United Nations Environment Programme
Mediterranean Action Plan
Plan Bleu – Regional Activity Centre

A Sustainable Future for the Mediterranean

The Blue Plan's Environment and Development Outlook

Executive Summary

Plan Bleu

Sophia Antipolis,
July 2006

The text herein is the executive summary of the latest Blue Plan report on the environment and development in the Mediterranean. It provides an overview of main findings achieved by Blue Plan for the attention of decision-makers in riparian countries, heads of Mediterranean and Euro-Mediterranean cooperations and local authorities, as well as academics, journalists, NGOs, business stakeholders and all those concerned by the prospects for development and for environmental protection in this region of the world.

The Blue Plan report analyses and provides extensive information on the dynamic interaction between populations, economic activities, territories, natural resources and milieus. It focuses on six main issues: water, energy, transport, urban areas, rural areas and coastal zones. The text herein has been simplified. The emphasis is on the determining factors and the risks associated with a trend scenario, as well as on the strategic orientations proposed for moving to an alternative sustainable development scenario. It is hoped that this summary will encourage readers to explore the main report.

The main report is published in French, under the title:

« Méditerranée : les perspectives du Plan Bleu sur l'environnement et le développement »

sous la direction de Guillaume Benoit & Aline Comeau

2005. 432 p.

Editions de l'Aube (Le Moulin du Château, 84240 La Tour d'Aigues, France)

The English version is entitled:

"A Sustainable Future for the Mediterranean: The Blue Plan's Environment and Development Outlook"

edited by Guillaume Benoit & Aline Comeau

2005. 464 p.

Earthscan (8-12 Camden High Street, London. NW1 OJH, UK)

The Blue Plan is a regional activity centre of the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP). The report was prepared under request from the Mediterranean riparian countries and the European Community. France, the European Commission and the European Environment Agency provided support. It is a collective work, drafted by the Blue Plan team with the support of a steering committee and with contributions from many experts from both shores.

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Contents

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The New Report on the Mediterranean

The latest Blue Plan publication is a follow-up to the first report published 16 years ago[1] to initiate environmental prospective on the Mediterranean Basin scale. *A Sustainable Future for the Mediterranean: The Blue Plan's Environment & Development Outlook* takes stock of changes, draws attention to the main risks associated with the continuation of current trends, and calls for action by proposing strategic orientations to reconcile development with the environment and reinforce solidarity between both rims.

The concept of sustainable development is particularly relevant in the Mediterranean, which is:

- A rare and fragile *ecoregion*, where development is largely dependent on the environment, and where degradation has become a major concern;
- One of the main regions in the world for North-South contacts, fracture and interdependency;
- A group of countries and an area where stability and prosperity will highly depend on the capacity to implement development and cooperation policies and patterns that take heed of the environmental, social and economic components of development.

The ecoregion is renowned for its climate, for the common sea that separates and links three continents, for its antique heritage and cultural landscapes, and for the populations' feeling of 'belonging to the Mediterranean world'. It is also one of the main hot spots of world biodiversity: 10% of known higher plants live on only 1.6% of land surface and 7% of marine species in less than 0.8% of total ocean surface; many of these species are endemic (Map 1). Heavy constraints are hydric stress (summer water shortages), aridity in the South, natural hazards, limited expanse of plain surfaces and communication difficulties.

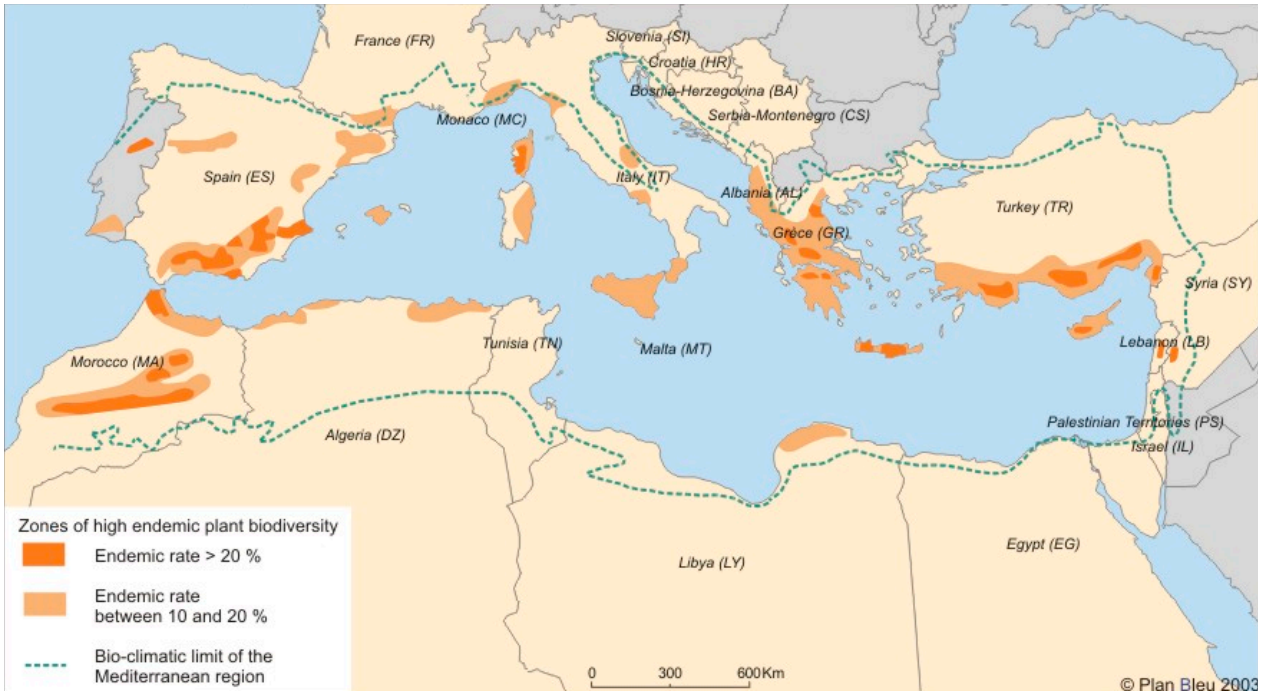
In 2000, the 22 riparian countries and territories (Map 1) accounted for:

- 5.7% of the planet's emerged surfaces, including deserts and mountain ranges,
- 7% of the world's population (stable share) with 427 million inhabitants,
- 32% of international tourism, with 218 million visitors,
- 13% of world GDP (decreasing),
- 60% of the world's "water-poor" populations,[2]
- 8.3% of CO_2 emissions (increasing).

On the sea, 30% of international maritime freight traffic and some 20 to 25% of oil maritime transport transit through the Mediterranean.

When presenting trends in the Mediterranean, a distinction will be made between Northern Mediterranean countries (NMC), which include countries spreading from Spain to Greece as well as the two insular states (Cyprus and Malta), and the Southern and Eastern Mediterranean countries (SEMC), which include countries and territories from Morocco to Turkey.[3]

Map 1 Riparian countries and zones with high level of endemic plant biodiversity in the Mediterranean bio-climatic area



Source: Adapted from Médail & Quezel, in *Annals of the Missouri Botanical Garden*, 84 (1997)

The approach taken for the report has been limited to in-depth analysis of a single trend scenario to 2025. Then, in view of the many unsustainable aspects highlighted by this scenario, strategic options are proposed favourable to curbing trends. The in-depth analysis focused on six major Mediterranean issues, from economic, social, environmental and political viewpoints: water, energy, transport, urban areas, rural areas and coastal areas. Tourism was discussed in several chapters.

To demonstrate that unsustainable trends are not irreversible and can be curbed through determined action, the publication highlights examples of good practices, identifies alternative strategies and quantifies possible shifts to other more sustainable scenarios. It examines the obstacles to overcome and policy tools that could be implemented. The report facilitated the preparation of the *Mediterranean Strategy for Sustainable Development*, a framework strategy adopted in late 2005 at Mediterranean and Euro-Mediterranean level, which sets forth objectives, calls for reinforced solidarity and provides a frame to national strategies currently under development.

Trends in the Mediterranean: Fairly Gloomy Prospects for 2025

The trend scenario is founded on assumptions related to climate, cooperation and regional integration, population, economy, and environmental and development policies. The consequences by 2025 are largely unacceptable, as regards the risk of accrued fractures between both rims, fractures within countries, and environmental degradation and instability.

Growing vulnerability to natural hazards

The 1990s were definitely the warmest decade of the last millennium. Droughts have been severe in several countries such as Morocco and Syria. Earthquakes in Al Hoceima (Morocco 2004), Algiers and Boumerdes (Algeria 2003), Izmit (Turkey 1999, 17,200 fatalities), as well as floods (Bab el-Oued, Algiers, 2001) and forest fires (Portugal), marked the decade.

On both rims poor management of catchments, land uses, and careless and imprudent construction, increase vulnerability to hazards. In French Mediterranean Languedoc-Roussillon, 80% of constructions erected on floodable land are less than 40 years old, and several recent floods have generated damage estimated at hundreds of millions euros (flood damages of 1.2 thousand million euros in Gard in 2002). All throughout the Mediterranean, coastal over-development is increasing vulnerability to tsunamis.

Global warming is expected to have strong long-term impacts on the Mediterranean Basin. Assumptions are the intensification of extreme climatic events and a warming of less than 1°C by 2025.

Globalization and regional cooperation: An integration model in the North, without equivalent in the South and East

The past 25 years have witnessed the collapse of the "two-block system" and an accelerated pace in globalization. In the Mediterranean, conflicts or instability have significantly affected several regions of the Near East, the Balkans and Algeria, and would have caused 500,000 deaths in riparian countries over the past 20 years.

Several Northern riparian countries have joined the European Union (Greece, Spain, and, since 2004, Slovenia, Cyprus and Malta), and this has strengthened exchanges and led to significant progress in terms of peace, democracy and economic reforms. By 2025, five more riparian countries (Croatia, Bosnia-Herzegovina, Montenegro,[4] Albania and Turkey) are expected to join. These countries will gradually benefit from important Community funds, free circulation of people and the application of directives. Peace, democracy, social market economy and economic and environmental convergence will thus be reinforced. Yet changes in production and consumption patterns follow those of the EU countries and remain unsustainable. In the absence of a parallel process of political deepening, the enlargement dynamic results in a weakened European project, which tends then to be limited to the single market, based on common values and rules.

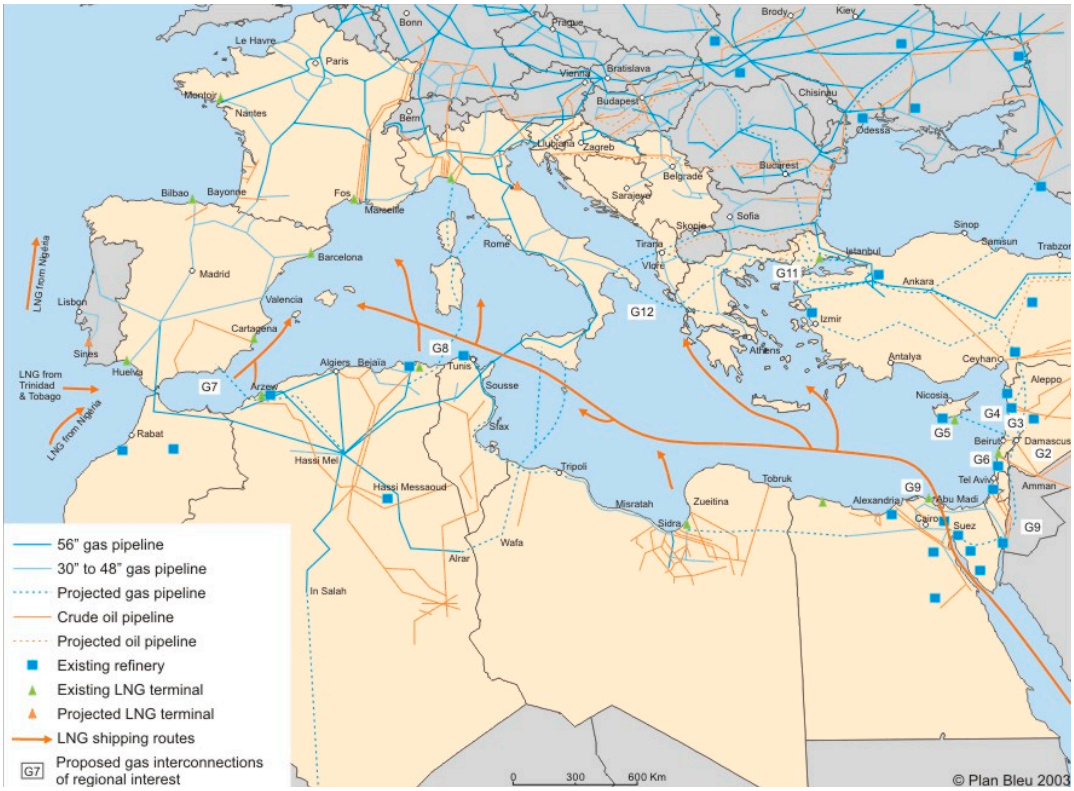
The regional integration model being developed in the North has no equivalent in the South and East. Despite several initiatives, the region remains characterized by persistent conflicts and the lack of structured cooperation. On the eastern rim, military expenditure accounts for over twice the world average in percentage of GDP. From the economic standpoint alone, the level of trade exchanges between Southern and Eastern countries (less than 5% of total foreign trade for these countries) points to the lack of integration.

Southern and Eastern countries, particularly in Maghreb, mainly exchange with EU countries. Euro-Mediterranean interdependencies are likely to increase.

The European Union accounts for 75% of Tunisia's total trade for example. Energy interconnections (Map 2) strengthen the links between the two shores. In spite of very restrictive EU migratory policies, migratory flows remain significant and most unlikely to dry up. It is estimated that 10 million foreigners, 5 million of whom are from other Mediterranean countries, are living in the Mediterranean countries (Map 3). Tourism

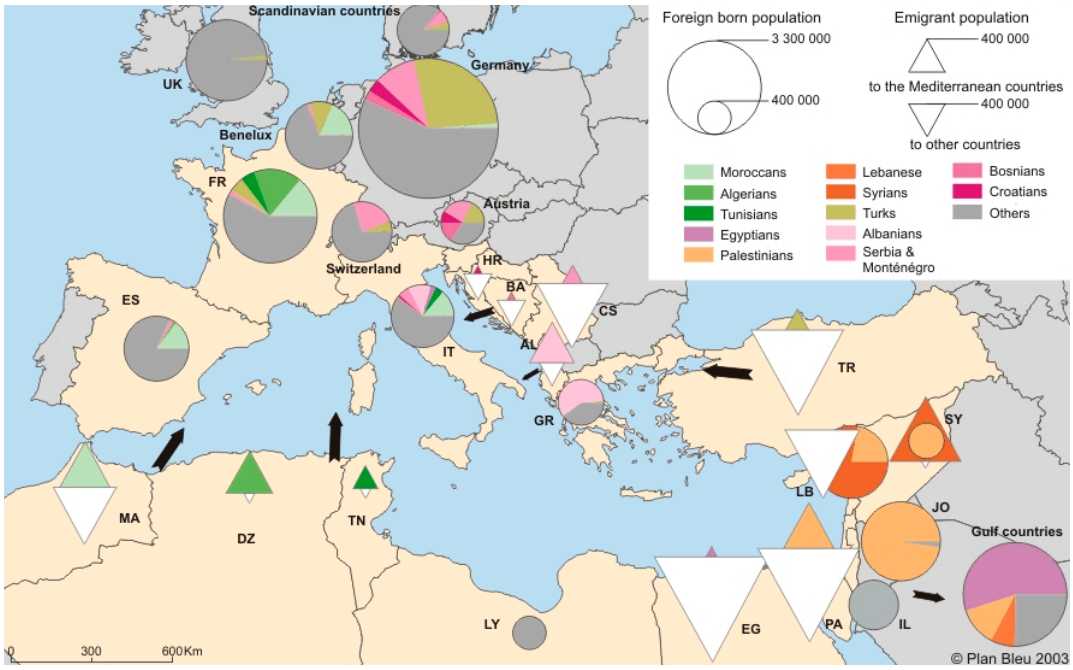
is another important migratory flow. International tourist arrivals in the Mediterranean countries increased 4-fold between 1970 and 2000, reaching 218 million visitors in 2000, 85% of whom were Europeans.[5] The assumption for 2025 is a continuing strong growth of tourist flows with 178 million additional arrivals. Both the transfer of funds from emigrant people and international tourism represent a significant source of foreign currency for several countries.

Map 2 The development of gas infrastructures in the Mediterranean



Source: OME (Observatoire méditerranéen de l'énergie)

Map 3 Migration: foreign and Mediterranean emigrant people

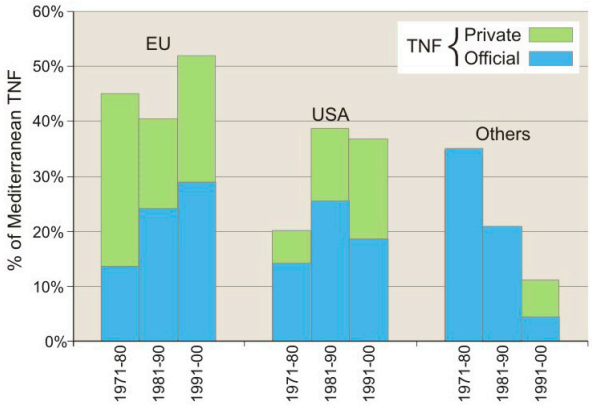


Source: Eurostat data

In the 1990s, non-EU Mediterranean countries received total net capital flows, official and private, of an average of US$16.8 thousand million per year, now increasing. However, their relative share in international financing is decreasing sharply (10% in the 1990s versus 17% in the 1970s), as Southern and Eastern countries, with the exception of Israel, are not appealing to direct foreign investments.

Net official flows have remained predominant, with bilateral funds representing nearly 85% of Official development assistance. The EU share (member states, Commission and EIB) is the largest and rising (Figure 1). The United States of America (36% of net capital flows) focus on some strategic countries. EU-sourced aid, with better geographical distribution, has been redirected towards Eastern Adriatic countries.

Figure 1 Source of capital destined for the Mediterranean (excl. EU) - (in % of the total net flows to the Mediterranean)



Source: OECD Development Aid Committee (DAC)

International cooperation policies and economic reforms have been focused essentially on reducing state involvement, trade liberalization (without however assessing the impacts on sustainable development), withdrawing subsidies and privatization. According to several experts, little or no attention was granted to improving the performance and competitiveness of local actors and professionals, or to clarifying their relationships with the state. The *Euro-Mediterranean Partnership*, launched in 1995, was the starting point of an ambitious process: establishing a common area of 'stability and shared prosperity'. However, Euro-Mediterranean cooperation, which has been integrated into the new European Neighbourhood Policy since 2003, is still lacking resources, mutual commitments and incentives. In 2002, the share of EU MEDA credits to Southern and Eastern Mediterranean countries per inhabitant represented 5 euros per capita per year, compared to 30 euros per capita per year in Eastern Adriatic countries, 53 euros for the 10 accession countries –then EU members in 2004, and EU net financial transfers of 200 to 300 euros per capita per year to Spain and Greece. The Partnership process has mainly focused on security issues and trade liberalization, with the objective of establishing a free-trade area by 2010, and on bilateral relations, with poor integration of sustainable development into its priorities and financing. In association agreements, reference to the environment and sustainable development remains scarce, with even less specification on objectives and resources. An impact assessment of the Euro-Mediterranean Free-Trade Area was carried out only recently.[6]

Up to 2025, the baseline scenario assumes continued globalization, liberalized North-South trade (progressive in agriculture) and restrictive migratory policies. Despite awareness that its fate is linked to that of the Southern and Eastern Mediterranean, the EU hardly manages to play the historical role that would be justified by the importance of its interdependencies and its well-understood interests. Both North-South and South-South cooperations remain insufficient, and Euro-Mediterranean integration advances unevenly, with limited resources. Sustainable development is poorly taken into account. Under these conditions, the Mediterranean may well be faced with increased risks of fracture between a Northern rim where development towards the single market is supported by powerful political, financial and regulatory commitments, and a Southern rim where liberalization continues without an equivalent level of support and solidarity.

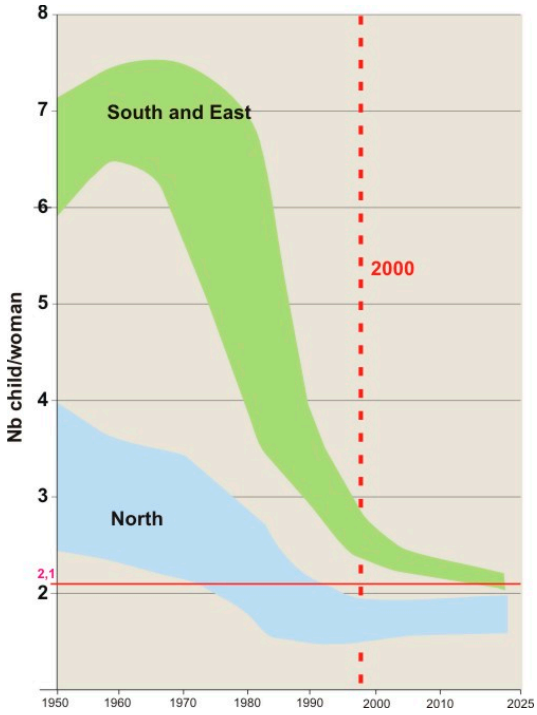
Accelerated demographic transition, ageing populations in the North, demand for employment in the South

The main surprise over the last 20 years has been the fast drop in fertility rates in Southern and Eastern countries as well as in Albania, much faster than imagined in the 1980s (Figure 2). The assumption for 2025 is the continuation of the demographic transition in the South and therefore of the convergence of fertility rates.

Despite the accelerated transition, the demographic swing between both rims is expected to continue. Populations in the South and East have doubled over 30 years, to reach 234 million inhabitants in 2000, and are expected to increase by additional 96 million by 2025. Populations in Egypt and Turkey would then respectively total 95 and 87 million inhabitants. On the North rim, the population has only grown by 14% over the same period, numbered 193 million in 2000, and is expected to increase by a mere 4 million by 2025.

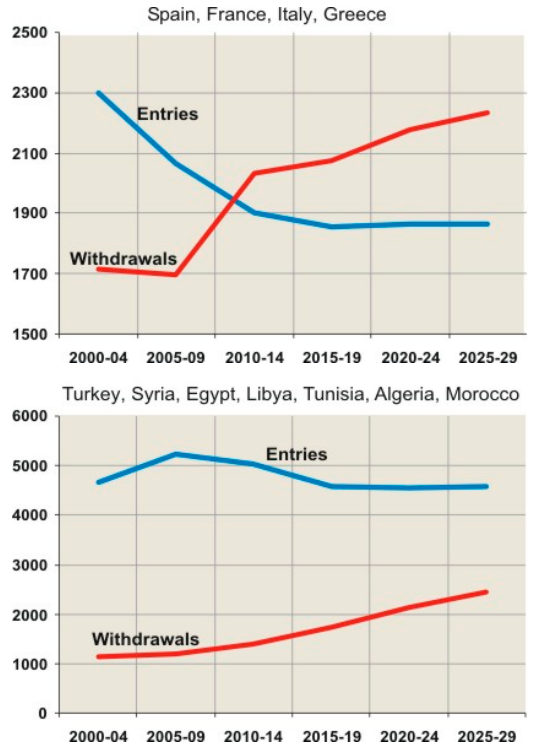
The consequences of these demographic changes are highly differentiated on both rims (Figure 3): Mediterranean Europe will be severely confronted with ageing issues (and with financing retirement pensions), whereas the South and East would have to create an additional 34 million jobs over the next 20 years, if the current employment rates are to be maintained.[7]

Figure 2 Fertility rate, 1950-2025 : trends and projection



Source: Plan Bleu

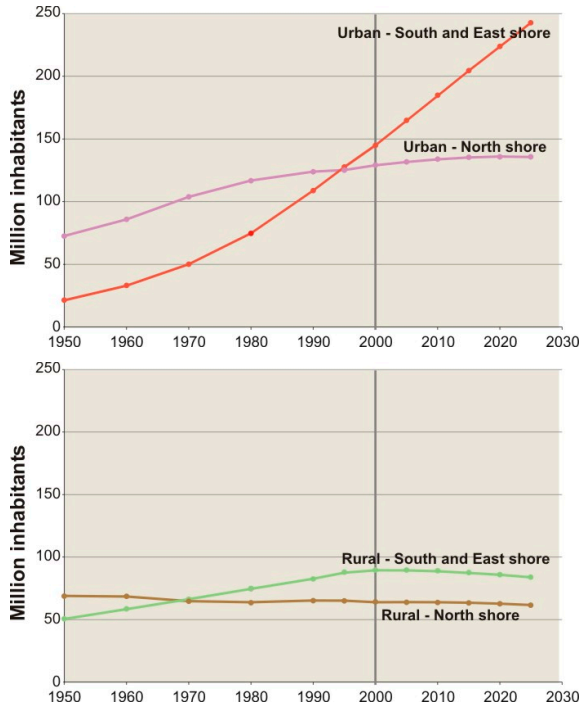
Figure 3 Net entries and withdrawals into the labour market



Source: Plan Bleu (Youssef Courbage, Isabelle Attané), 2002

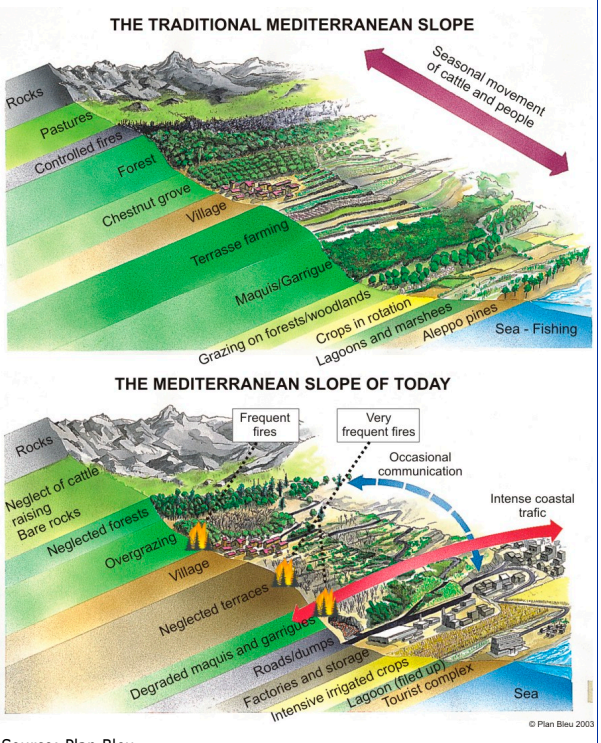
Urban development (Figure 4) and coastal over-development, or concentration of pressures on coastal areas (Figure 5), have been much more significant than imagined by the Blue Plan in 1989. It is now assumed that these heavy trends will continue, whereas the numerous rural populations in the South would be maintained in absolute values on both rims (Figure 4).

Figure 4 Urban and rural population



Source: Plan Bleu, I. Attané and Y. Courbage, 2002

Figure 5 The coastal over-development



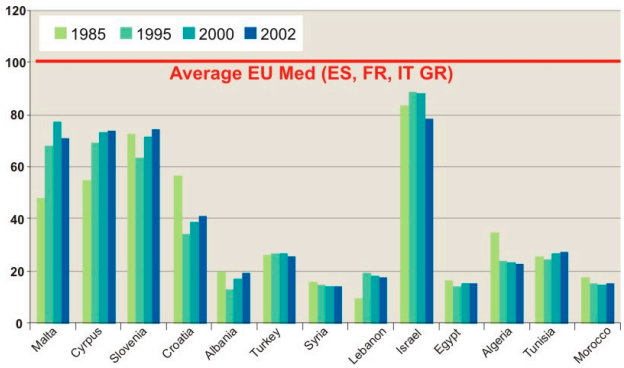
Source: Plan Bleu

Poor economic performance, youth unemployment, continued North-South gaps

On both rims, economic growth has been lower than in other comparable regions worldwide. One reason often described is the ever prevalent 'slack' and 'mining' features of the Mediterranean economy: revenue from land as a result of the residential economy and some farming practices, revenues from oil and gas, revenue from water abstraction from non-renewable resources, and the appeal of short-term speculative or commercial gains without any real strategy for developing goods and services. The economy lacks of innovation and remains little dynamic. Public and private R&D expenditure and ties between business and training and research institutions remain limited. Brain drain is high and civil societies are not sufficiently active in many countries.

While GDP in new EU member countries is closer to that of France and Italy, the North-South gaps in GDP per capita, in terms of purchasing power parity, have not been reduced: gaps of 1 to 5 between developed countries and several developing countries (Figure 6).

Figure 6 Income gaps: comparison with four EU-Med countries (Spain, France, Italy, Greece), in GDP per capita ppp



Source: Plan Bleu from World Development Indicators, World Bank, 2004.

Note: Croatia and Slovenia: 1990 and 1993 instead of 1985. Lebanon: 1989 instead of 1985.

Such poor economic performance has severe social consequences: youth unemployment reaches 'record' levels on both rims, with many countries recording unemployment rates at 20 and 30%.

Remarkable progress has been achieved in the South and East as regards infant mortality and primary education, and significant efforts are underway to reduce the number of Mediterranean deprived of access to drinking water and to sanitation (approximately 30 million people). However, in rural areas of several countries, high illiteracy rates and rural exodus are severely impacting fast-growing cities, which in turn lack the resources to face this growth. Although extreme poverty is limited, relative poverty remains significant, and despite the progress achieved, gaps still exist as regards access to information (internet) and gender equality compared to other regions worldwide.

Economic growth remains uncertain for 2025, particularly in the South and East: the baseline scenario assumes, for the entire Mediterranean Basin, an average GDP growth rate of 2.7% per year over the period 2000-2025[8] versus 2.5% in 1985-2000. If this were the case, employment demands could not be satisfied in the Southern and Eastern countries, and unemployment and revenue gaps between both rims would not be reduced. This could lead to social unrest, to strong pressures on emigration and to growing risks of instability. For its part, Europe, faced to the issue of its ageing populations, would see its global economic power diminished. According to IFRI (French Institute for International Relations), Europe, together with its neighbours (Russia and the Southern and Eastern Mediterranean countries), which accounted for 28% of world GDP in 2000, would only account for 20% of GDP in 2050 in a trend scenario called "Chronicle of a predicted decline", instead of the 32% highlighted in the alternative scenario "Europe-Russia-Mediterranean".[9]

Environmental crisis despite the expansion of policies

Awareness of the environment and of sustainable development has improved.

The *Barcelona Convention* for the Protection of the Mediterranean Sea against Pollution (1976) was amended and extended to include coastal areas in 1995, and a Mediterranean Commission on Sustainable Development, open to a more dynamic civil society, was created in 1995. Synergies with the Euro-Mediterranean Partnership and the required means for action have remained however limited.

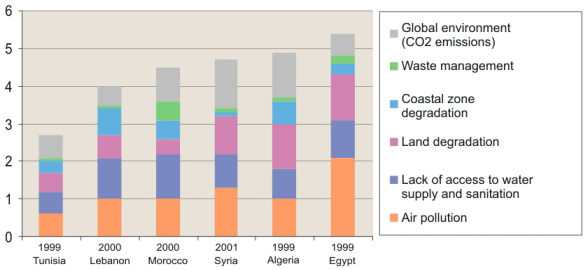
Environmental policies have been set up in all countries, and examples of good practices are available on all three rims. Despite these achievements, tensions forecasted by Blue Plan in 1989 regarding natural resources and environmental degradation have now been confirmed. They weigh heavily over poor populations and tend to impede, if not to compromise, economic and social development.

On the Southern and Eastern rims, the World Bank has assessed annual costs of environmental degradation at nearly 3% in Tunisia and at 5% of GDP in Syria, Algeria and Egypt (Figure 7).[10] Costs essentially stem from degradation of land, water resources and coastal zones, and of urban environment.

In EU countries, Community '*acquis*' and solidarity have failed to prevent coastal over-development and growing regional disparities, urban sprawl and massive loss of quality farmlands, 'concreting' of entire portions of coastal areas and poor management of

hinterlands. Spain and Greece's integration into the single market resulted into high increase of greenhouse gas emissions and waste production.

Figure 7 Average annual costs of environmental degradation (% of GDP)

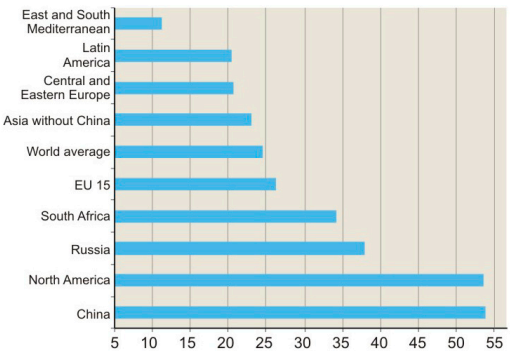


Source: Estimates from World Bank, 2004

Several factors contribute to the poor Mediterranean performance. In addition to the above-mentioned 'slack' and 'mining' features of the economy, the Mediterranean has undergone rapid changes, and tended to favour inappropriate development models over its know-how and customs.

Another factor is the characteristic and respective weight of policies: environmental policies have basically remained top-down, corrective and regulatory instead of participatory, integrated and anticipatory, and have not been allocated the appropriate resources or inter-ministerial support. Their implementation is fraught with serious difficulty. Land use planning has registered a certain decline, while coastal and rural development policies remained weak. The capacities of local authorities in the Southern and Eastern Mediterranean are limited (Figure 8), whereas in the most developed countries, the framework of the decentralization process is not strong enough to ensure fully taking the long-term into account. Economic cooperation and sectoral policies (agriculture, energy, water, transport, tourism) have poorly integrated the environmental component or the sustainability concerns.

Figure 8 Local level expenditure as a percentage of total government expenditure, 1997-2000



Source: L. Urdy for Blue Plan from the *World Bank Decentralization Database 2002* and national sources for the Mediterranean countries.

Note: East and South Mediterranean: Turkey, Israel, Egypt, Tunisia, Morocco – Central and Eastern Europe: Albania, Croatia, Slovenia, plus 15 other countries – World average: sample of 56 countries.

It is assumed that these trends will continue up to 2025. Environmental policies, more curative than preventive, largely remain a state matter, and environmental governance remains powerless to face the challenges of sustainable development.

Six Sustainability Issues

The report gives a detailed analysis of the assumptions and possible impacts of the trend scenario in the six major areas, but also shows that the gloomy future is far from inevitable. Real progress achieved in all countries demonstrates that solutions adapted to the Mediterranean features can be found and trends can be curbed.

Water: 'Demand management' policies to prevent shortage and crises

Water resources are limited and unequally shared in time and space. The Southern countries have only 13% of total resources. The number of *water-poor* Mediterranean populations living in countries with less than 1,000m^3/capita/year of renewable resources (which are not always available), could reach 165 million inhabitants in 2025, 63 million of whom would be facing shortage conditions with less than 500m^3 per capita and per year.

Water demands, i.e., cumulated withdrawals (95% of total), water imports and non-conventional water production (desalinization, re-use), doubled in the second half of the 20th century to reach 290km^3/year for all riparian countries, and 190km^3/year on the Mediterranean catchment basin. Irrigation accounts for 65% of total demand in the Mediterranean basin: 48% in the North and 82% in the South and East; irrigation is marginal only in the eastern Adriatic, from Slovenia to Serbia and Montenegro. By 2025, water demand could increase by another 25% in the South and East, particularly in Turkey and Syria.

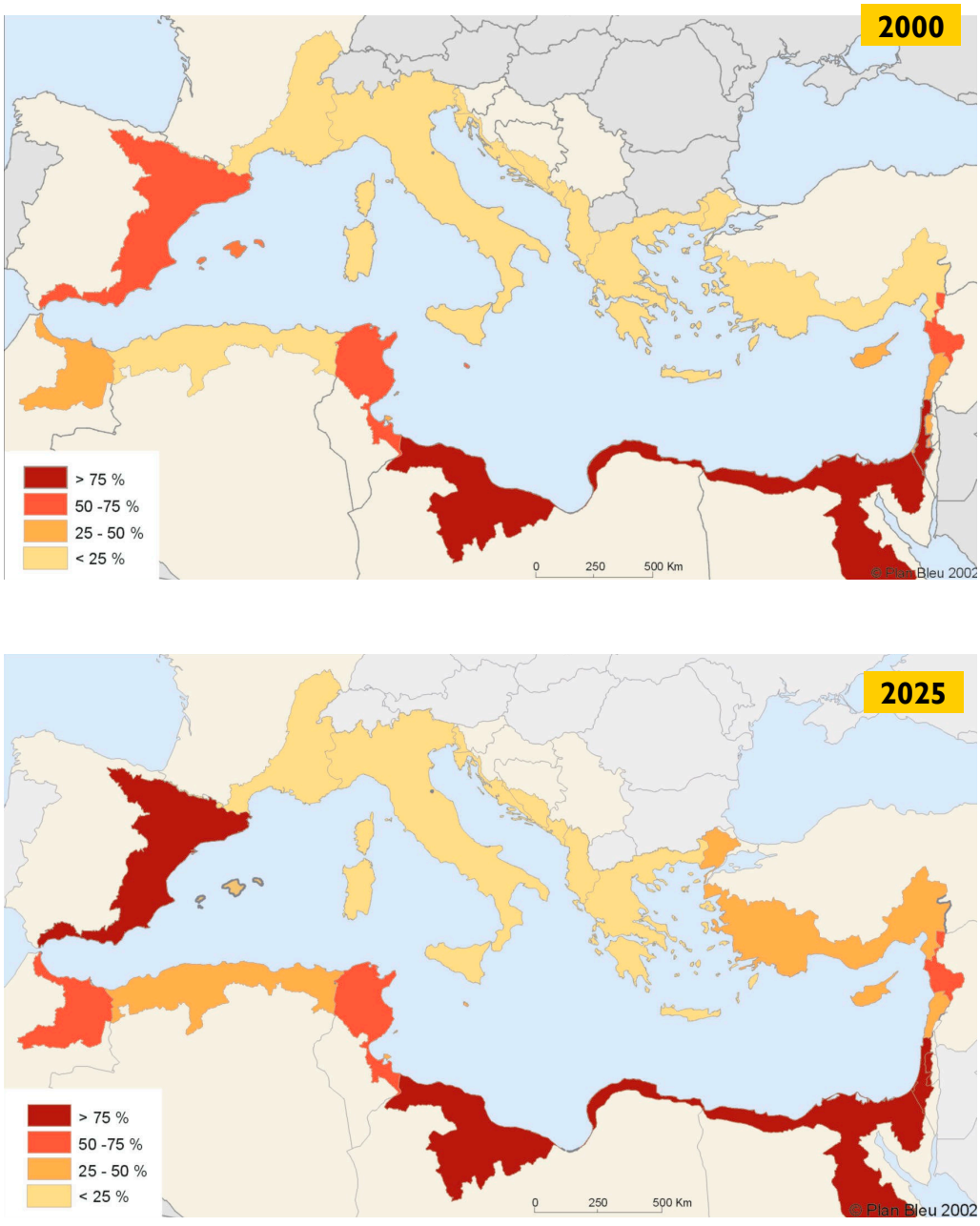
The degree of pressure on resources from demand can be measured through the *exploitation index of renewable natural resources*.[11] When the index in the Mediterranean catchment basin is projected to 2025, significant contrasts in the "water future" can be seen (Map 4). Tensions on the resources are expected to be particularly high in Egypt, Israel, Libya, Palestinian Territories and in the Spanish Mediterranean catchment areas (index at 75% or higher), as well as in Malta, Syria, Tunisia and in some catchments of Morocco (index between 50 and 75%).

Water demand is increasingly met by over-abstraction on natural resources. The *index of unsustainable water production* on the Mediterranean catchment basin exceeds 10% in Israel, Cyprus and some Spanish regions, 20% in the Palestinian

Territories, and 30% in Libya and Malta. On a national level, fossil-water withdrawals are added to over-exploitation of renewable water, bringing the index values to 22, 35 and 84% in Tunisia, Algeria and Libya respectively.

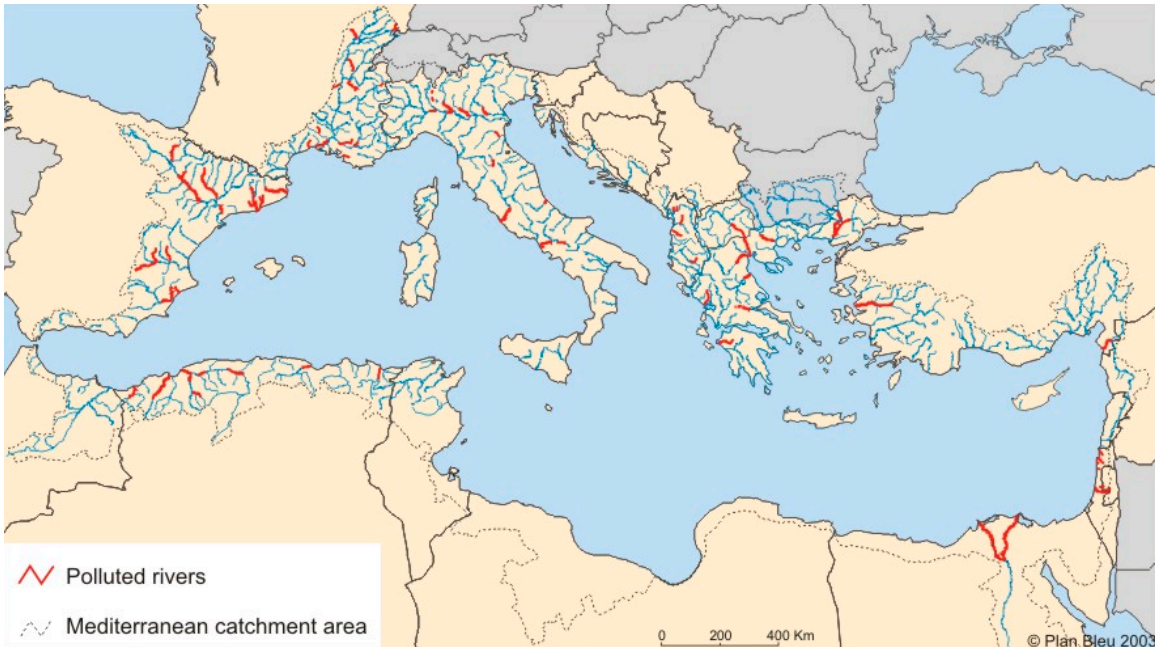
Pressures are also qualitative, such as excessive pesticide or nitrate contents in many aquifers, particularly in the North. It is reported that 27 million Mediterranean people have no access to improved sanitation systems, particularly in Morocco, Turkey, Algeria and the Palestinian Territories. Discharge of domestic and industrial waste has caused chronic pollution to many watercourses (Map 5).

Map 4 Exploitation indices of renewable natural water resources (catchment basin)



Source: Plan Bleu, J. Margat

Map 5 Main rivers subjected to chronic pollution



Source: Plan Bleu

The consequences of growing pressures are serious: changes in the water regime, excessive drop in underground water table levels, depleted sources, receding deltas (50m/year in the Ebro delta) – especially the Nile delta, quality degradation of distributed water, increasing supply costs and conflicts between users, shrinking of wetlands and irreversible losses to the natural capital for future generations.

To satisfy the growing demand, national policies are largely dominated by efforts to increase water supply, and multiply the number of large water infrastructures. Over 500 large dams were built during the last century, big transfer infrastructures are underway in Egypt and Libya, and many other waterworks are planned in Algeria, Morocco, Turkey, Cyprus, Spain, Greece, etc. However, many dams in the South and East will lose a large share of their capacity due to silting – in Algeria, reservoirs have already lost one quarter of their original capacity. Since the number of available sites is limited, a 'post-dam' era is likely to begin before the end of the 21st century in most of these countries.

Several countries have started to produce water from non-conventional sources: use of recycled agricultural drainage water (12.6km^3/year), re-use of wastewater for irrigation which could reach a total of 5.7km^3 on the Mediterranean Basin level in 2025, and industrial production of freshwater through desalinization of sea water or brackish water (0.2% of total demand).[12] The extent of these new forms of water production must nevertheless be put into perspective: in 2025, total re-use and desalinization would account for only 25km^3, 90% of which in Egypt with the use of recycled water from agricultural drainage.

Actually, the physical, socio-economic and environmental limits of supply-based policies have been reached. In order to counter the trend scenario with its inevitable crises, the alternative scenario assumes the implementation of voluntary policies.

- Policies to increase exploitable potential through improved water and soil conservation, and increased recourse to the artificial replenishment of water tables in arid areas;
- And, essentially, policies for efficient and economic use, called '*water demand management*' policies.

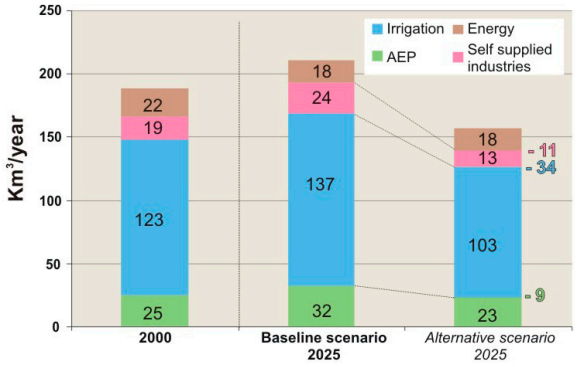
There is significant room for progress since improved water demand management could lead to total theoretical savings of 54km^3 of water in 2025 for the Mediterranean catchment basin, 34km^3 of which in the South and East (Figure 9). In the countries, agriculture represents 65% of potential savings (with transport losses reduced to 10%, and efficiency in irrigation water raised to 80%), industry 22% (recycling rate up to 50%), and domestic water 13% (with transport losses down to 15% and user leaks at 10%). Even if implementation were only partial, demand could nevertheless be stabilized and the forecasted crises avoided.

In total, over 25 years, 675km^3 of water could be recovered, representing savings of 270 thousand million euros (or 11 thousand million per year) at an average cost of 0.40 euro per cubic meter of water. These savings also represent net benefit: the rare available studies reveal gaps from 1 to 3, or from 1 to

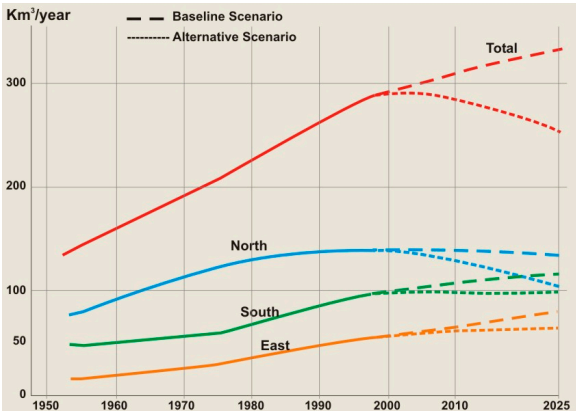
10, between the cost per cubic meter of saved water and that of exploited water.

Figure 9 Water savings, demand management with the alternative scenario to 2025

Demand by sector of use, baseline and alternative scenarios, Med-catchment area, 2000-2025



Total demand, baseline and alternative scenarios, entire countries, 2000-2025



Source: Plan Bleu, J. Margat

AEP: drinking water supply

The challenge of water demand management is not only limited to physical savings. It is also a matter of economic and social enhancement of exploited water, and of taking the needs of ecosystems into account, in particular to ensure water flows to wetlands, many of which are of international importance.

Several recent experiences have demonstrated the feasibility and the *win-win* impact, both economic and environmental, of such policies. Tunisia has implemented a national irrigation water-saving strategy which includes the creation of user associations, pricing aimed at progressive cost recovery, targeted financial instruments for water-efficient farming equipment, and support to farmer revenues. Since 1996, this policy has stabilized irrigation water demand despite agricultural development, and the needs of both the tourism sector (a source of foreign currency) and cities (a source of social stability) have been assured. In Morocco, improved water management in Rabat-Casablanca has delayed or perhaps completely avoided costly investments (dams, transfer canals) initially scheduled by the Master Plan of 1980.

Accelerating the transition to the alternative scenario requires reforms that include clearly the objective of integrated water management in all policies, particularly in agricultural policies, and the necessary resources for implementation, through sustainable efficiency plans and financing mechanisms. Higher investments for sewage systems in the South and East, and changes in subsidies and in pricing to attract actors and make them responsible (demand management), represent two priorities for action. There is significant potential for progress, as very few countries have fully taken the importance of economic tools[13] into account, particularly with regard to agricultural water saving and enhancement. Nevertheless, both a sound understanding of issues and the strengthening of local management capacity play as decisive a role as means of action and financial tools. Regional cooperation on water, which benefits from a long-standing tradition in the Mediterranean, plays a fundamental role as catalyst and driver of emerging changes.

Energy: Priority to savings and renewable energy

Four countries (Algeria, Libya, Egypt, Syria) are hydrocarbon exporters, and export 50% of their oil and 90% of their gas to other Mediterranean countries whereas all the other countries are net energy importers. The four large EU member countries, Spain, France, Italy and Greece, are responsible for approximately 70% of total carbon dioxide (CO_2) emissions in the region.

Demand for primary commercial energy more than doubled in riparian countries between 1970 and 2000. Transport prevails in the North, representing 32% of total demand in 2000 versus 21% in 1971. In the South and East, the residential sector prevails and shows the most spectacular evolution; along with the services sector, it accounts for nearly 40% of total demand.

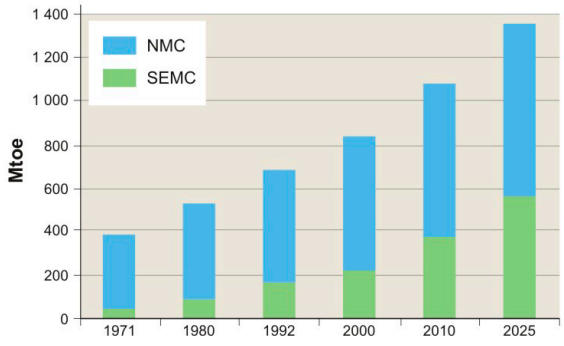
The trend scenario, based on the main orientations defined in energy strategies of the countries and of the major companies operating in the region, assumes that no priority will be given to energy restraint, even though technological progress generating less *energy intensity*[14] is integrated. Demand would increase of 65% and reach 1365Mtoe in 2025. The South and East, where growth rates are four times higher, would account for 40% of total demand in 2025 compared to 10% in 2000. Turkey would become the second largest energy consumer in the region (Figure 10).

Fossil fuels (oil, gas, coal) dominate supply and account for over 75% of consumption in the North, and 96% in the South and East; growth in natural gas consumption is relatively strong. Fossil energy is

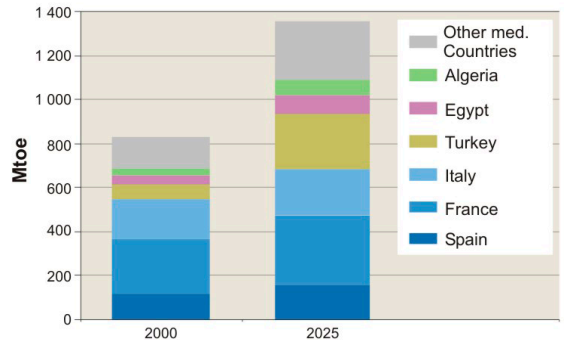
expected to account for 87% of total energy demand in 2025, nuclear only 9% (France, Spain and Slovenia), and renewable energy only 4% (biomass excluded), despite a four-fold increase over 25 years.

Figure 10 Primary energy demand: baseline scenario to 2025

Primary energy demand, trends and projections to 2025 (trend scenario)



The six main energy consumers in the Mediterranean



Source: OME (Observatoire méditerranéen de l'énergie)

The trend scenario assumes a significant increase of risks:

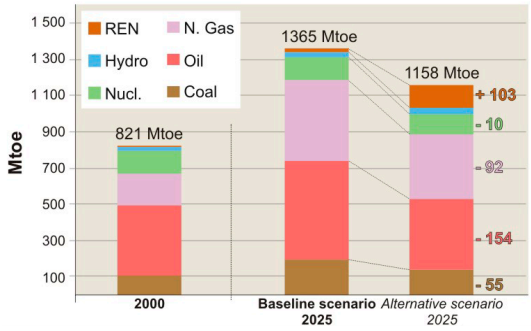
- *Geopolitical risks*, with higher energy dependency: hydrocarbons imports of 530Mtoe in 2025 compared to 290 in 2000, and reduced exporting capacity in Mediterranean producer countries;
- *Social and economic risks*, with higher supply costs and impacts on energy bills for countries, households and the business sector;
- *Environmental risks*, with growing contribution of the region to greenhouse gas emissions and the impacts resulting from energy infrastructure and hydrocarbon transport development.

The Blue Plan alternative scenario (Figure 11), based on improved use of currently available technologies, assumes more rational use of energy and rapid development of renewable energy (mainly solar and wind power). Assumptions highlight 20 to 25% savings in total energy demand by 2025, and renewable energy providing 14% of primary energy supply versus 4% in the baseline scenario. The housing sector represents the most significant potential for savings, particularly in the Southern and Eastern countries, where population growth is high.

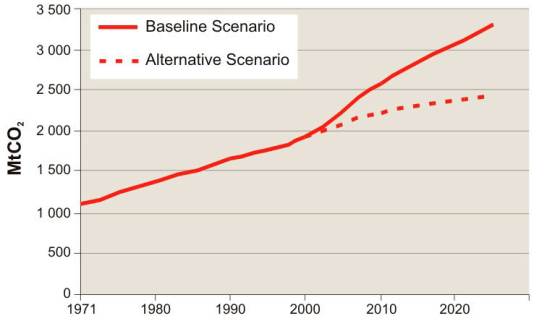
The comparison of inter-country performance, along with multiple examples, shows that this scenario is feasible, presenting both environmental and economic gains. Italy, with decreasing energy intensity, and Turkey, with solar water heaters, is leading the way. Returns on investment are usually short-term: only some years, sometimes only some months.

Figure 11 Feasible energy savings and less CO_2 emissions with the alternative scenario, 2025 (all Mediterranean countries)

Primary commercial energy demand



Total CO_2 emissions according to the two scenarios



Source: Plan Bleu, OME

The advantages of the alternative scenario are considerable:

- Total energy savings of 208Mtoe in 2025, i.e. approximately half the projected demand increase between 2000 and 2025;
- Avoided expenditure of US$1092 thousand million over 25 years, or 44 thousand million per year on average (at $60 per barrel);
- Energy dependency down to 18% versus 38% in the trend scenario;
- Avoided building of 154 power plants (of 500MW) on Mediterranean coastal zones;
- 860 million tonnes of CO_2 emissions avoided in 2025;
- Creation of numerous jobs in the innovative sectors of the 'post-oil' era;
- Preparedness of the region to more radical medium-term changes required to limiting global warming.

The implementation of the alternative scenario will require major changes in energy thinking, planning and management in order to diversify policies, involve most actors and make them responsible. Strong public initiatives, which are clearly visible in national strategies, will be needed, along with sustainable financing mechanisms, efforts in R&D, and communication and training. For behaviour to evolve, incentives and clear price signals are indispensable. In the Palestinian Territories, Cyprus and Israel for example, high kWh prices in the residential sector have lead to significant development of solar water heaters. Recourse to the climate-best suited Mediterranean architecture and town planning will also be needed.

Transport: Limiting high growth in nuisance

Traffic growth outweighed population and economic growth by far between 1970 and 2000: 4.9% per year for passengers and 3.8% for freight (excluding maritime traffic). Traffic growth is mainly due to road transport, which accounted for 88% of passenger traffic and 82% of freight in 1999. Rail (9% of domestic passenger traffic) predominates in Egypt (47% of total) and in the Eastern Adriatic countries (23%). High growth in air transport (7.3%) is linked to tourism development.

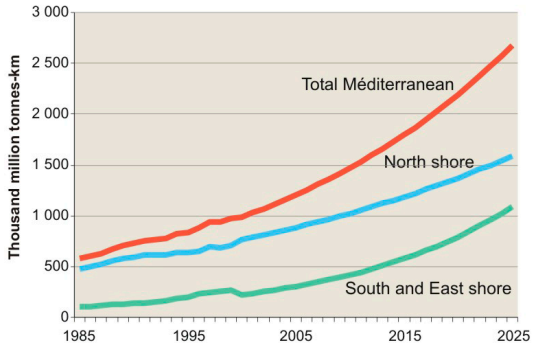
Maritime freight transport also registered significant growth (4% per year), even though North-South Euro-Mediterranean transport chains lack of competitiveness. The Mediterranean fleet carries dangerous substances, while controls are limited. Transit flows account for 40% of Mediterranean traffic. The closure of roads in former Yugoslavia during the conflicts has resulted in the establishment of intermodal chains with maritime exchanges between Greece, Turkey and Western Europe, which were maintained after the end of the hostilities, thus demonstrating the economic soundness of more sustainable transport systems.

Transport is the source of significant nuisance:

- Peaks in ozone pollution;
- Noise pollution, which impacts 51% of the population in Israel, 45% in Malta and 33% in Italy;
- Emissions related to hydrocarbon combustion (volatile organic compounds, benzene, etc.);
- Nearly a third of CO_2 emissions and of particle emissions, and 70% of nitrogen oxide emissions in large Northern rim urban areas;
- Road congestion costs,[15] which are steadily increasing (16% per year) in Mediterranean Europe. Costs have been roughly estimated[16] at US$41 thousand million in the Mediterranean in 2000, of which 14 thousand million in France versus 1.6 in Turkey for example;
- A major cause of surface sealing (through the construction of infrastructures), thus increasing vulnerability to floods and to loss of biodiversity;
- Irreversible loss of coastal zones from "concreting" land cover when roads are built alongside or too near the coastline.

Significant progress has been achieved in combating marine pollution from ships: operational pollution from hydrocarbons would have been divided by a factor of 20 between 1985 and 2000, through stronger regulation, mainly the obligation to use separate ballast tanks. Emptying ballast waters into the sea is illegal, and yet this pollution is estimated at 100,000 to 150,000 tonnes per year.

Figure 12 Freight traffic (road, air and rail): trend scenario to 2025



Source: ECMT, Ministries of transport, national statistical institutes, Plan Bleu's prospective

The trend scenario assumes high increase of pressures by 2025: multiplication by 2.6 in land freight traffic (Figure 12), by 3.7 in maritime freight traffic, and a two-fold increase of passenger traffic. Mass car ownership would be widespread in the South before 2025. This exponential growth will have major impacts in terms of congestion, noise, greenhouse gas emissions and local air pollution. With the high growth in maritime traffic, the Mediterranean Sea, victim of 156 accidents followed by oil spills between 1977 and 2000, is not protected from disasters such as those of *Prestige* or *Erika*, which may prove much more costly than in the Atlantic.

The alternative scenario assumes:

- Decoupling motorized mobility from economic growth, with traffic in 2025 being 8% lower than in the trend scenario;
- A modal share more favourable to rail (accounting for 20%) and to maritime transport;
- An extended and stricter implementation of rules to combat pollution from ships.

Spectacular advantages would be obtained in terms of reduced CO_2, VOC (90,000 tonnes avoided) and NOx emissions, congestion costs (US$41 thousand million saved), road accidents, noise pollution and reduced marine pollution.

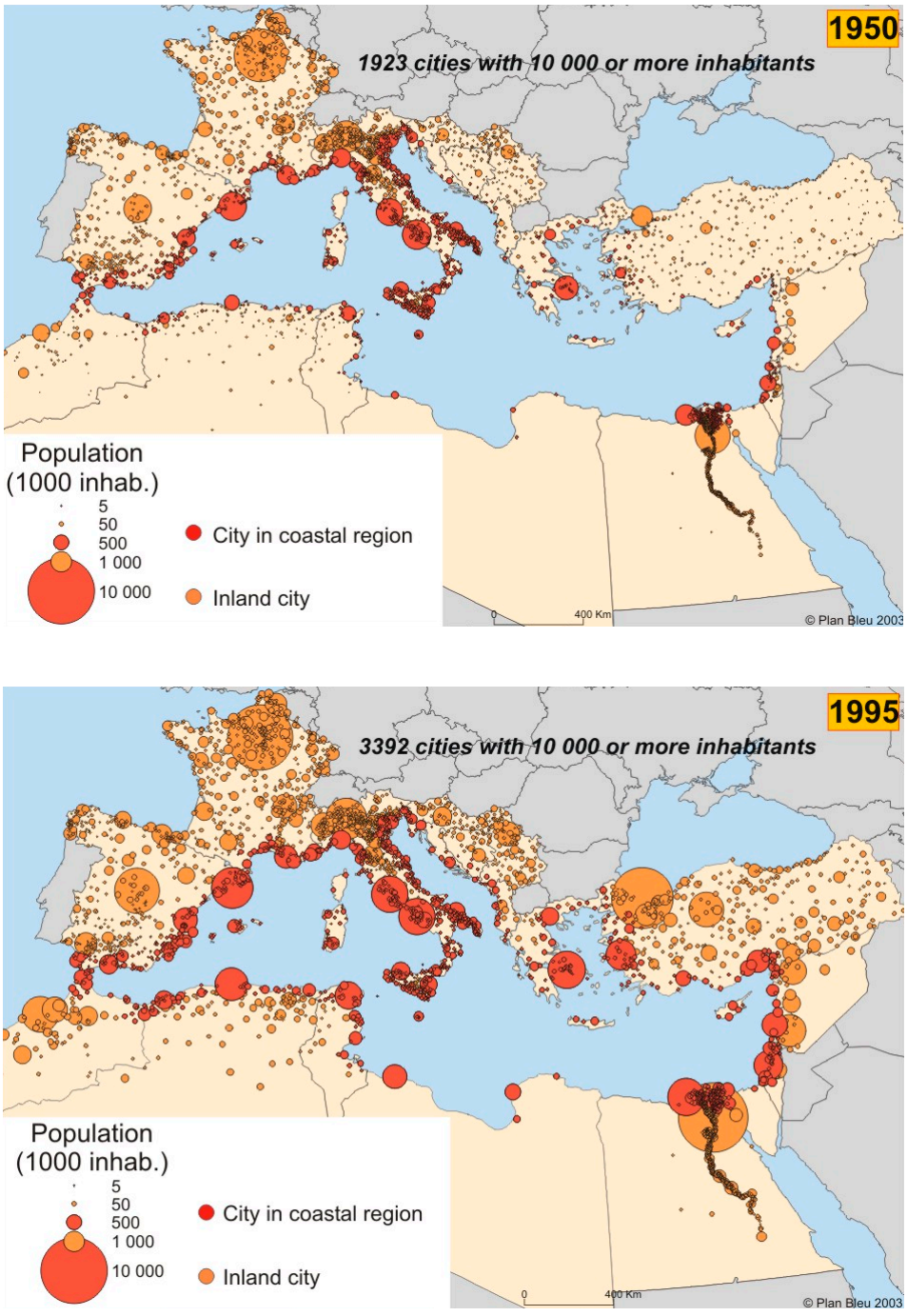
Shifting to the alternative scenario will require the Mediterranean transport system and policies to evolve,

by setting forth medium and long-term sustainability goals determining the changes required at different geographical levels (Euro-Mediterranean, national, regional and local), financing sustainable transport infrastructures, rationalizing taxes and subsidies, and strengthening international cooperation to regulate liberalization. Europe could play a significant role for regulating liberalization.

Urban areas: Reinventing the Mediterranean city

The urban population in all riparian countries together grew from 94 million in 1950 (44% of total population) to 274 million in 2000 (64%). Spectacular urban development takes place in the South and East (Map 6), where 74% of population would become urban by 2025.

Map 6 Cities with 10,000 or more inhabitants : 1950, 1995



Source: Plan Bleu from *Géopolis*

Urban dynamics are quite different on both rims. In the North, population and employment are scattered, and population is dropping in town centres. Urban sprawl has major consequences in terms of land-sealing and increased motorized travel distances. Losses of agricultural land are considerable, and reach 276ha per year in Padua-Venice-Mestre, for example. On the South and East, the very high urban growth rates cannot be equated with similar economic development levels, and technical and financial capacities of cities are limited. With the expansion of urban areas, the proliferation of informal housing (between 30 and 60% of total) and the risks of instability have been accentuated.

Waste management is a crucial issue on both rims and is expected to worsen. Over 80% of landfills are uncontrolled in the South and East, and waste production, at a current average of 282kg per capita and per year versus 566kg in the North, could reach 600kg per capita by 2025. Total volumes of produced waste could almost triple in the South and double in the North by 2025.

Air pollution and health impacts are another issue of common concern to both rims. In the North, despite progress made (clean public transportation, renewal and improvement of the car fleet, decreased emissions of VOC, NOx, SO_2, PM10 – 10µm particles), epidemiological studies have shown that air pollution impacts mortality episodes. In the South and East, fine particle concentrations in several cities regularly exceed the threshold set by standards; yet the high impact of pollution on health is insufficiently assessed. Car ownership rates are still low in these countries, with 124 cars per 1000 inhabitants in 2003 (versus 592 in the North), but the 'automobile transition' would well take place before 2025, with very high increases in traffic, further degradation of urban air quality and significant risks of respiratory diseases.

The alternative scenario assumes a revival of the Mediterranean model of blended and compact cities for limiting urban sprawl, the promotion of less wasteful and less polluting lifestyles, and a boost of urban economy by enhancing the Mediterranean heritage and lifestyle. Many urban regeneration and renewal experiences show the capacity of Mediterranean cities to implement urban projects aimed at rebuilding the city over the city and enhancing historical and cultural heritage. Such initiatives have been carried out in Barcelona, Naples and Aleppo.

Moving towards this scenario requires the expansion of urban regeneration and renewal initiatives, and the integration of transport planning and town planning in order to facilitate more dense urban fabrics around public transport corridors, the protection of agricultural land and natural spaces, and the creation of green areas. Sustained development of non-polluting public transport, limited circulation of private cars, cleaner fuels, and efficiency and recycling policies will also play an important role in reducing the projected increase of environmental impacts. Reducing waste volumes at source and generalized recycling would limit total waste production volumes in the countries to 250 million tonnes by 2025 against nearly 400 in the trend scenario, representing 150 million tonnes less, and financial gains of about US$3.8 thousand million per year.

The alternative scenario requires policies to evolve sharply, and governments have a major role to play in promoting and supporting local concerted approaches to sustainable urban development. New contractual forms between the different political and administrative levels and specific support to small and medium-sized cities are needed. Participatory territorial prospective exercises can prove very useful to define desired futures rather than imposed ones. The scenario also emphasizes the need to integrate the urban dimension into Mediterranean and Euro-Mediterranean cooperation.

Rural areas: The need for sustainable rural development policies

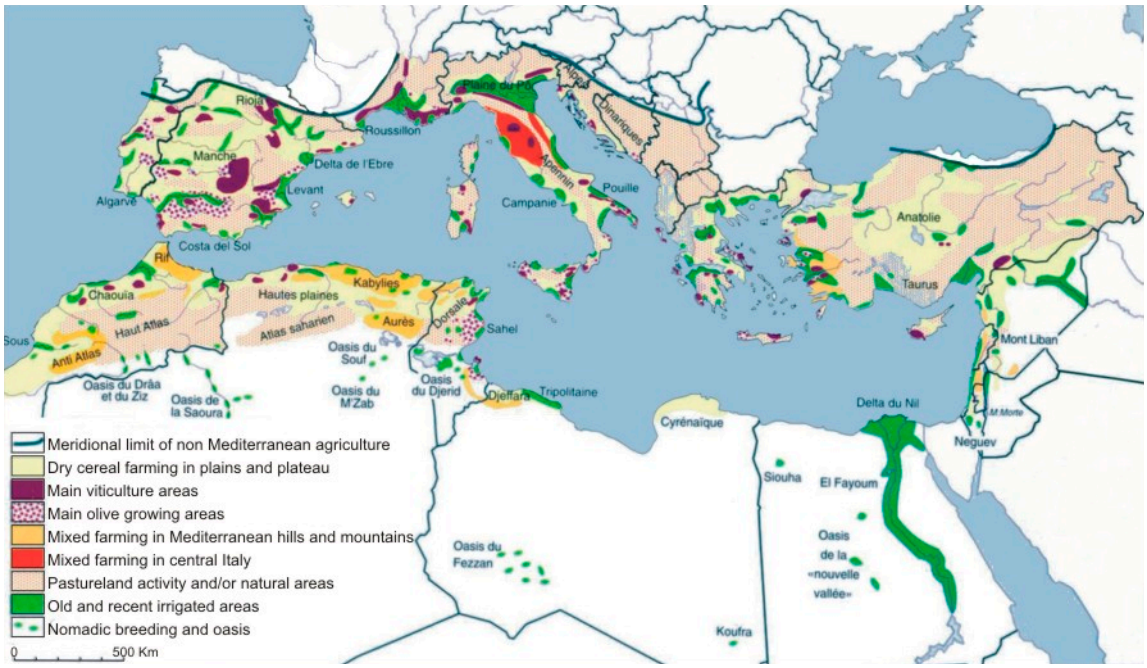
Irrigated surfaces have doubled in 40 years, reaching 23 million hectares in 2000: they may exceed 28 million hectares in 2025. Their importance is nevertheless relative: they only represent 20% of all arable land and permanent crops (100% in Egypt). Agriculture is essentially rain-fed and large rural areas (mountains, arid plateaux) are of sylvo-pastoral use (map 7).

Wood cover is high in the North (42%, with large shrubland areas) and increasing, whereas it remains very limited in the South, from Morocco to Turkey (4.7%). Large pastoral regions are located mainly in the Maghreb countries, and in Turkey, Spain and Syria.

The lack of water resources and quality soils, as well as strong demographic growth, explain the aggravated deficit of the agricultural trade balance and the increase in cereal imports. Only France, Spain and Turkey displayed clearly positive trade balances in 2001. In Syria, the trade balance remained stable, while imports grew in Algeria and Egypt. Current agricultural progress, which may lead to a further 50% increase in agricultural production in the South and East by 2025, will not be enough to improve self-sufficiency rates.

In the North, agricultural population has collapsed, with a 74% reduction in 40 years (Figure 13). After an important phase of rural migration, which accentuated coastal over-development, a rural revival has been recorded in many developed countries. The development of quality products, agrifood industry, tourism and the residential economy, has lead to a diversifying rural economy, still without avoiding

Map 7 The Mediterranean's main agricultural and natural systems



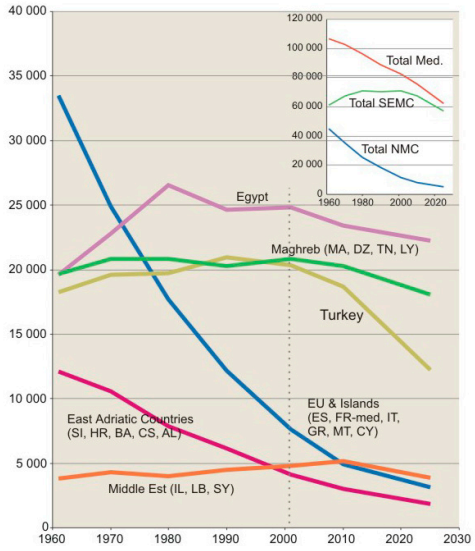
Source: *Méditerranée*, Tome 97, n° 3-4 « 40 ans de géographie méditerranéenne », 2001

environmental degradation. Urban sprawl, along with the abandonment or poor management of mountainous regions, results in landscape degradation, loss of productive capital and of biodiversity, and increased vulnerability to floods or forest fires. The environment has also been degraded by the impacts of the dominant 'high productivity' agricultural model, including water and soil pollution from pesticides and nitrates,[17] soil compacting and fertility losses, and overexploitation of water resources.

Changes towards more integrated Community policies have taken place: agro-environmental measures, reform of the Common Agricultural Policy, the Leader rural development program, establishment of the Natura 2000 network. Italy is now in the forefront of organic agriculture, which represents 11.4% of total arable land and permanent crops. New generations of protected areas, drivers of sustainable development (such as regional parks in France and biosphere reserves), have emerged.

In the South and East, despite rural exodus and emigration, agricultural populations have increased of 10 million in 40 years to reach 71 million in 2000 (Figure 13), while differences with agricultural productivity in the North have been deepened. Non-agricultural employment is still scarce. Agriculture still plays a decisive social and economic role but is characterized by duality, where modern farming coexists with a mass of subsistence small farms, which are undergoing fragmentation. Yet duality tends to increase. Rural poverty and disparities with cities are high, as shown by some indicators (population living under the poverty line, access to basic services, schooling and illiteracy rates). Considerable pressures are exerted on natural resources causing deforestation, desertification, rapid silting-up of reservoirs, altered stream flows and irreversible biodiversity losses. *Desertification* affects 80% of arid and dry areas; pasturelands and rain-fed croplands are the most affected but irrigated land is also under threat.

Figure 13 Agricultural populations in the Mediterranean countries: trends and projections (excl. non-Med-France, in thousands)

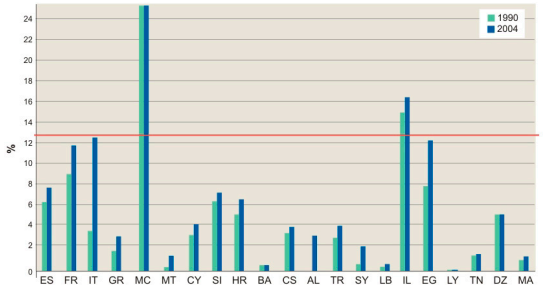


Source : FAO, Plan Bleu's prospectives

Degradation is essentially due to over-grazing, to farming in wooded or pastoral lands, to poor farming practices, to insufficient drainage in irrigated land and to over-exploitation for fuel wood. In Turkey, 1.5 million hectares are no longer appropriate for agricultural use due to salinization. In Tunisia, annual land losses from land degradation processes (water and wind erosion, salinization) are estimated at 37,000 hectares, 13,000 of which have suffered irreversible damage.

Too technical policies to combat desertification have not been really integrated in rural development policies, and these remained insufficient. Protected areas have played a role of 'laboratory' for sustainable development, as is the case in countries of the other rim: as opposed to the North, where most protected areas are classified under IUCN category V (protected landscapes), in the South, they are classified under IUCN category I (national parks) and their surface is limited. In 2004, Mediterranean protected areas only account for 5.5% of total land, while the world figure is at 12.7% (Figure 14).

Figure 14 Protected area coverage (continental, marine & coastal) in the Mediterranean



Source: IUCN 2004, according to the UN list of protected areas

* The red line indicates the percentage of protected area on a worldwide scale in 2004

The trend scenario assumes a mutual but gradual liberalization of agricultural trade between both rims, a common agricultural policy extended to new EU members but not to other countries, the expansion in the North of a highly technology- and capital-based 'precision' agriculture, while sustainable development policies remain insufficient. The evolution of the agricultural workforce is expected to remain dissimilar between both rims: another 50% drop in the North, beginning of a reduction in the South and East, more significant reduction in Turkey. Rural populations would maintain their position in absolute values. Rural exodus, expected to remain high in the South and East, could be amplified in case of accelerated and mutual liberalization of Euro-Mediterranean agricultural trade.

The main risks associated with the trend scenario include:

- Maintained or accentuated desertification and rural poverty in the South and East;
- Aggravated direct or indirect impacts (accrued pressures on cities and on emigration from rural exodus, rapid silting-up of reservoirs, irreversible biodiversity losses);
- Loss of over 1.5 million hectares of quality agricultural lands through urban and infrastructure development;
- Degradation of water resources and increased vulnerability to fires and floods.

The alternative scenario assumes:

- Faster transition to rural revival in developing countries;
- Improved recognition of the multiple roles of Mediterranean agriculture and forests,[18] the *water-tower* role of mountains and the importance of protecting suburban agricultural land;
- Enhancement of product, landscape and territory-specific quality and diversity, by benefiting from increased international and domestic demand for typical products and for rural and green tourism, re-invigoration of mountainous areas around the *Mediterranean garden* concept;
- Reduction of irreversible environmental degradations – mainly desertification, of losses of quality farmlands from artificial land cover and of biodiversity losses. The goal would be to quickly reduce, by at least one third, the losses of agricultural land and the speed of silting-up of reservoirs.

Poverty reduction and desertification abatement, as well as the development of national economies, require parallel progress in basic facilities and services, agricultural modernization, diversification of rural economies (tourism, agrifood, craftsmanship, facilities along with support to small cities, industry), and clarification of rights and rules on access to natural resources. Moving towards such a scenario will imply major policy and administrative changes in favour of deconcentrated, territory-specific and integrated approaches to sustainable rural development, involving local and professional actors with participatory approaches. First experiences in Maghreb countries prove the appropriateness of these new approaches, where rural actors are partners, even though many obstacles remain for a shift from administered development to a more accountable development. Inter-ministerial and flexible rural development funds may be required. Approaches such as *biosphere reserves* (UNESCO) or *regional natural parks*, particularly relevant for sustainable management and the economic enhancement of 'natural' spaces, deserve to be developed.

Furthermore, this scenario assumes the integration of sustainable agricultural and rural development objectives into the Euro-Mediterranean Partnership. This implies heightened European awareness of the Mediterranean issues and challenges, a progressive and asymmetrical approach to liberalization, and significant

support to developing countries, along with deconcentrated cooperation programmes. The promotion of the Mediterranean food regime, already engaged by WHO and the Anglo-Saxon countries in order to limit the increasing social costs of cardio-vascular diseases and some cancers, should also be an important objective for regional cooperation.

Coastal areas: Stopping continuous degradation and ensuring balanced development

The coastal zone represents a priceless capital, due to the value of its ecosystems and heritage, its social functions and maritime identity. Fishing, with an exceptional high proportion of small-scale operators, holds high socio-cultural value. Transport, tourism and industrial infrastructures are concentrated on the coveted coastal areas. In 2000, there were 70 million urban inhabitants, 584 coastal towns, 175 million tourists, 750 yacht harbours, 286 trade ports, 248 energy plants, 238 desalinization plants, 112 airports and numerous high-traffic roads (Map 8). Intensive aquaculture of sea bream and bass has undergone spectacular growth since 1990, particularly in Greece and Turkey.

On both rims, pressures and degradation are increasing, with rapid artificial land cover of coasts. In less than one generation, entire portions of coastal zones have been built-up, causing irreversible damage to landscapes and losses in habitat and biodiversity. The effects of decreased natural sediments provided by rivers (90% in 50 years), illegal extraction of sand and inappropriate constructions on the coasts are converging. The economic consequences of coastal erosion can be quite significant: Tangiers lost 53% of tourist night-stays after the near disappearance of the beach in the 1990s. The Mediterranean is also prey to over-fishing (with important loss of jobs in Italy) and to biological invasions: nearly 500 non-indigenous marine species have been introduced. There are 104 endangered species, including the monk seal and sea turtles.

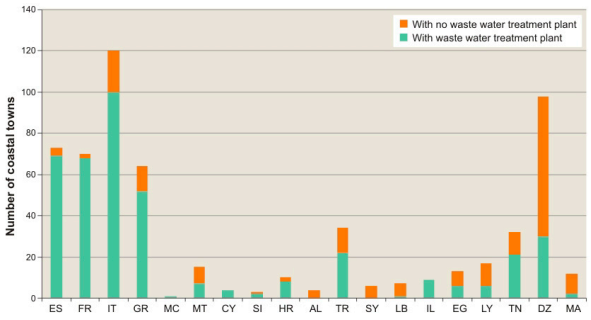
The risk of economical unsustainability must also be highlighted. Destinations that have favoured mass tourism development over the enhancement of their local features are all competing against each other on markets dominated by large tour operators. Reductions in nominal spending per tourist, loss of territorial quality and degradation of buildings have been observed in several destinations.

Despite growing awareness, sea protection and sustainable coastal management policies remain insufficient.

The Mediterranean Action Plan (MAP) has a protocol on pollution from land-based sources, and a strategic action plan to combat pollution adopted in 1997, with further national plans. The EU has also strengthened its legal framework and set ambitious objectives for the protection of water resources. The water framework directive aims at improving the state of coastal waters by 2015. Yet, 60% of urban wastewater is still discharged into the sea without any treatment (Figure 15) and considerable differences exist between EU member countries, which benefit from structural aids, and the developing Southern and Eastern countries.

Map 8 Road and airport infrastructures along coasts

Figure 15 Wastewater treatment in coastal cities with more than 10,000 inhabitants, 2002



Source: MEDPOL 2003

MAP, and the European Commission (for European coasts), has initiated projects on integrated coastal zone management. Yet the implementation of integrated management is fraught with serious difficulty, such as the prevailing logic of short-term speculation, and the dispersed and overlapping political and administrative responsibilities. In some tourist destinations (Balearic Islands), rehabilitation programmes that include the demolition of obsolete hotels have nevertheless been initiated.

The relative share of protected coastal areas remains low despite a six-fold increase over 25 years. Other approaches to protection and sustainable management have been applied: five riparian countries have framework legislation on coastal areas and three countries (France, Tunisia, and Algeria) have a specialised agency. France lead the way, with the creation in 1975 of the *Conservatoire du littoral*, which had acquired 36,000 hectares and 180km of Mediterranean coasts (11% of total coastline) in 2003; and with the adoption of the Law on Coasts (*loi Littoral*) in 1986. The growing importance of associations, supported by owners concerned with protection, and the strict application of the law by official bodies and justice authorities, have both encouraged real protection. But trends in coastal areas remain nevertheless quite problematic.

Future trends in Mediterranean coastal areas raise questions and concern. How can this small territory and its societies withstand, in addition to the projected growth in coastal urban populations (additional 20 million urban inhabitants by 2025), the near doubling of tourist flows (additional 137 million in coastal regions, 2.3% growth per year) and the even greater transport growth? The baseline scenario, characterized by coastal overdevelopment, sprawl of large conurbations and saturation of coastal areas, points to an undesired future, with impoverished coastal quality and integrity, and increased natural and social risks. Nearly 50% of the coastline could be built-up by 2025 versus 40% in 2000.[19]

The alternative scenario assumes strengthened policies in all countries to stop coastal degradation and reduce the forecasted risks, while at the same time aligning coasts on globalization and linking them with their hinterlands, so as to contribute to more balanced country development. Objectives will be different according to different coastal areas. On coasts with extensive artificial land cover, repairing and restoring ecosystems, landscapes and constructions will be prior objectives. Where coastal built-up areas are not yet extensive, more innovative strategies will lead to less costly development patterns on the long term. On coasts with strong calling for industry and international trade, transport systems will be improved. Still others will choose the added value of promoting quality and territory-specific features, and synergy between tourism and production activities (fishing and agriculture), even though this may require limiting accessibility and urban development.

A common objective to all coastal areas would be to stop continuous linear urban development, by introducing green areas, agricultural and wooded, and favouring transverse road access to the sea instead of additional roads along the coasts. Some islands, such as Minorca in the Balearic Islands, could become 'laboratories' for sustainable development, by promoting integrated approaches such as biosphere reserves. In countries with high potential, such as Libya, Morocco, Algeria, Albania, Montenegro and Syria, anticipation would be particularly important, with innovative approaches to sustainable tourism and conservation. The overall objective for the entire Mediterranean would be the conservation and sustainable management of the natural and cultural heritage of additional 4,000km of coastline up to 2025, so as to preserve functional ecosystems and a quality environment for local populations and sustainable tourism.

Moving towards the alternative scenario will require strengthened coastal policies. The adoption by the Contracting Parties to the Barcelona Convention of a Protocol on Sustainable Management of Mediterranean Coastal Areas would provide a clear signal of the resolve to change and help countries develop or strengthen their policies. Developing legislation, agencies or specific action mechanisms, as well as new generations of protected areas and integrated management plans, will be needed. Such a scenario would result in the multiplication of collective territorial prospective initiatives and in continuous progress monitoring through indicators. Accrued pooling of public and private financing and strengthened North-South solidarity will be crucial to reducing land-based pollution and achieving the objectives defined in Mediterranean and national action plans. According to a rough estimate, the costs of upgrading sewage systems in coastal cities with more than 10,000 inhabitants in the South and East by 2025, could reach 10 thousand million euros.

The alternative scenario also assumes relieving coastal zones: promoting hinterland tourism and urban tourism in some countries, favouring maritime and rail transport, redirecting urban development to more appropriate areas and rehabilitating the hinterlands. The integration of the environment and development in all fields (water, energy, transport, tourism, fishing, aquaculture, agriculture) could significantly reduce the projected pressures and degradation. With improved energy management, the construction of 80 thermal power plants on the coasts by 2025 could be avoided, for example.

Tourism policies need to evolve to limit the negative territorial and environmental impacts and to make tourism a real driver of sustainable urban, rural and coastal development. New economic instruments will be required and 'accommodation capacities' defined so that tourists who enjoy the Mediterranean environment contribute to its protection. Ambitious innovations are required in these areas but concrete examples exist.

Sustainable Development Policies to Change the Future

The alternative scenario suggests making the Mediterranean, with European support, a 'laboratory' for the application of sustainable development principles and resolutions of the Rio and Johannesburg Summits.

A rationale of integration and anticipation

The trend scenario relies on end-of-the-pipe approaches, where it is assumed that economic growth can provide the financial means required to repair the environmental and social damage that it caused in the first place. The alternative scenario inverts this rationale and relies on a proactive, innovative and forward-looking approach to the integration of the environment and development. It rejects the paradigm of a single development model and the ready-made unique solutions: responses are to be found on a case-by-case basis, taking national and local objectives and contexts into account. Progress will be more often achieved in the periphery than in the centre.

Successfully decoupling

Above all, the alternative scenario assumes *decoupling* economic or urban growth from pressures on the environment. The challenge is to correct unsustainable consumption and production patterns and make them contribute to more sustainable management of natural resources in the interest of economic and social development. Rapid progress can be achieved with regard to energy efficiency, agricultural water saving and enhancement, stopping the building-up of coastal and agricultural land, combating desertification, managing mobility and reducing waste volumes at source. Most often, these are 'win-win' scenarios, providing significant economic and environmental benefits.

'Mediterranean' thinking and acting

The alternative scenario calls for more Mediterranean thinking and acting, and assumes improved recognition of:

- Regional environmental *commons* – the common sea and coasts, the water-tower role of mountains, the rich biodiversity – and the multi-functional value of Mediterranean agriculture, woodlands and ecosystems;
- Mediterranean diversity and quality made of specific territories – islands, mountains, village lands, coasts and ancient cities –, the material and cultural heritage of Mediterranean civilizations, products, food, landscapes, lifestyle, arts and know-how;
- Specific constraints of the region: scarcity of water resources, climate, natural hazards, the necessary complementarity and solidarity between coastal areas and hinterlands;
- The resolve and capacity of Mediterranean people to cooperate on environmental and sustainable development issues, which constitutes a key entrance to building a regional project.

Common and differentiated approaches

A more accentuated North-South solidarity and the adoption of 'common and differentiated approaches' are fully justified by the differences in socio-economic situations and by the interdependency between both rims. These approaches are recognized by the Kyoto protocol and the Global Environment Fund, since the reduction of global pollution is less costly and more effective when sustainable development projects are financed in less developed countries, where potential for progress is greater.

The alternative scenario calls for a wide application of this principle and for helping Southern countries to:

- Reduce their environmental deficit (waste management, water treatment) and protect the Mediterranean Sea, search and develop simple and low costly solutions for depollution;
- Accelerate transitions to more sustainable development without reproducing past errors made in the more developed countries, succeed in integrating environment and development upfront rather than developing end-of-the-pipe policies which are often costly and little effective. Technological and governance '*leap-frogging*' for sustainable development is possible in developing

countries, as demonstrated by several remarkable examples: use of compressed natural gas in Egypt, thermal solar energy in the Palestinian Territories, participatory approaches to sustainable rural development in Maghreb;
- Apply the clean development mechanisms set out in the Kyoto Protocol;
- Avoid imitating the European 'high productivity' agricultural model which would lead to massive rural exodus and environmental degradation, and fuel instead transitions to sustainable rural development;
- Prevent widespread urban sprawl and massive use of motorized individual transport, by guiding urban development and encouraging the use of environment-friendly transport;
- Take heed of the lessons learned from tourism development in the North and innovate in the field of more sustainable tourism development;
- Avoid imitating environmental standards that would not be adapted to conditions in Southern countries.

All this calls for creating and developing an innovative Euro-Mediterranean approach to cooperation policies.

National sustainable development policies involving all actors

The changes required for sustainable development are first and foremost the responsibility of the countries. Integrating the environment and development will require ambitious domestic policies:
- '*Demand management*' policies to benefit from potential savings (water, energy, land, coastal areas) and counter-balance the current prevailing supply-based policies;
- Developing innovative supply with low environmental costs: thermal solar and wind power, public transportation;
- Development and integrated management of territories: support to hinterlands and to small and medium-sized cities, coastal management, and sustainable rural and urban development.

More systemic approaches will be needed; for example, managing underground and surface water resources together so as to use the natural storage capacities of water tables. Sustainable urban development requires a common approach to town planning and transport planning, which takes hazards into account.

However, integration should not lead to a regression in environmental policies. For example, reducing environmental deficits in the South and East will require significantly higher investments in water treatment and waste management, and integrated coastal zone management will not be possible without stringent conservation measures.

Tools for sustainable development strategies and policies

Changing scenario will be facilitated with countries or local authorities setting forth concrete objectives for national, sectoral and local sustainable development strategies. Territorial prospective approaches are powerful tools to involve actors (states, cities, rural communities, professional groups, businesses, training and research institutions, NGOs), help them develop a common vision of their future and set medium or long-term objectives, then regularly monitored through indicators.

Economic tools are crucial to correct market weaknesses by internalizing the positive and negative environmental impacts of economic activities. Pricing systems that favour sustainability can stimulate research and development of appropriate technologies; wastage can be penalized through taxes, pricing and quotas; sound development and management can be subsidized. The focus should not be limited to the technical and economic aspects of these measures, but consider equity and social acceptance if the successful implementation of theoretically sound solutions is to be ensured.

Promoting sustainable local and territory-specific development is another key to successfully involve local and professional actors. Introducing local and territorial development agents can help to create partnerships in innovative projects on a given territory. To ensure long-term territorial approaches, specific regulatory or economic measures may be required from the upper government levels. This is the case for regional natural parks in France: to maintain the 'regional park' label and the benefit of public aid from the state and the regions, parks must develop 10-year (a time period longer than electoral office) charters and territorial projects to be approved at national level.

Key conditions for change include information on progress towards sustainable development, heightened awareness, evolution of training, and progress monitoring through observatories and indicators.

Re-designing and strengthening regional cooperation

Strengthening multilateral and bilateral regional cooperation for sustainable development is another major prerequisite for change. The challenge is to rediscover co-development around the concept of project, and define new shared and stimulating ambitions for the region. This would imply:
- Strengthened mutual commitments of Euro-Mediterranean partners to achieve sustainable development targets, through clear political commitments and increased resources. North-South solidarity, internal reforms in some countries and South-South cooperation should also be included;

- A differentiated approach to agriculture and rural issues: asymmetric opening-up of markets to prevent the abrupt and severe destabilization of Southern and Eastern societies still largely dependent on food-producing crops; European support to sustainable agricultural and rural development;
- Changes in financing and cooperation mechanisms so as to succeed in involving local and professional actors. Innovation is needed in terms of decentralized cooperation, debt for sustainable development swaps, programmes gathering small-scale projects, regional application of the clean development mechanisms of the Kyoto Protocol on climate change;
- The development and adoption, within the framework of the Barcelona Convention, of a Mediterranean Protocol for sustainable coastal zone management;
- Improved synergy between the Euro-Mediterranean Partnership and other regional cooperation frameworks, in particular the Mediterranean Action Plan and the Mediterranean Commission on Sustainable Development.
- Strengthening capacity (expertise, observatories) both to monitor progress in the implementation of Mediterranean and national sustainable development strategies and to promote policies: indicators for monitoring, recording best practices, feedback on pilot projects, policy analyses, prospective approaches, regional experience-sharing, regular reporting on the environment and development at the national and Mediterranean levels.

2006-2025: the European Union and the riparian countries have two decades ahead to effectively integrate sustainable development principles in their internal policies and partnerships, and this is a prerequisite for a new dynamic of growth, cooperation and peace, respectful of the wealth of Mediterranean diversity.

Notes

[1] M. Grenon & M. Batisse (eds). *Futures for the Mediterranean Basin. The Blue Plan*, Economica & Oxford University Press, 1989. Also published in Arabic, Turkish and Spanish.
[2] Population in countries where per capita water natural resources (which are not always 'available') are under 1000m^3 /capita/year.
[3] The differentiation between two Mediterranean rims facilitates analysis, but remains somewhat arbitrary. Some Northern countries, such as Albania, are closer to Southern and Eastern countries, as regards population and development levels. In Israel, development levels are comparable to those of EU countries.
[4] At the time of drafting the report, Serbia and Montenegro formed a single State. This should change following the May 2006 referendum in Montenegro.
[5] Tourism in Syria and Lebanon is mostly Arabic.
[6] The impact assessment of the Euro-Mediterranean Free Trade area, requested by the European Commission, and steered by the University of Manchester, is underway. Initial results show that, without appropriate political measures, economic benefits could be limited (and negative in the short-term in the South) while social and environmental costs would be very high.
[7] Source: FEMISE.
[8] 4% in Maghreb countries, 4.3% in Egypt, 4.7% in Turkey.
[9] *Le commerce mondial au 21e siècle*. Paris : IFRI (Institut français des relations internationales), 2002.
[10] World Bank. "Assessing the Costs of Environmental Degradation in the Middle East and the North Africa Region". *Environment Strategy Note* N° 9. April 2004.
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[16] Blue Plan estimate, based on the INFRAS/IWW report *External costs of transport: accident, environmental and congestion costs in Western Europe,* 2000.
[17] Israel, France and Egypt are among the world's largest fertilizer consumers, with more than 260kg per hectare and per year. In the South and East, fertilizer and pesticide consumption, which is increasing in Syria (4% per year) and in Turkey, has been limited by the withdrawal of aids, imposed by the structural adjustment plans.
[18] For example, timber production only accounts for 9% of the total value of Italian forest use, compared with 10% for firewood, 11% for the 'leisure, mushroom, hunting' category and 58% for the water cycle. In Morocco, firewood accounts for 30%, and grazing lands for 23% of total value of forest use (source: Medforex).
[19] Estimates to be considered with caution, due to the lack of accurate data.

ISO country codes

Albania AL, Algeria DZ, Bosnia-Herzegovina BA, Croatia HR, Cyprus CY, Egypt EG, France FR, Greece GR, Israel IL, Italy IT, Lebanon LB, Libya LY, Malta MT, Monaco MC, Morocco MA, Palestinian Territories PS, Serbia-and-Montenegro CS, Slovenia SI, Spain ES, Syria SY, Tunisia TN, Turkey TR

The fruit of a Mediterranean collective expertise

The Blue Plan report is the fruit of a collective expertise, as mentioned below. It is also based on numerous studies and workshops organised this late decade by the different components of the Mediterranean Action Plan, other institutions, Mediterranean networks of experts and NGOs, which has mobilized more than 300 experts from all Mediterranean countries as well as from some European countries not bordering the Mediterranean sea. Much of the report particularly owes to analyses produced within the framework of the Mediterranean Commission on Sustainable Development since 1996 and to the *Fascicules du Plan Bleu* series.

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Other components of the Mediterranean Action Plan

Programme for the assessment and control of pollution in the Mediterranean region (MEDPOL, Greece), Specially Protected Areas Regional Activity Centre (SPA RAC, Tunisia), Regional Marine Pollution Emergency Response Centre for the Mediterranean (REMPEC, Malta), Regional Activity Centre for Cleaner Production (CP RAC, Spain), Priority Actions Programme Regional Activity Centre (PAP RAC, Croatia), Programme for the protection of coastal historic sites (France), Environment Remote Sensing Regional Activity Centre (ERS RAC, Italy)

Blue Plan focal points

The Blue Plan Focal Points in Albania, Algeria, Bosnia-Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Morocco, Serbia and Montenegro, Slovenia, Spain, Syria, Tunisia, Turkey and the European Commission were consulted on the draft report.

About "A Sustainable Future for the Mediterranean. The Blue Plan's Environment and Development Outlook"

"Here's a work arriving just at the right moment and contributing new insights at precisely the time when public opinion remains sceptical of the not very promising future we are preparing for our children, when governments balk at explaining to their electorates the vital but unpopular decisions that have to be taken and when civil society, with few ways and means, is finally becoming involved."

Mohamed Ennabli, former Minister of the Environment and Land Use Planning, Tunisia

"The Blue Plan has carried out a remarkable assessment of the serious environmental problems and insufficiently targeted cooperation in the Mediterranean, and also of new financing systems to be implemented."

Georges Corm, economist, former Minister of Finance, Lebanon

"This document of remarkable quality will prove very useful to our work."

Philippe de Fontaine Vive, Vice-President, European Investment Bank (EIB)

"Because of its international component, this very informative report is of particular interest … I really appreciate its prospective approach, rich in experience and action-oriented."

Monique Barbut, Director of the Division of Technology, Industry and Economics (DTIE), United Nations Environment Programme

"Grateful thanks for this splendid report… With scientific rigour, Blue Plan recommends orientations to be followed. Now, everything depends on the political will to implement them. Congratulations!"

Federico Mayor, former General Director of UNESCO, Chairman of Fundacion Cultura de Paz

About Blue Plan

The Blue Plan is a regional activity centre of UNEP/MAP (United Nations Environment Programme/Mediterranean Action Plan), created, funded and steered by all riparian countries and the European Community.

Its objective, as defined by an intergovernmental conference held in Split in 1977, is to develop regional cooperation and make available a common knowledge base aimed at facilitating the implementation of development respectful of the environment.

The Blue Plan carries out prospective analyses on the environment and development, and acts as a Mediterranean observatory for sustainable development.

As the main support centre to the Mediterranean Commission on Sustainable Development (MCSD), Blue Plan coordinated technically the drafting of the Mediterranean strategy for sustainable development.

Blue Plan is located at Sophia Antipolis (Alpes maritimes, France).

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