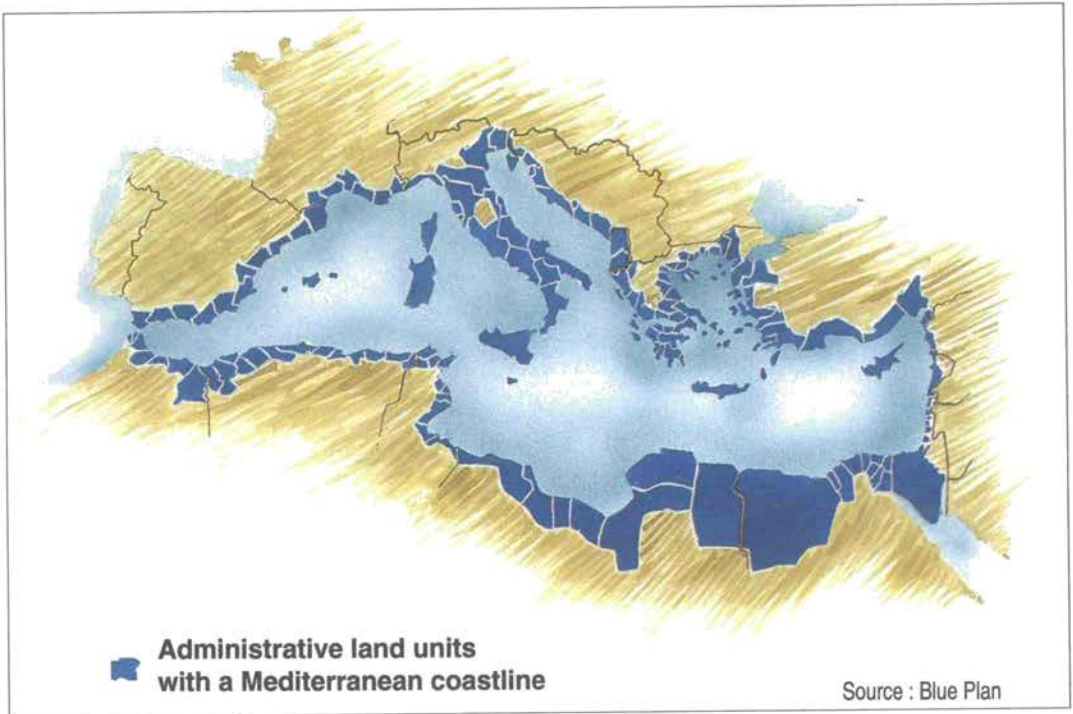
such as Portugal or Irak which do not border on the Mediterranean, which is the central scope of MAP. Similarly, the area in which olive groves are grown does not provide a sufficient definition either.

For practical reasons, therefore, four geographical levels were used in the Blue Plan studies:

– the entire territory of each country bordering the Mediterranean. For several countries, such as France, Morocco or Turkey, such a delimitation goes far beyond the Mediterranean region. Nevertheless, it is an area which corresponds with national economic statistics and with the level at which most laws and regulations concerning environment are applied;

– the Mediterranean catchment basin, defined by the dividing lines for waters flowing towards the sea. This limit is particularly useful for the study of water resources, erosion, irrigation and pollution;

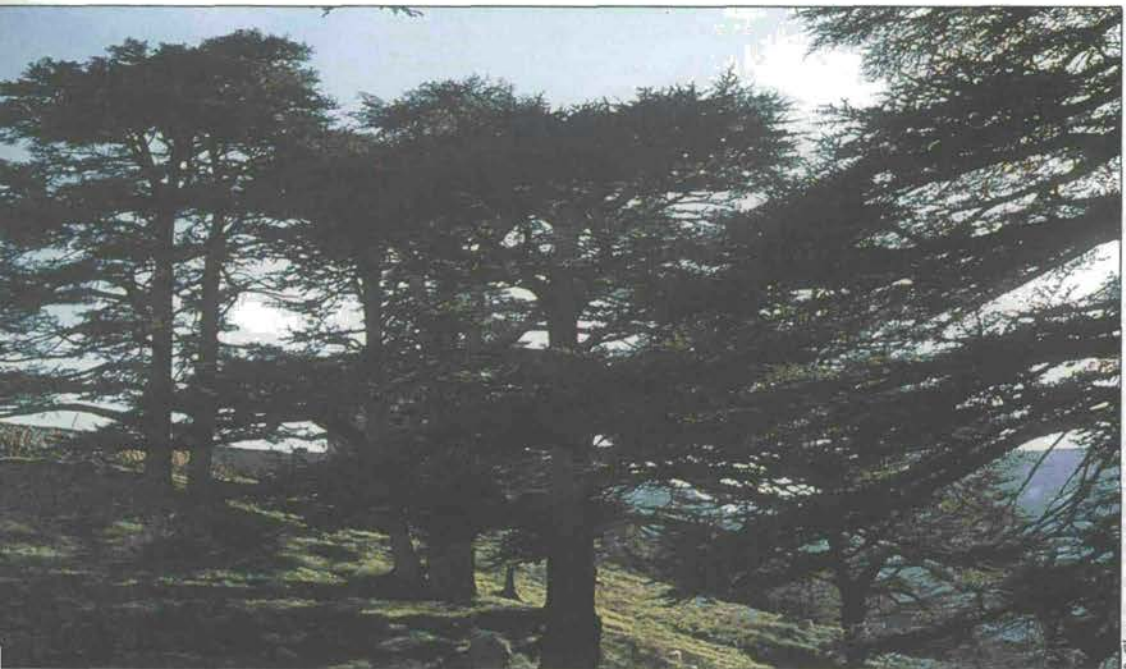
THE BLUE PLAN MEDITERRANEAN REGIONS



– the coastal provinces of each bordering country. This level is defined by using the mosaic of territorial administrative units which run along the coastline and for which comparable statistics are available (population, urbanization, land use, etc.);

– finally, the coastline itself, a narrow strip of land and sea a few kilometres wide where human pressure is concentrated.

Prospective work is concerned with what the future could be in a fixed period. The choice of this period depends on the rate at which the changes studied take place; the Blue Plan has aimed at incorporating coherently the period covered by environmental changes and the time necessary for correcting them with the duration of economic and social changes. If one is to integrate these durations, reference horizons have to be decided upon; the choice of 2000 and 2025 marks the capital importance that that quarter of a century will have.



A one thousand year-old cedar forest

B. Glass



Pierrick D. Marchessaux

Monk seals

By way of comparison, the period necessary for the vertical mixing of Mediterranean waters is around 250 years. To build up a forest plantation with poplars, it takes 15 to 25 years; for a cedar plantation, it takes at least 200 years. On the other hand, 25 years have sufficed to urbanize, in a disorderly manner, most of the coastline in the French Languedoc and in 15 years' time there will perhaps no longer be any monk seals.

The main stages

This investigation into the future has relied upon of a group of medium and long-term "scenarios", all sufficiently different from one another for the possible changes to be shown and for the amount of room to manoeuvre to be identified for the decision-makers and those responsible for planning, development and environment policies. The scenarios are built from consistent sets of assumptions made at the outset and concerning population trends, types of development and economic growth, environmental and land-management policies, and the level of intra-Mediterranean cooperation. They are developed in stages, through logical pathways, the likelihood and coherence of which must be constantly checked. They lead to images of possible futures, showing what could be the evolution of the "Mediterranean system", with its interactions between environmental components and socio-economic factors.

The work has developed into three successive phases which can be summed up as "understand, explore, suggest".

"Understand" is the phase in which stock was taken of the development and environmental situation in the Mediterranean basin countries; it lasted from 1980 to 1984. Analytical studies and partial syntheses for the main economic sectors and various milieux in the region were carried out with the aid of specialists from different Mediterranean countries working together in pairs, each tandem consisting of a northern and a southern expert.

"Explore" is the phase when the scenarios were actually worked out, leading to an overall report which was handed over to the countries participating in the MAP; this took place from 1985 to 1988. Rather than using a "large-scale" economic and ecological model which would be lengthy and expensive to build, small independant models were set up (population, agriculture, tourism, energy, forestry, etc.), and their results linked together and rendered coherent by cross-checks with some key indicators. This work was carried out by coordinating the work of national teams (national scenarios) and that of a central team (Mediterranean scenarios).

"Suggest" is the phase when results are discussed with the Mediterranean countries and disseminated, and the work gone into in greater depth. It has begun in 1988 and is still going on, while at the same time the socio-economic and environmental data base which was built up is being constantly brought up to date and the methods and lessons of the scenarios are being adapted to meet the concrete problems experienced by bordering countries. This phase also includes the publication of thematic brochures called "fascicules" (Forests, Mediterranean ecosystems, Fishing and aquaculture, Islands, Water, Energy, Industry, etc.) which are being produced at present.

The Blue Plan scenarios

This research into future evolution does not aim at advocating such and such a type of development but rather pointing out the influence that these can have on the environment. These types of development are characterized, in the scenarios, by population trends, by the nature of international economic relationships formed between countries (particularly by the levels of cooperation between northern and southern countries or between southern countries only) and, on a national scale, by the limitations in space and natural resources and by the choices of development and environment strategies.

Three relatively different types of development have been envisaged, in relation to a continuation of present trends (reference trend scenarios):

- development with weak economic growth. If world economic trends are reflected by slow growth in most Mediterranean countries, budgetary constraints could greatly hamper the maintenance and investment operations needed for environmental protection. It would be more difficult to enforce regulations (as industrial enterprises would be more vulnerable) and they would be less effective because of lack of new investment. (This situation corresponds to the "worst trend scenario")

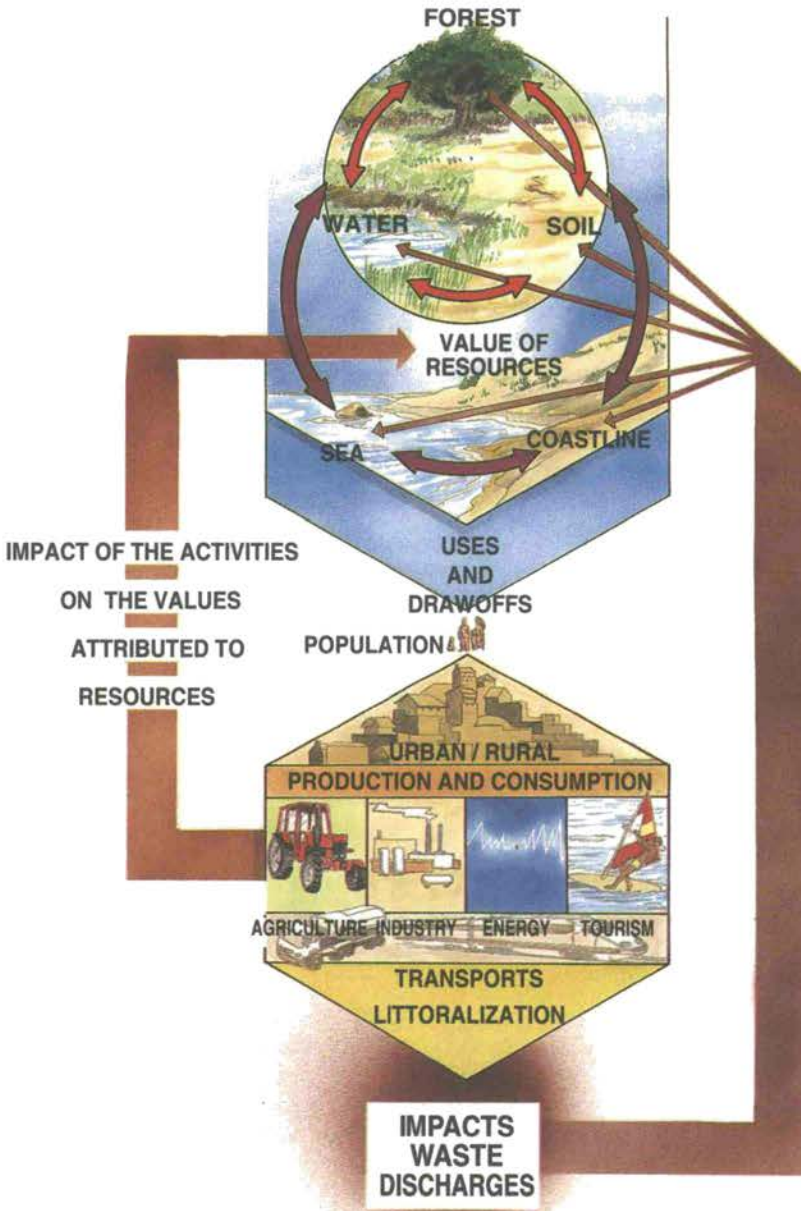
- development with rapid growth, but neglectful of the environment. This kind of rapid growth could entail serious, even irreversible, damage to the environment because of the greatly increased pressure on resources and the difficulty in gearing efforts to compensate for the harm done. (This situation corresponds to the "moderate trend scenario")

- well-balanced development, concerned about the environment. The combination of certain choices of national strategy (a priori involving environmental regulation policies among others) and enhanced international co-operation (North-South with a more assertive Europe, and South-South among regional groups) could produce a compatibility between economic growth and protection of the Mediterranean environment. (This situation corresponds to the "alternative scenarios" and the objective of sustainable development: "reference alternative scenario" and "integration alternative scenario").

The Blue Plan scenarios studied possible evolution in population, urbanization, agriculture, industry, energy and transport and their impact on soils, water, forests, coastal areas and the sea. These scenarios are not predictions and do not take into account sudden breaks in evolution which are always possible, such as natural disasters or danger of armed conflict. They necessarily contain all the uncertainties which are inherent in any prospective exercise and which are a direct result of the choice and range of hypotheses concerning evolutions of a political, social or technological nature or of shifts in public opinion and in cultural factors which might affect both development and the environment.

However within the prospective field thus defined, the work carried out under the Blue Plan does provide significant results concerning both major development issues and risks facing the environment and, consequently, the populations themselves.

ENVIRONMENT-DEVELOPMENT RELATIONSHIPS



THE MAIN RESULTS OF THE BLUE PLAN

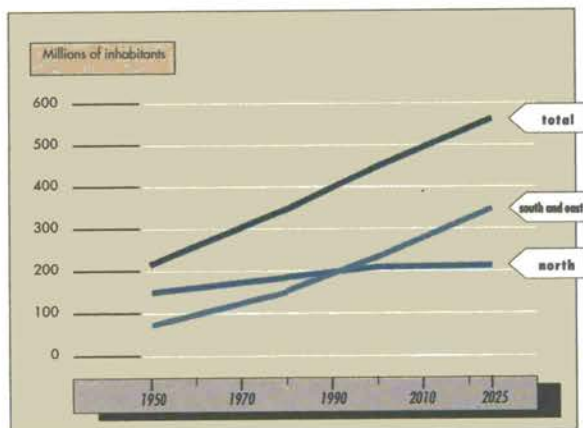
Demographic pressure

Population dynamics constitutes the dominant factor in the economic, social and environmental evolution of the Mediterranean basin. According to the scenarios, the total population of all the Mediterranean countries together would rise from 356 million in 1985 to a figure of between 520 and 570 million in 2025, the 50 million difference being the equivalent of the present population in France or in Egypt. The northern countries, which accounted for two thirds of the total Mediterranean countries' population in 1950, will only account for one third in 2025. At the same time, the population of the southern and eastern countries, from Morocco to Turkey, will have become five times that of 1950. This quantitative population swing is at the same time accompanied by a qualitative swing. During the period in question, the population of the north, with its declining fertility rate, will in effect have aged and be experiencing the problems that this phenomenon brings with it. Conversely, to the south and east, the population will be young: the number of those coming on to the labour market will rise more sharply than that of those withdrawing from it and this gap will grow wider and wider, reaching its maximum around 2000; the pressure of those seeking employment will therefore be added to the other development problems. The drop in fertility in the south and east will have a slow impact, to the extent that it will only be towards the end of

POPULATION DISTRIBUTION AROUND THE MEDITERRANEAN BASIN



POPULATION IN THE MEDITERRANEAN COUNTRIES



Source : Blue Plan

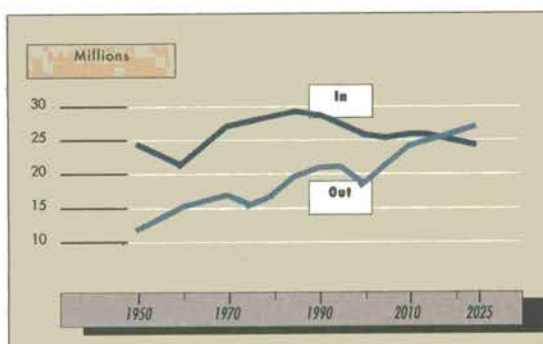
the period considered in the scenarios that it will begin to make itself felt; it is only in the second half of the 21st century that the southern and eastern population figures should reach a steady state.

The socio-demographic situation is made worse by rates of urbanization which continue to accelerate: the urban population for all the Mediterranean countries put together was 91 million in 1950 and should reach between 417 and 443 million in 2025, generating a concentration of people and their activities in the coastal areas, where the urban population ratio will reach 75 to 80% in 2025. This upward swing is explosive in the south and east where it will be five times as fast as it was in Europe between 1800 and 1950. The figures concerning the demographic outlook are therefore striking and undergo only slight changes between the different scenarios envisaged.

ENTRIES INTO AND WITHDRAWALS FROM THE LABOUR MARKET

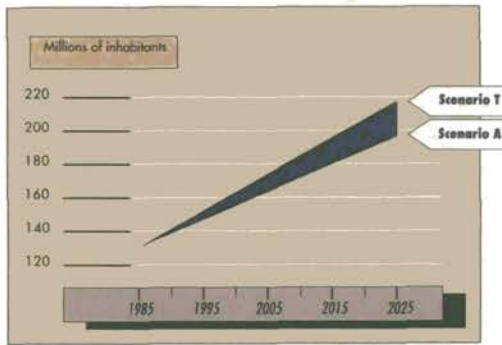
Spain, France, Italy, Greece, Yugoslavia

Turkey, Syria, Egypt, Libya, Tunisia, Algeria, Morocco



Entries : 15-24 year-olds Withdrawals : 55-64 year-olds Source : Blue Plan

COASTAL POPULATION GROWTH



Source : Blue Plan

The requirements and impacts of development

This demographic growth is going to bring with it, in countries south and east of the basin, considerable needs in terms of food, industrial goods, energy, housing, water, etc., needs which will have increased by 3 or 4 times as much between now and 2025. The resulting development will place enormous pressures on the environment which could lead to irreversible degradations imposing through negative feedbacks additional constraints on development.



A changing society

B. Glas

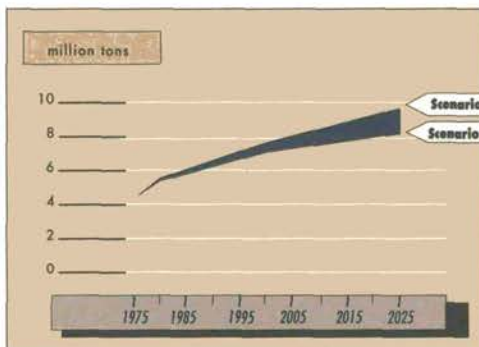
Agriculture in the north is dominated by EEC policies. There, the main problems are, on the one hand, the management of land which now lies waste due to the “underrating” of agriculture and, on the other hand, excessive use of irrigation, fertilizers and pesticides leading to pollution of surface and ground water and also to overproduction. In the southern and eastern parts of the basin, it will be necessary to proceed to an intensification of agriculture in order to limit food imports. Production could be quadrupled, bringing with it a tripling of inputs and mechanization and a doubling of irrigation; the latter would require an investment of some 70 billion dollars for the north and 140 billion for the south. In addition it should not be forgotten that an increase in intensive farming means the development of industry upstream and downstream.

The future of agriculture in the south varies greatly from one scenario to another but in every case it will become an intensive activity, having to face up to the demographic pressure and having important impacts on the environment, particularly on water and soils. Turkey alone, among southern and eastern basin countries, will remain self-sufficient for food production; some others could decide upon a policy of high value-added produce for export.

As regards fisheries, a rise in the amount of fish caught is hardly likely and will never meet the needs of the region which are already four times higher. On the other hand, aquaculture offers certain possibilities.

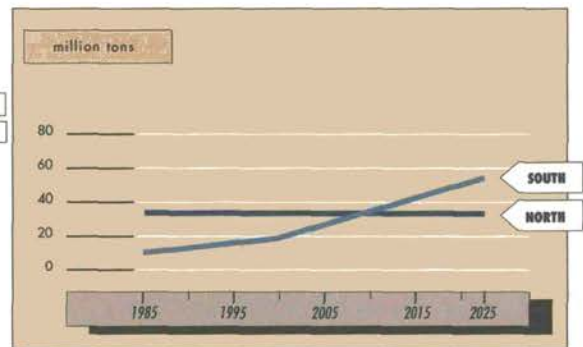
As for **the industrial sector** the outlook is equally contrasted. Whereas in the north, heavy industry will be on the decline, in the south it will increase sharply. For instance at present there are 32 million tons of steel produced in the north and 8 million in the south. For the year 2025 the scenarios indicate approximately 31 million and 51 million respectively. Cement production will follow a similar pattern.

FERTILIZER CONSUMPTION



Source : Blue Plan

STEEL PRODUCTION IN THE YEAR 2025



Source : Blue Plan

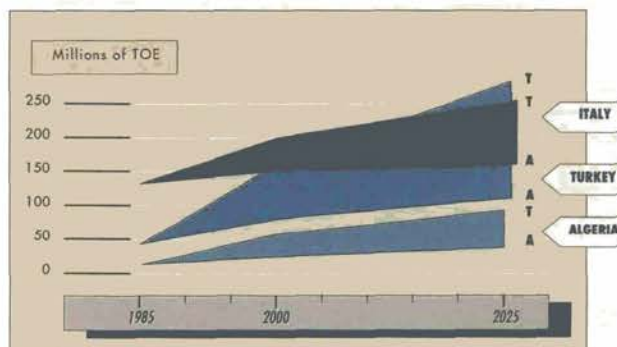


Industrial rejects in the sea

Industrial activity will tend to be concentrated along coastal areas, which means a serious and unavoidable threat to both natural and urban landscapes together with pollution of air and waters. However this development may prove to be less aggressive than in the past owing to the application of standards at the installations and to the introduction of preventative measures and "clean technology". The northern countries will mainly witness the development of new industries which are easier on the environment (biotechnology, electronics, new materials).

As for **energy consumption**, the scenarios foresee considerable variations from one region to another. At present, the northern countries consume the equivalent of 480 million tons of oil and the

ENERGIE CONSUMPTION PER CAPITA

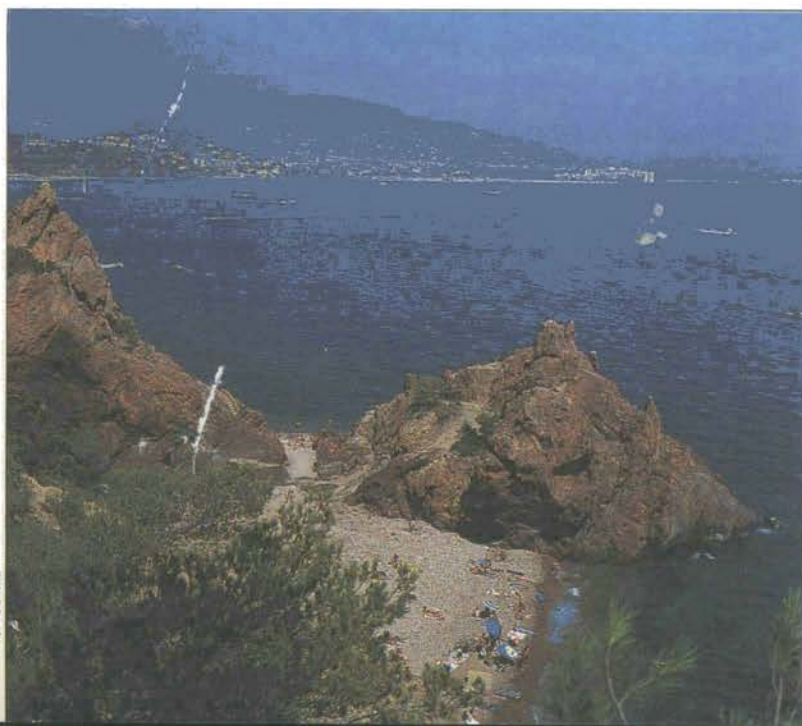


Source : Blue Plan

southern countries, 130 million. By 2025, these figures should reach 580 to 790 million tons and 315 to 700 million tons respectively depending on the scenarios. Electricity installation and consumption will no doubt continue to rise in line with growing urbanization and industrialization. Electricity consumption in the north will thus rise from 740 TW/h in 1985 to between 1,380 and 1,880 TW/h in 2025; in the south, the figures for the same period would be, respectively, 130 TW/h and between 400 and 1,000 TW/h. The range given here by the scenarios is very wide. If no saving measures are taken, a large number of thermal power plants will have to be built, and most of them along the coast. When one considers the coastal strip from Morocco to Turkey, such a development could go as far as requiring the construction of a plant every 20 km on average.

As regards oil, several Mediterranean countries which at present have abundant supplies will be importing by 2025, a situation which will considerably affect their balance of payments. Natural gas, which is in relatively plentiful supply in the region, should become a major element of the energy market while renewable energy, particularly solar energy, could play an important role in the alternative scenarios. As far as impact on the environment is concerned, it can be said, paradoxically, and making all due allowance, that the less energy is available, the worse it is used. Finally, the Mediterranean countries will, like all the others, have to take into consideration global disturbances such as the greenhouse effect which could, in the long term, be as serious for the well-being of humanity as the direct toxic effects from effluents.

Tourism plays a considerable role in Mediterranean countries which, taken globally, account for a third of the world's tourists. This activity means a rise in the concentration of people along the coastal areas which at present receive some 100 million tourists per year. By 2025 this figure could, according to the scenarios, vary between 170 and

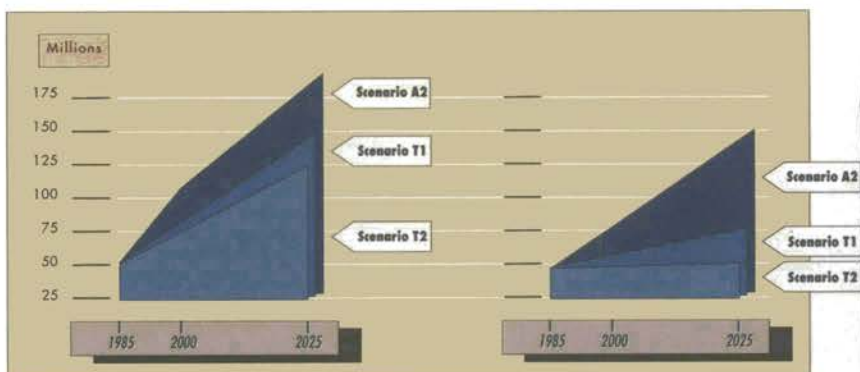


*The Mediterranean basin,
a tourist's playground*

NUMBER OF DOMESTIC AND INTERNATIONAL TOURISTS IN THE MEDITERRANEAN COASTAL REGIONS

International tourism

Domestic tourism

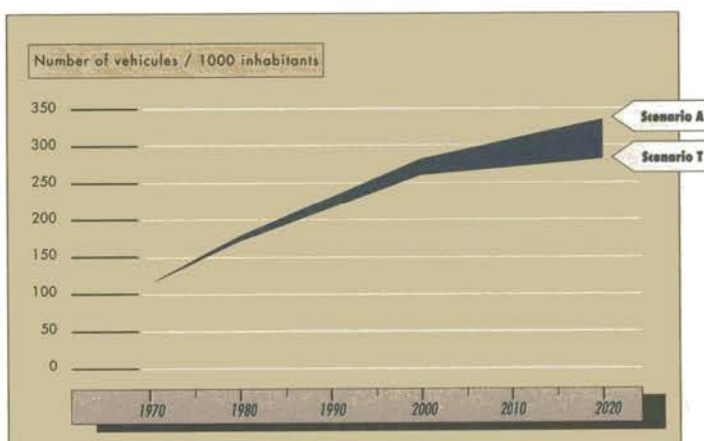


Source : Blue Plan

340 million tourists, both national and international (the alternative scenarios favouring a strong increase in national tourism). It becomes therefore highly necessary to protect natural and historic sites from deterioration owing to too many visitors. This could bring about a fall in the tourist capital of a region where many of the countries need this source of foreign income. The scenarios also show the difficulties arising out of needs in water and land: on the coastal strip, up to 4,000 km² would be given over specifically to accommodating tourists. A drop in the level of ground water could be caused by overpumping in these areas leading in addition to the salting of ground water by sea water intrusion.

Trends in **the transport sector** depend upon those of other sectors. Road transport will continue to increase and the number of vehicles, at present 60 million of them, concentrated mainly in France, Italy and Spain, could reach 175 million by 2025, with a large increase in the number of vehicles in the south and east of the basin. Land coverage by

AUTOMOBILE STOCK



Source : Blue Plan

road networks in the coastal regions could then reach between 10,000 and 20,000 km². The only way, at that stage, to limit heavy traffic congestion and a high level of pollution would be by technical innovations, introduction of regulations and organization of public transport.

As regards maritime transport, whatever the scenario, the major risk of accidental pollution will remain: even though there will hardly be any increase in the number of oil tankers (there are constantly 300 at sea), most of them are too old and deballasting facilities not sufficiently provided for; the amount of crude oil transported will drop but that of refined products should rise. As for natural gas, its transport should be mainly carried out through trans-Mediterranean gas pipelines.

Lastly, the increase in air traffic will lead to the creation of new airports and the extension of others along the south and east coastal areas; it will also lead to a worrying level of congestion in air corridors and airport facilities.

Oil pollution: a major risk

Greenpeace



Natural resources as development factors

By placing environment and development side by side, the Blue Plan has pinpointed the numerous interactions which affect the Mediterranean ecosystems.

Forests still cover 5% of the Mediterranean region. In the south and east, their over-exploitation for firewood and grazing has not only diminished these resources but has reduced the influence they have on regulating water and maintaining the soil in place: flooding, erosion, desertification and silted dams are all on the increase. In the north, the rise in the number of fires, whether accidental or criminal in origin, and destruction in the face of urbanization are the main causes of deforestation. However the moderate trend scenario and the alternative scenarios indicate a future where the situation will be less dramatic: to the south, it will probably continue on its downward trend until 2000, then become stable before showing signs of improvement from 2025 onwards; to the north, waste land will continue to gain ground and it will only be after 2000 that rehabilitation policies for these areas will begin to have an effect.

Fires and erosion:
desertification factors

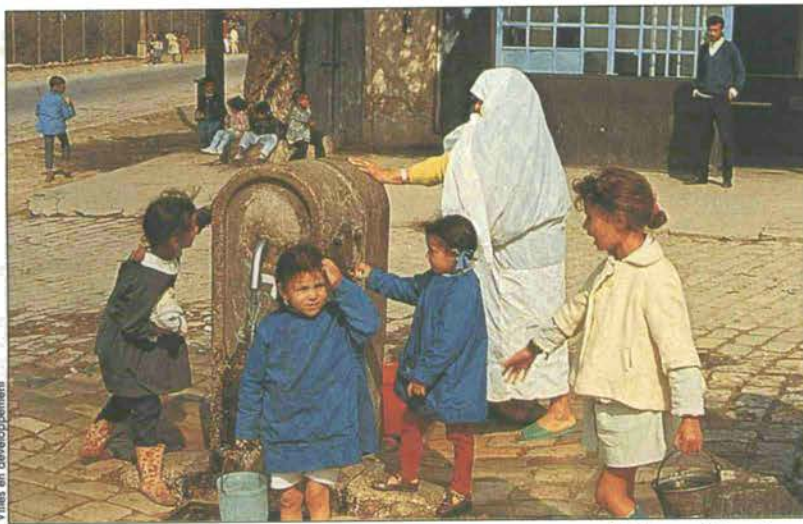


B. Glass



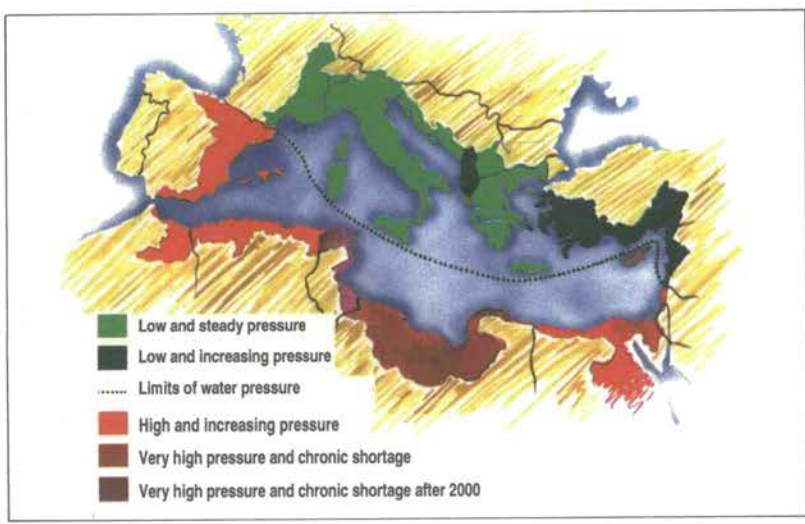
A. J. De Grijse

Soil degradation is in danger of speeding up, particularly in southern countries. This is due to erosion in a region where steep slopes and lashing rain together contribute towards 35% of soil undergoing losses of between 5 and 50 tons per hectare per annum. This soil degradation will also take the form of continued desertification, use of arable land for buildings, loss of biological productivity and salinization due to irrigation (in the Nile valley, 30% of soil is salinized and 40% is showing signs of becoming so). All the scenarios show erosion of Mediterranean soil and the present incapacity to stop this process is one of the most worrying threats to the basin, requiring extremely long-term action and considerable funding.



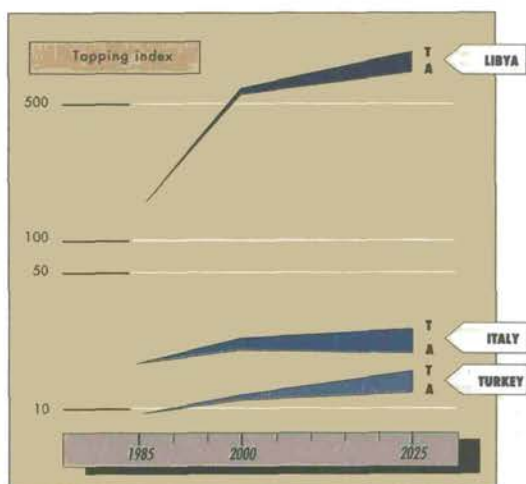
Water: a future issue

WATER RESOURCES IN 2025



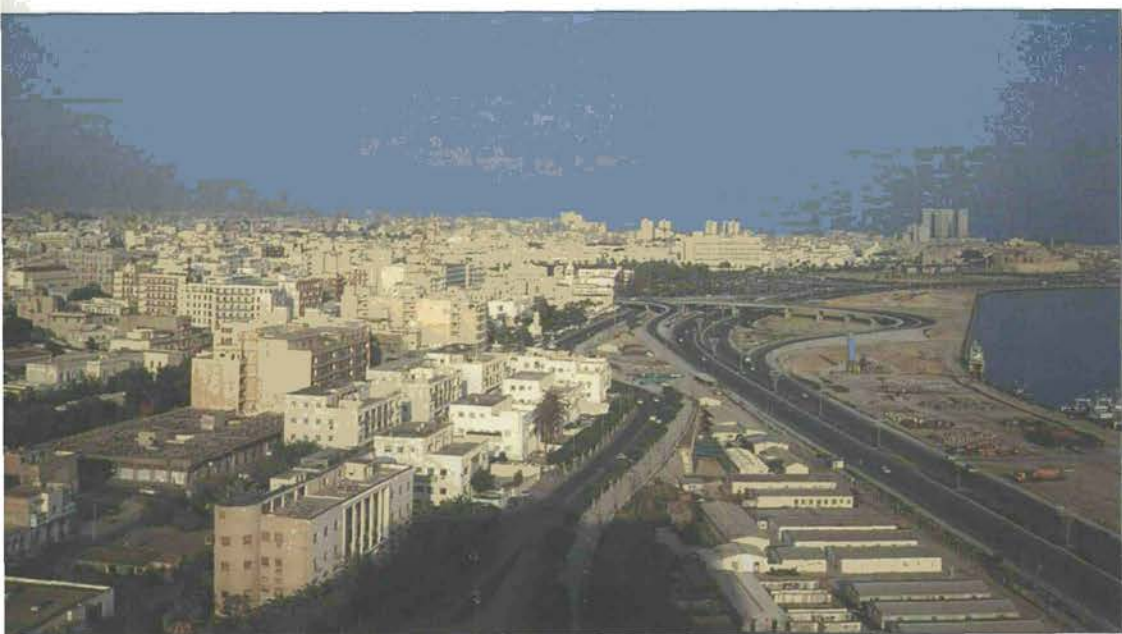
Good quality **water resources** are both the key condition and the limiting factor in Mediterranean development. The scenarios have analysed future needs at the river-basin level. An “exploitation index” has been used, taking as its definition the ratio of the sum of all water draw-offs to the volume of available resources. In the cases of Israel and Libya, this index already exceeds 100%, which means that these countries are already counting on non-conventional resources (such as fossil ground water, desalination, recycling). The index is approaching 100% for Egypt while for Malta and Tunisia it is already over 50%, situations which require a very strict management of resources from now on. By 2025, Algeria, Morocco and Spain are also likely to be experiencing a considerable drop in the amount of water available.

WATER TAPPING INDEX PROSPECTIVE



Source : Blue Plan

Water requirements for urbanization, industry and tourism should be met even if this does mean reconsidering the price of water; as regards irrigation, which consumes enormous quantities, there may well be restrictions on supply with the obvious consequences for food production. All the scenarios, even the most optimistic, show the need for economising on water, and this all the more so as demand is subject to high seasonal increases which reach their peak in summer, contrary to the surface run-off pattern which is at its peak in winter.



In the North as in the South: the irreversible littoralization

The coveted coast

The scenarios also emphasize the convergence and the combined effect of the different pressures on the coastal area. It is there that the population and economic activity will continue to concentrate. This coastal concentration or "littoralization" poses all the more problems in that the Mediterranean coastal strip is narrow. The coastal population, which was 133 million in 1985, should reach between 195 and 217 million by 2025. In any case, this concentration on the coast must be considered as a major handicap for the basin's future, one which will



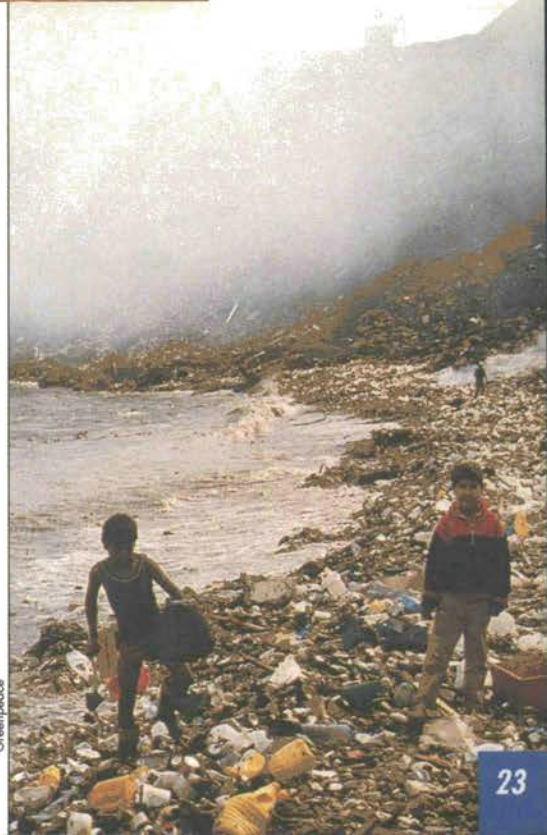
*A preserved coastline:
an invaluable capital*

Plastic-polluted shores

play a controlling role major role in the environment and the different economic sectors. In the scenarios an attempt has been made as an example to calculate the consequences of this rise in the coastal population on drinking-water requirements and land use. Furthermore this coastal area is fragile. About 1 million hectares of wetlands have been destroyed there over the last fifty years or so. If this process continues, it is a process which will deprive the countries of one of their important ecological and economical assets. Indeed, the Blue Plan shows that the coastal area is an invaluable asset for all the Mediterranean countries and particularly for those in the south and east who will need to develop tourist and leisure activities there to improve their balance of payments.

The sea in common

Some 600,000 tons of oil are spilt into the sea each year and 30% of that reaches the coast and spoils the beaches. Marine pollution is studied in detail under the MEDPOL programme, within the



Greenpeace

MAP framework, but the scenarios did attempt a global evaluation of the possible trend in pollution of terrestrial origin (although that of atmospheric origin is no doubt as much, if not more, responsible for polluting the Mediterranean). The Mediterranean is particularly polluted by plastics; organic pollution, especially residue from fertilizers, can bring about a chaotic proliferation of certain species through eutrophication and this affects not only the coastal strip but the sea itself. Lastly, it is always possible for pollutions of a more serious kind (heavy metals, pathogenic micro-organisms, etc.) to appear at certain points of the coastline without having an effect on the sea as a whole.

SUGGESTIONS FOR ACTION

The Blue Plan scenarios have highlighted suggestions for action aiming at ensuring "sustainable development" of the region by targeting on the specific relationships between economic sectors and environmental components, on the protection of the most threatened milieux and on the promotion of co-operation between the Mediterranean countries.

Ensuring sustainable development

The images provided by the different scenarios do not radically differ for 2000; up until then, conditions can apparently be controlled as long as regulations are actually applied. For later periods, the trend scenarios were found to be unstable, either because of the growing deterioration in socio-economic conditions or because of the worsening state of pollution and of the environment.

Only the alternative scenarios seem to be capable of reconciling economic growth and the safeguard of the Mediterranean environment in the long run, *i.e.* ensure "sustainable development". The key to these scenarios lies not so much in growth rates as in greater Mediterranean co-operation and in integrating management of environment into the development process. However, given the inertia of agricultural and industrial processes, the heavy demographic trends and the difficulty that human societies have in changing their habits, it is now that the "change of scenario" must be set in motion. Any hesitations now will make matters more costly later with a risk of producing irreversible situations.

The safeguard of the sea and the Mediterranean shores depends not only upon local preventative and protective measures but also upon overall development and environment policies at a national level. The latter depend in turn upon economic and commercial links between these countries and all the others. The scenarios confirm the global analyses of UNEP and of the Brundtland Commission, since the region cannot, of course, be artificially separated from the rest of the world.

The alternative scenarios with strong North-South co-operation lead to a faster development of the southern and eastern countries; the scenarios with predominant South-South co-operation lead to a better overall balance. A combination of the two would probably offer the most favourable conditions for the protection of the Mediterranean region.



The coastal strip: an endangered species

In any case, at the level of the Mediterranean regions, both in the north and in the south, priority should be given to the coastline, considering it as the narrow terrestrial and maritime strip where the most serious threats exist. It is there, more than in the open sea itself, that the future of the Mediterranean environment hangs in the balance.

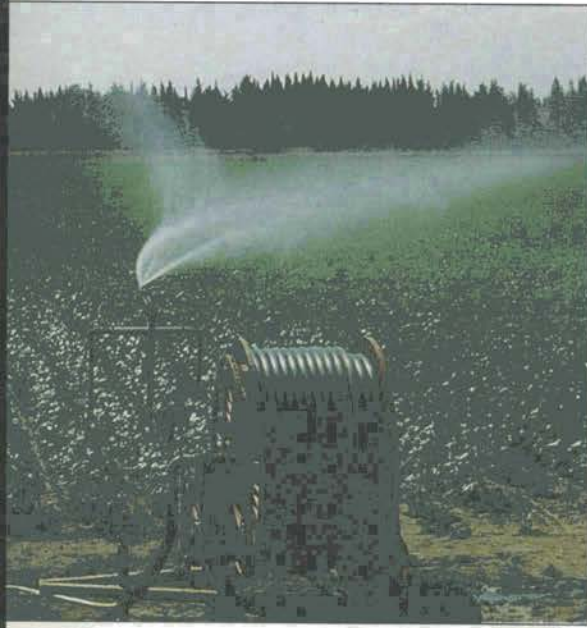
Acting on the economic sector and the environment

Environmental protection along the coastal strip will depend upon the way that urbanization, which will develop inevitably and rapidly, is handled. Main efforts should focus on the management of water supplies, on saving energy, including through developing renewable sources, on the elimination of toxic waste, on the maintenance of a type of housing and architecture adapted to ecological and cultural conditions, on the creation of green spaces and on the protection of peri-urban agricultural land and historic urban centres.

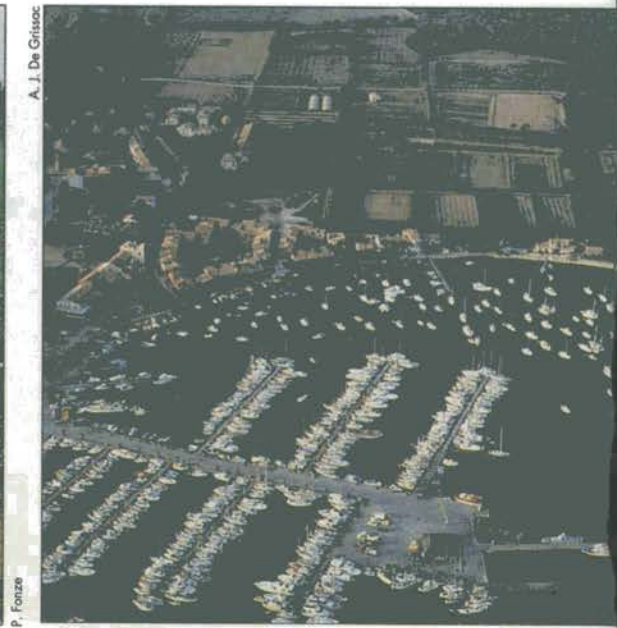
Food requirements will rise considerably in the south and only intensification in agriculture can help to reduce heavy dependency. Main efforts should focus on the conservation of biodiversity, on technical and institutional mechanisms contributing to the management of soil and water, on research in bio-technology likely to increase or improve production and on the profitability of dams involving erosion

control upstream and efficiency of the irrigation networks downstream; special attention should be paid to pollution produced by agro-food industries in coastal areas.

There will be considerable **industrial growth** in traditional sectors in the south and east over the next forty years. Efforts should be concentrated on the prior development of appropriately equipped “industrial zones”, on the identification and control of “hazardous industries” as well as the evacuation of toxic waste, on the use of “clean technology”, on a stepping-up of the introduction of depollution processes and installations and on the development of information and training in this field.



The necessity of intensive farming



Controlling tourism: a necessity

In the **energy field**, main efforts should concentrate on extending interconnections for electricity and gas networks, on finding a solution to the fuel-wood problem, particularly in the south and east, and on the systematic development of solar energy.

In the future, **tourism** is destined to be one of the major resources of several Mediterranean countries. In theory, it should be possible to receive four times more tourists provided that they can be better distributed throughout the region and especially throughout the year. It is important that tourists be made aware of the need for conservation of the environment and for respect of local customs as well as for the protection of certain overcrowded natural and historic sites.

As for **road transport**, it is essential that a judicious choice of routes be made in order that certain coastal areas be safeguarded; there will also have to be a reduction of pollution from emissions and new regulations for traffic in large towns. Public transport should be given preferential treatment, especially along the whole of the coastal strip.

Regarding **maritime transport**, the dumping of oil at sea should be reduced by an increase in the number of port installations in order to comply with the Barcelona Convention regulations. There is also a need to ensure that security standards for roll-on, roll-off vessels are strictly



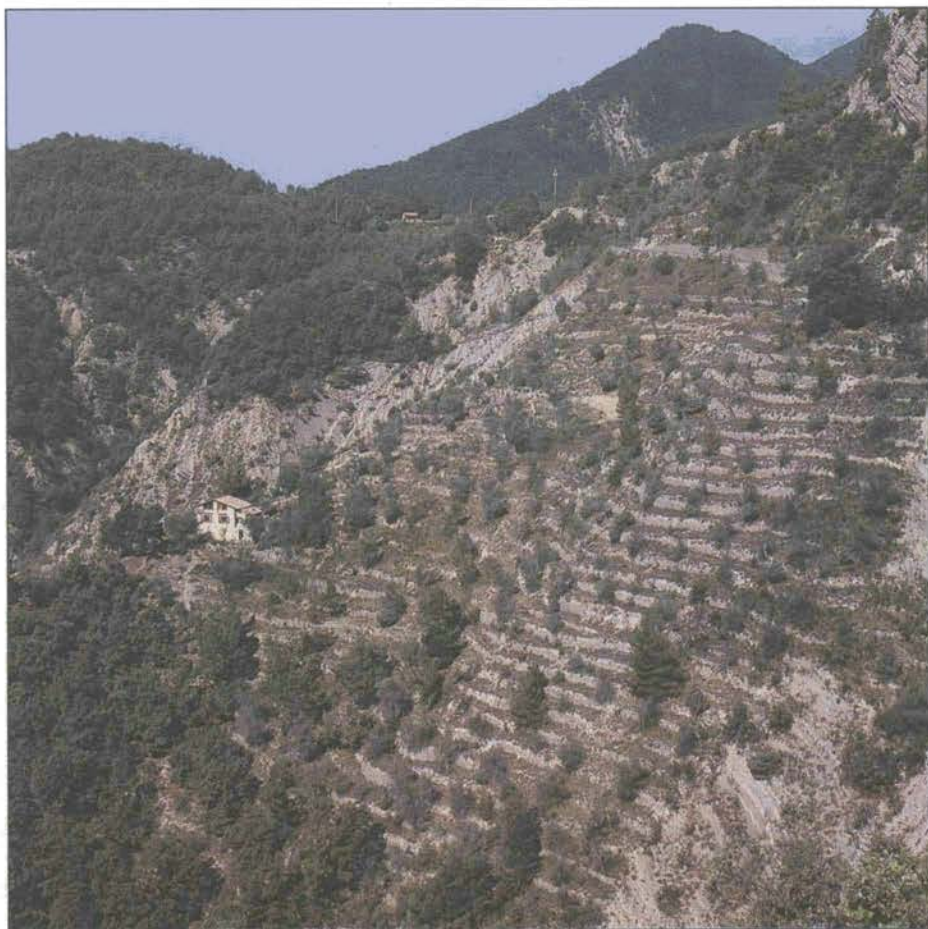
A need for integrated tourism

kept to and that deballasting and other facilities are installed in order that maritime transport nuisances may be reduced as much as possible.

The Blue Plan highlighted the fundamental role played by **forests** in protecting ecosystems in the northern countries. Efforts should mainly concentrate on relieving the pressure on wooded areas, and on a rational system of management for natural forestland, together with the means to combat fires and diseases. In southern and eastern countries, there should be established a policy of replanting, improving forestry management conditions, integrating trees, with their numerous functions, in urban and tourist developments, and setting up areas of safeguard for ecosystems.

Soil erosion and the difficulty in checking its processes are a major threat. Soil policy implies rapid action but has to be sustained over a long period together with provision of considerable means. Efforts should concentrate on utilizing available techniques for tackling potential erosion in dry farming under the Mediterranean climate, on improving drainage networks in order to limit the risk of salinization, on maintaining terraces on slopes, on taking measures against overgrazing and deforestation and on ensuring better management of abandoned rural land in the hinterland of the northern countries.

Water resources require rational management. Main efforts, using regional analyses as guidance, should be focused on adopting qualitative and quantitative objectives to be taken into account in economic decision-making, on the establishment of integrated water management authorities at basin level, including ground water, and on the setting up of "observatories" of water resources and uses. The question of the price of water, particularly that used for irrigation, should not be lost sight of.



Deserted terraces

For **the coastal strip**, one of the Blue Plan's most pressing recommendations is that all possible measures for protecting the natural areas for which it is not too late be taken without further delay. This could be brought about by setting up protected areas. All industrial, urban and tourist development projects should comply with regulations laid down in an integrated coastal policy covering both land and marine aspects. There is an urgent need for better co-ordination of management decisions between the sea, the coast and the hinterland. For what good is there in having a clean sea if its shores are devastated? Finally, it would be advisable to organize an exchange between the different regions of experiences aiming at minimizing damage on both the land and the near-shore sea-bed.

As for **the sea**, which remains seriously threatened, it should not be forgotten that there is a continuity between the coastal zone and the high sea, and that pollution does not recognize territorial borders. Efforts should focus mainly on the implementation of the international conventions and protocols aimed at reducing pollution whatever its origin. The fact remains that it is on land, through political determination and individual awareness, that the fate of the Mediterranean sea will be decided.

Promoting co-operation

The alternative scenarios call for multilateral and bilateral intra-Mediterranean co-operation. Two major lines of co-operation are to be encouraged simultaneously: the North-South axis under the impetus of the EEC and the South-South axis on the initiative of Arab countries. This co-operation can be applied to wide fields of action:

- the advancement of knowledge in the environmental field including, for example, the setting up of research networks to facilitate exchange among scientists and technicians;

- the strengthening of environment policies and particularly their integration within development policies, especially those concerning the management of coastal areas, urban agglomerations, water resources or forests;

- the development of transport networks, including improvement of relations over short distances, particularly in southern countries;

- contributing towards self-sufficiency in food by appropriate financial and commercial arrangements and by the setting-up of research-development programmes;

- the interconnection of energy networks based on natural gas and electricity;

- the co-ordinated development of the exceptional international tourist commodity which the Mediterranean basin constitutes.

Will these lines of action be explored by the international authorities? For the moment, world organizations represent levels of concertation and decision-making in which all the Mediterranean countries participate but in which they form a minority and never a united group.

However, the growing realization of the extent to which the deterioration of the environment is having negative feedbacks on development should encourage the emergence of Mediterranean policies referring to the concept of sustainable development. Thus, the EEC has set up a programme in favour of the coastal countries which has specific financial means at its disposal. The EEC organizes concertation enabling the strengthening of environment-development plans and the increase in investment by countries for improving the management of water resources, for collecting and processing waste, for preventing and combatting accidental pollution and, in particular, for an integrated development of the coastal area. In addition, international financing bodies, the World Bank and the European Investment Bank, using the Blue Plan's findings as guidance, have launched a Mediterranean Environment Programme in cooperation with the UNDP and the EEC. These organizations contribute, in a number of Mediterranean States, to development actions which follow the priorities indicated by the alternative scenarios. Nevertheless, even if the Mediterranean coastal countries do take measures to ensure that the particularities and needs of their environment are better integrated into the economic decision-making process, it is a growing awareness in this field by the populations concerned and by local decision-makers that will decide the future.

Developing the action of the Blue Plan

In this context, the Blue Plan is led to incorporate its action into a wider framework, as a centre for observation and future studies for the Mediterranean environment. It also participates in various coastal development projects by co-operating with local experts and other MAP elements in the putting together of "coastal scenarios". Indeed, the role played by the Blue Plan can only be conceived as a dynamic and continuous process, a camera exploring the future, sometimes focussing upon well-defined sites in the region, sometimes standing back to take in a panoramic view of the whole basin. The recent geo-political upheaval in the world and the socio-cultural evolution around the Mediterranean are all factors which imply readjustments in the centring of the future outlook and approach of the Blue Plan. It is all the more necessary and complex to continue these future studies in that in a period of growing uncertainty, anything may happen and every possibility must be envisaged; it is by opening up broadly the range of possibilities in this way, that research into the future accomplishes its true mission.

THE SCOPE OF THE BLUE PLAN

The Blue Plan was conceived with the aim of ensuring Mediterraneans of a future commensurate with their past. Over and beyond its direct effects, it has helped to establish a network for reflection and set up a working team of Mediterranean experts. By consistently associating consultants from developed countries with those from developing ones, it has been able to avoid individual opinions or the influence of particular economic or social theories. In view of this, the Blue Plan can be considered as a collective approach by Mediterraneans for Mediterraneans.

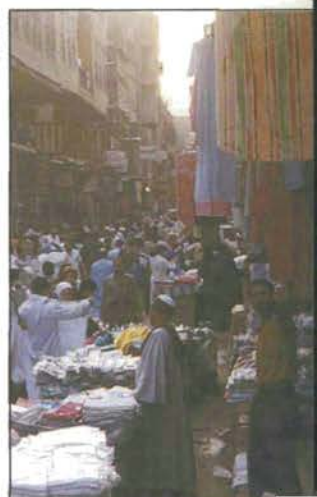
In all the scenarios, the magnitude and intricacy of both development problems and those of environment which affect the countries south and east of the basin are such that the efforts that they undertake at the national level, however significant or relevant they may be, will not suffice. Much more determined North-South solidarity and South-South co-operation are fundamental if not only the sea but the whole of the basin is to be safeguarded. Such solidarity and co-operation should not be limited to action on environmental protection but must surely imply, in addition, a stepping-up of aid to development, a harmonized increase in intra-Mediterranean trade (facilitating, in particular, the compensation of food deficits), a development of communication systems, a mobilization geared to new technologies and a clearer perception by each and every one of the region's inhabitants of the demands of the future.

The Blue Plan for the Mediterranean shows both the limits and the possibilities offered by protecting the shores and the landscapes in the face of the region's socio-economic challenges. It also shows that other "Blue Plans" could be used to explore the future of other regions for, by the very nature of the problems which are encountered here between north and south, between environment and development, between land and sea, the Mediterranean basin forms a veritable microcosm which is representative of the whole of the planet.

At a time when the international community is becoming aware that the environment is everywhere subject to stronger and stronger pressure, new ways must be thought up for reducing the effects of this pressure and reversing the most adverse trends. In the light of the findings of the Blue Plan, the most significant of these ways appears to be:

- the search for new types of development founded on stronger regional co-operation and on more resolute North-South solidarity;
- the systematic consideration of the environment in all projects and development plans, particularly at the level of coastal regions;
- the promotion, by means of education and information, of a clearer perception of interaction between the environment and development in order to encourage new kinds of behaviour as much among local or national decision-makers, whether public or private, as among the populations concerned.

B. Glan



... for the Mediterraneans

The Blue Plan has outlined these alternative paths in Mediterranean development and environment policies and it has worked out an initial methodology for reflection which could be elaborated by others. Together with its partners from the region and elsewhere, it has now undertaken to move on from reflection to action. In this way it intends working towards the building up of a future which will be acceptable to present and future generations on the Mediterranean shores.

A LIST OF BLUE PLAN PUBLICATIONS

Futures of the Mediterranean Basin: The Blue Plan

Michel Grenon and Michel Batisse. Ed. Oxford University Press, 1989

French version, Ed. Économica, Paris, 1989

Spanish version, Ed. Mopu, 1990

Arabic version, Ed. Édifra, 1991

The Blue Plan – Futures of the Mediterranean Basin

Executive summary

PNUE - CAR/PB, 1990

with French, Arabic, and Serbo-Croat versions

Blue Plan fascicules

N° 1. *Pêche et aquaculture. État actuel et perspectives en Méditerranée*

Daniel Charbonnier *et al.*, Ed. Économica, 1990

N° 2. *Les forêts méditerranéennes. Enjeux et perspectives*

Henri Marchand *et al.*, Ed. Économica, 1990

N° 3. *Conservation des écosystèmes méditerranéens. Enjeux et perspectives*

François Ramade *et al.*, Ed. Économica, 1990

N° 4. *Industrie et environnement en Méditerranée. Évolution et perspectives*

Jacques Giri *et al.*, Ed. Économica, 1991

N° 5. *Les îles en Méditerranée. Enjeux et perspectives*

Louis Brigand *et al.*, Ed. Économica, 1992

N° 6. *L'eau dans le Bassin méditerranéen. Situation et prospective*

Jean Margat *et al.*, Ed. Économica, 1992

And seven other issues in preparation concerning:

- Energy
- Hinterlands
- Tourism
- Urbanization
- Natural risks
- Transport
- Agriculture.

THE BLUE PLAN REGIONAL ACTIVITY CENTRE

The Blue Plan Regional Activity Centre RAC/BP is responsible for the establishment of one of the constituent components of the Mediterranean Action Plan. It carries out systemic and future-oriented studies, both local and global, which concern the Mediterranean basin and the relations between environment and socio-economic development. The centre is situated at Sophia Antipolis, the Mediterranean technopolis near Nice, and operates as a non-governmental association under French law; it comes under the patronage of the ministry of Environment and that of Foreign Affairs representing the French government.

A small team carries out the programme of systemic and prospective activities, as laid down by the eighteen coastal countries and the EEC within the framework of the MAP, and, as appropriate, studies with similar objectives at the request of national or international institutions.

To this end, the RAC/BP takes on four main functions: information and observation with gathering, assessing and processing of socio-economic and environmental data; study and research in liaison with specialists from northern and southern basin countries; training of coastal experts and planners; communication based particularly on publications.

Guidance of the centre's activities is carried out on the one hand by the MAP Co-ordinating Unit and the nineteen Blue Plan focal points from coastal countries and from the EEC and, on the other hand, by the association's Council Assembly. The Centre's budget depends on financial contributions approved under MAP, financial support from the French authorities and contracts with international partners such as the EEC, the World Bank, etc.

The RAC/BP can provide interested departments or organizations with additional information about its work as required.



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