

CHAPTER 6

MEDITERRANEAN WATERSHED MANAGEMENT: OVERCOMING WATER CRISIS IN THE MEDITERRANEAN

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Water is the subject of much bilateral and regional cooperation in the Mediterranean. The Global Water Partnership for the Mediterranean is now composed of 12 networks and institutions, including Plan Bleu, which has elaborated the Mediterranean Vision on Water for the 21st Century.

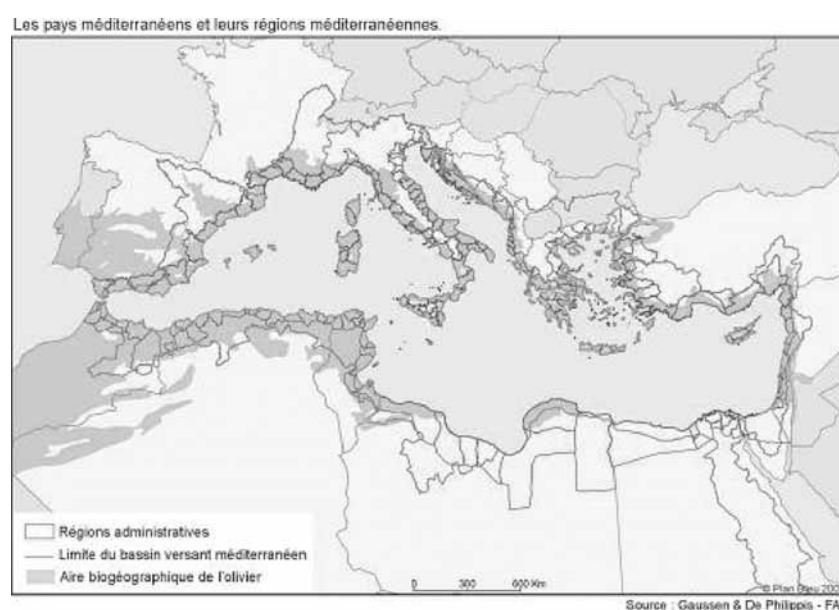
Plan Bleu is a regional activity centre of the Mediterranean Action Plan (Barcelona Convention), created in 1975 under the aegis of the United Nations Environment Programme (UNEP).

Plan Bleu activities on water issues are focused on research and studies on water policies, sustainable development indicators, environmental information publications, sharing of experience among countries, statistical data production and database management.

Plan Bleu is the main support centre of the Mediterranean Commission on Sustainable Development to back the regional strategy for sustainable development in the Mediterranean.

FIGURE 1

Mediterranean countries and their Mediterranean regions



FROM SCENARIO BUILDING TO STRATEGIC CHOICES

In the Mediterranean, climate conditions have led people to learn to plan and manage their water since the earliest times. Yet the demographic growth and social and economic changes of the twentieth century created a new situation. In the degraded environment, water – a rare resource – is under threat and has become a factor limiting development in many ways.

To face up to a rise in the problems that seem unavoidable, the people of the Mediterranean must learn how better to manage water resources in the long term, for all economic sectors.

Within the Mediterranean Commission for Sustainable Development (MCSD), water sector actors are thinking about and assessing the best ways of avoiding local water crises.

Increased use of unconventional resources (e.g. desalination and waste water reuse) and long-distance water transfers, which are unavoidable in certain places but costly, will respond only very partially to the increased need for water.

Faced with the necessity to improve the water supply significantly, optimizing water cycles becomes imperative. Integrated watershed management is a field that is becoming better known and implemented, as shown by many national and local experiments.

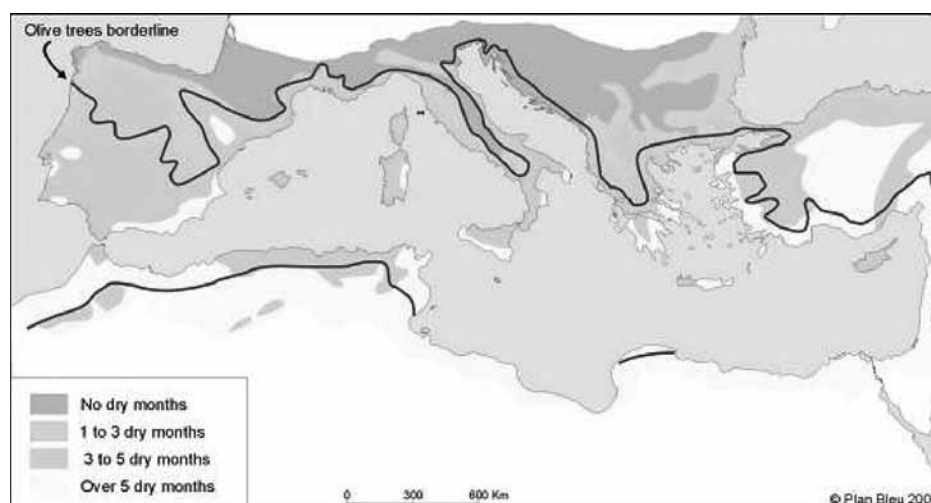
A RESTRICTING CLIMATE

The Mediterranean region is bioclimatically characterized by strong summer droughts. Over the past 20 years, most countries have experienced memorable droughts lasting several years.

Precipitation is irregular and often violent. Mediterranean high water often causes disastrous flooding, and rain is a major cause of soil erosion.

FIGURE 2

The "olive border" in Mediterranean countries



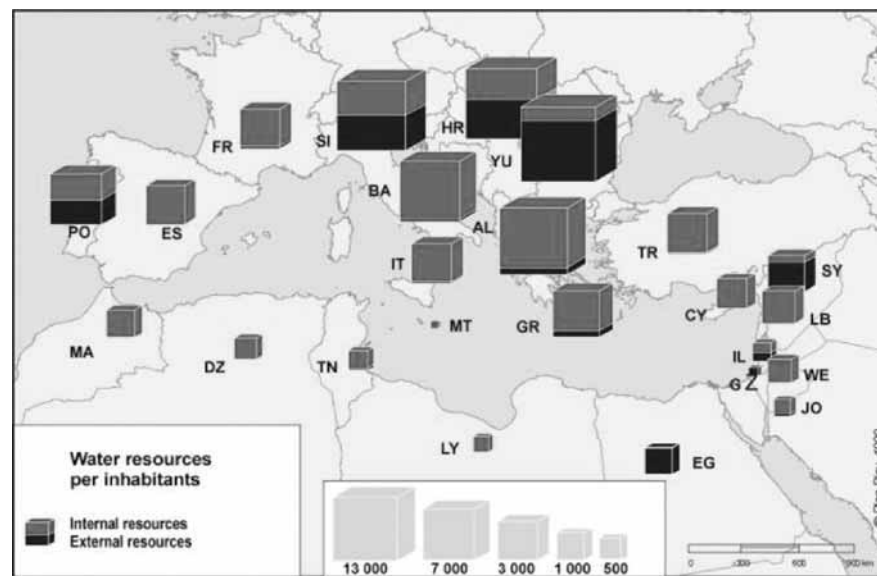
Faced with these constraints, local societies and governments have always endeavoured to plan and manage water and soils, as witnessed by the ancestral expertise of farming communities and the major urban water works of antiquity. In the nineteenth and twentieth centuries, major drainage and irrigation works made it possible to transform numerous marshy plains into high-yielding land.

WATER RESOURCES STILL JUST AS CONSTRICTING

On its own, the Mediterranean represents 60 percent of the “water poor” (less than 1 000 m³ per capita per year) world population, or 162 million people, mostly living in the south and east, but only 8 percent of the world’s total population (at 450 million people).

Natural resources are very unequally distributed among the countries (72 percent in the north, 23 percent in the east and only 5 percent in the south) and among population groups.

FIGURE 3
Water resources per inhabitant



SHARED WATERSHEDS

Some countries or territories (e.g. the Syrian Arab Republic, Israel, the Palestinian Territories and Egypt) are heavily dependent on other upstream countries.

POPULATION: A DETERMINING FACTOR FOR WATER DEMAND

Despite the present drop in the fertility rate, the Mediterranean population will have almost tripled in a century because of demographic growth in the south and east. A young, strongly growing population in the south and east contrasts with a stagnating, ageing population in the north, while migratory movement continues between the Mediterranean’s two shores.

FIGURE 4
Shared watersheds

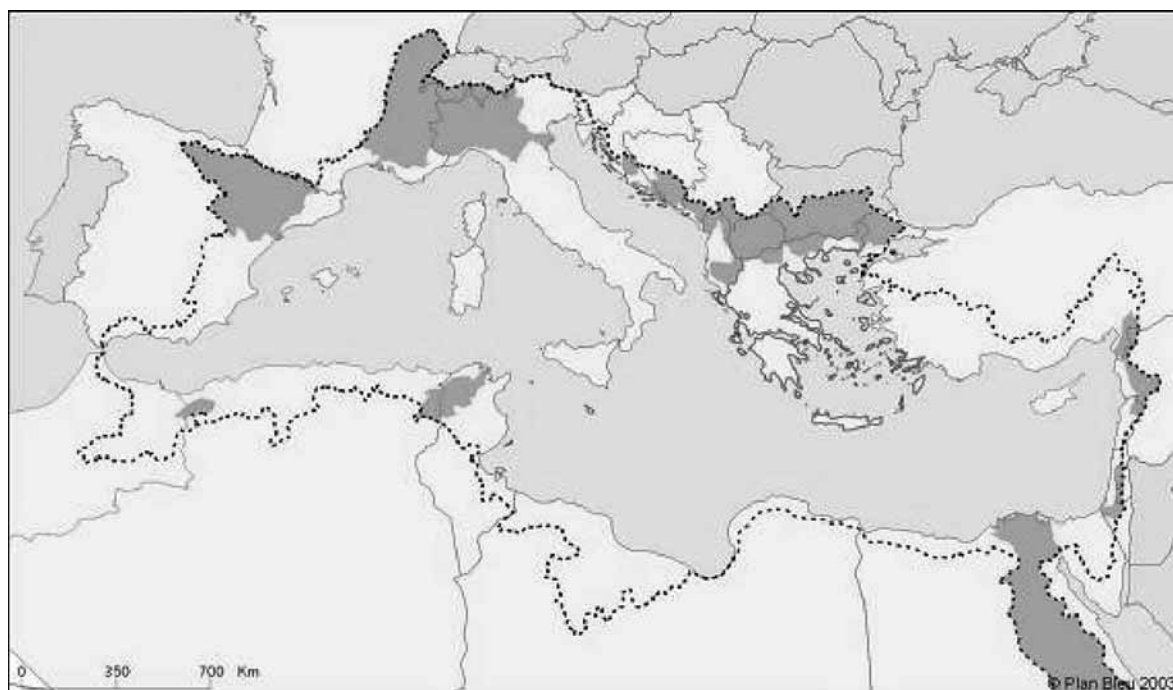
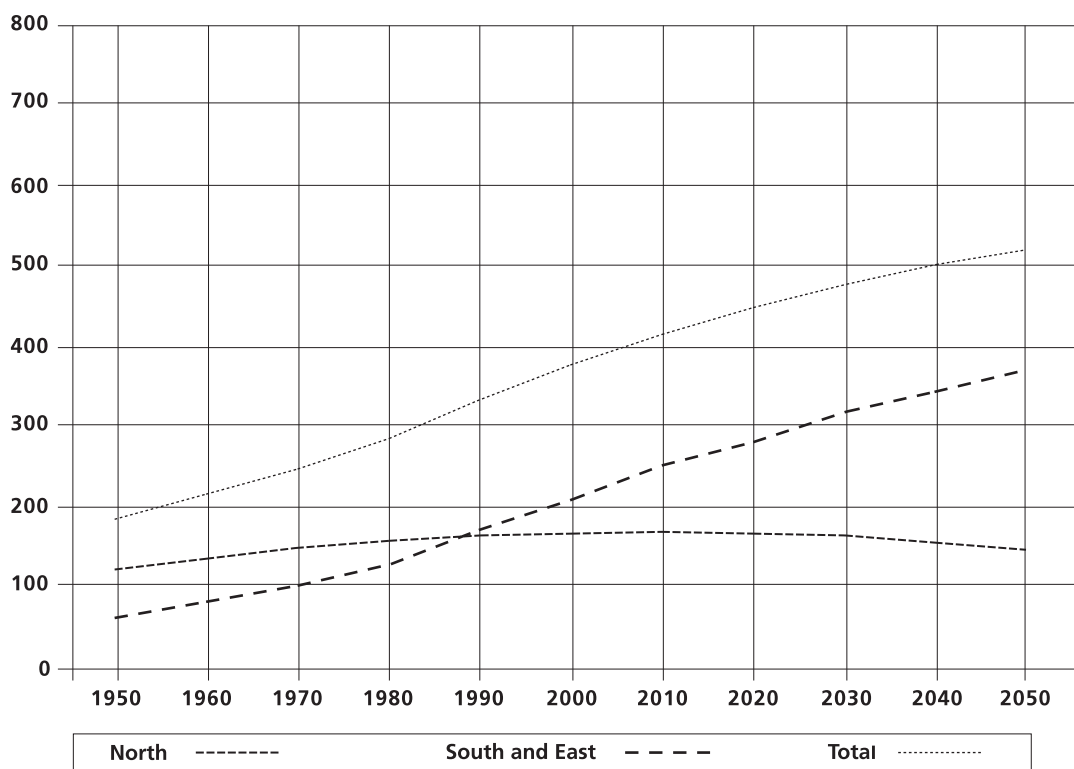


FIGURE 5
Population projections in the Mediterranean



IN THE SOUTH, AN INCREASINGLY IMPOVERISHED AND WATER-STRESSED POPULATION

The southern and eastern parts of the Mediterranean basin host many rural populations, some of which are still growing. In these regions, 79 percent of the rural population lives from farming; irrigation water is a vital economic resource for these people.

At the same time, migration from the country to towns is generating increased urban demand.

STRONG AND GROWING SECTOR-BASED WATER DEMANDS

300 billion m³ of water are being used today in the entire region. This water demand (consumption + losses from conveyance and distribution) has doubled in a century, and increased by 60 percent over the past 25 years. It remains unevenly distributed (from 100 to more than 1 000 m³/capita/year), depending on the country.

The main cause of increased total demand is irrigation, which represents 82 percent of the total demand in the south.

FIGURE 6
Per capita water supply

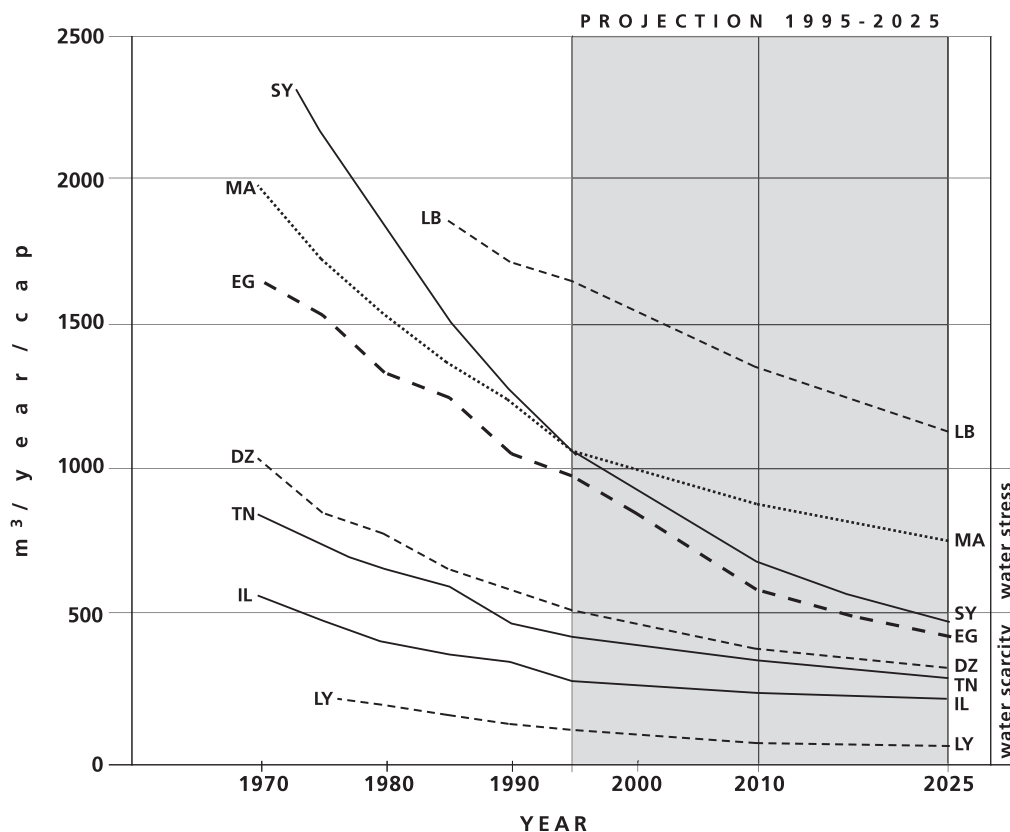
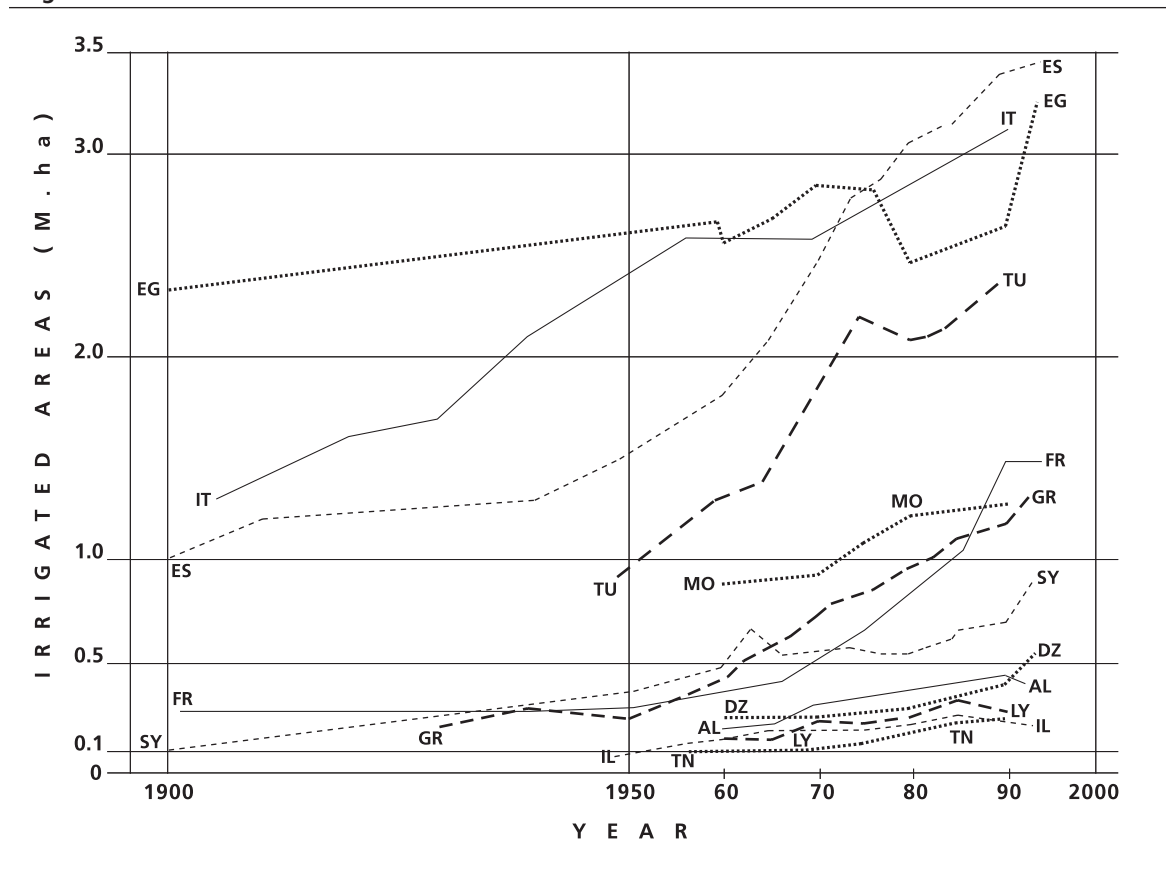


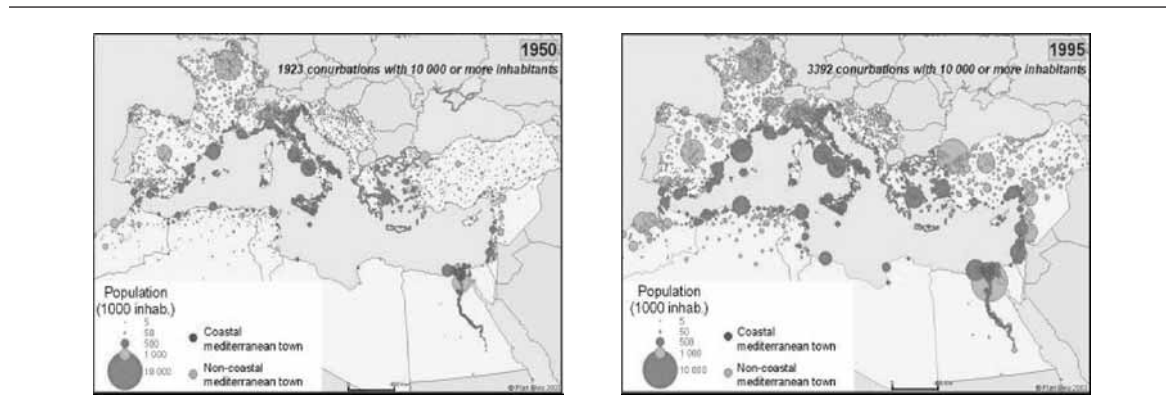
FIGURE 7
Irrigated areas



Urbanization

Towns of more than 10 000 inhabitants will account for 80 million inhabitants by 2025 (compared with 43 million in 1995). Water supply and sanitation needs for this population will require more and more water and considerable supply investments in water supply and treatment. Several experiments show that service improvement (leakage control, customer monitoring, adapted water pricing) make it possible to mobilize water loss volumes and orient them towards new water demands.

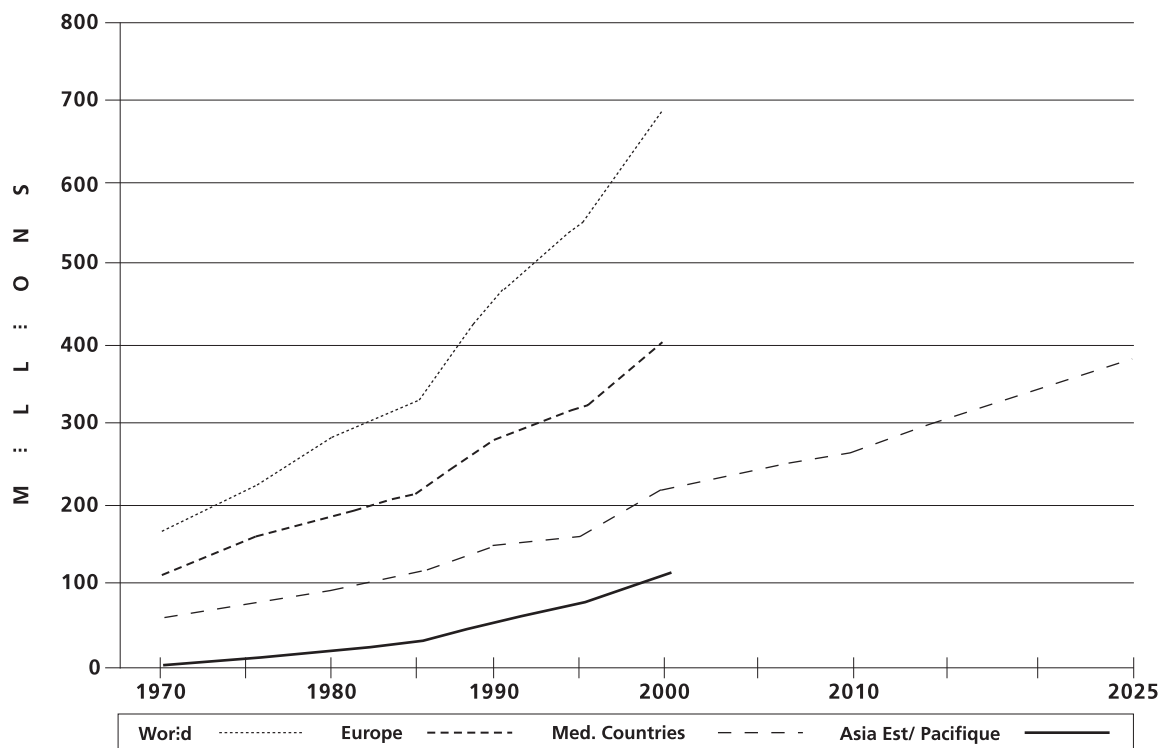
FIGURE 8
Cities of at least 10 000 inhabitants, 1950 and 1995



Tourism

Very rapidly developing tourism (the Mediterranean is the most visited destination in the world) greatly increases the summer need for potable water in the coastal areas.

FIGURE 9
Worldwide tourist numbers



THE TERRITORIAL IMBALANCES OF THE TWENTIETH CENTURY

Populations and economic activity tend to concentrate on the coastline. Accelerated and uncontrolled urbanization and accrued competition among activities for soil and water have led to the degradation of particularly precious and fragile countryside and ecosystems. Coastal groundwater is overexploited, while inland areas are often abandoned and degraded from lack of upkeep. Water need is especially acute on coastlines and islands (tourism).

EXISTING MAJOR IMPACTS

Withdrawal already exceeds 50 percent of the renewable natural water resources (all of which are far from “exploitable”) in countries such as the Syrian Arab Republic, Tunisia and the Mediterranean watershed of Spain, and 90 percent in Egypt and Israel. The exploitation index goes beyond 400 percent in the Libyan Arab Jamahiriya, a country that uses mainly non-renewable fossil resources. These averages mask extremely strong local pressures on water resources.

FIGURE 10
Traditional and today's Mediterranean slopes

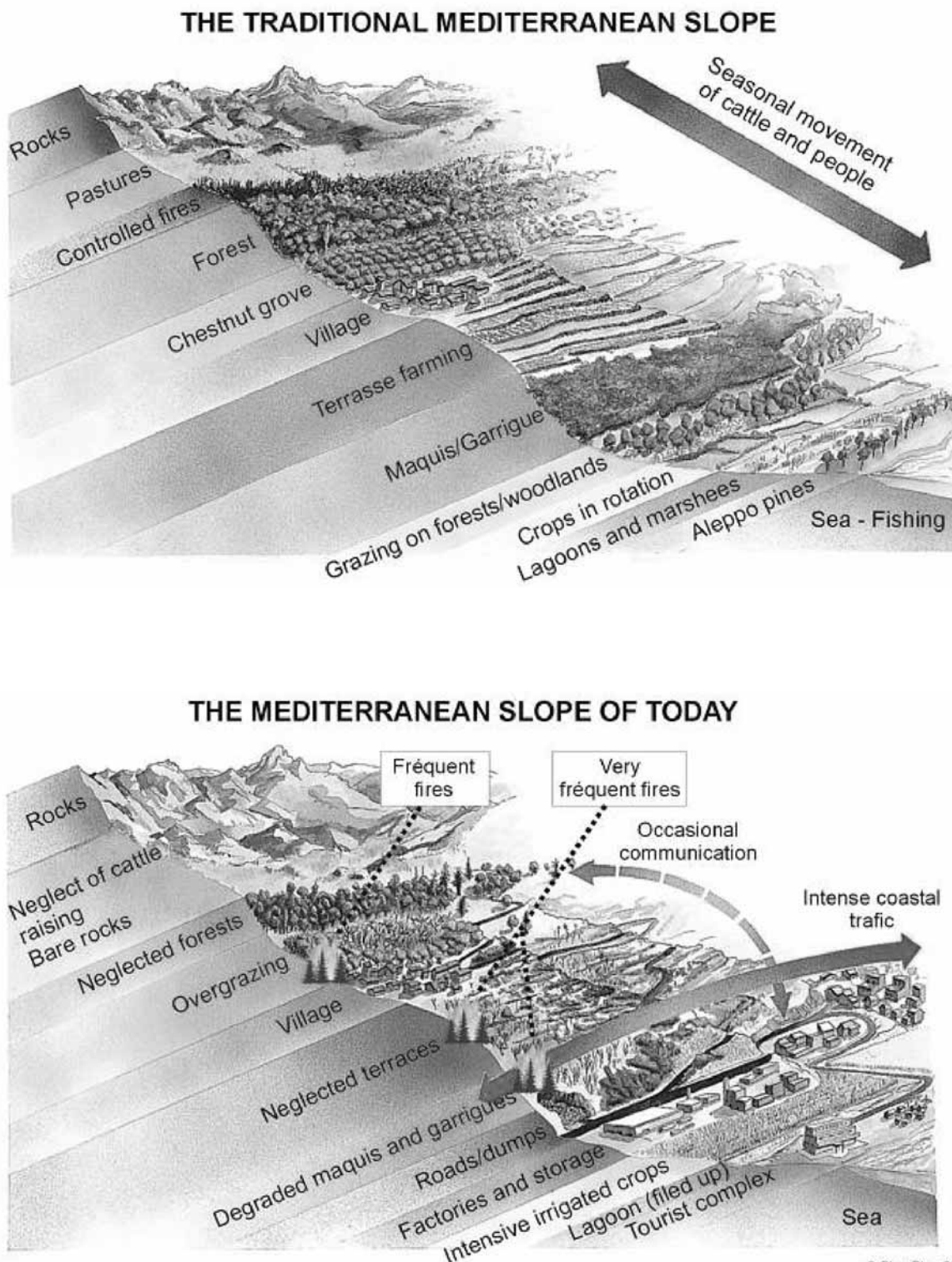
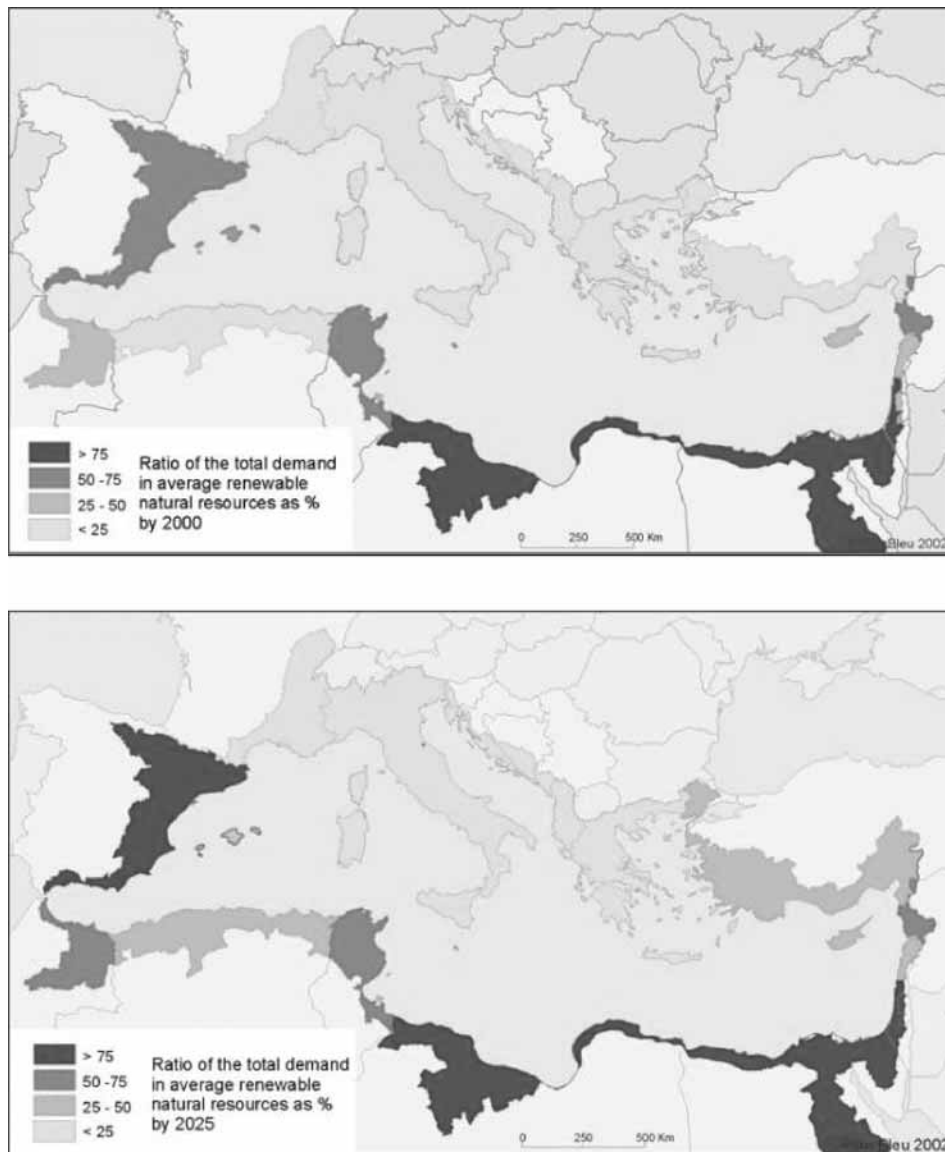


FIGURE 11
Exploitation index 2000 and 2025



The magnitude of the unsustainable water production index in the Mediterranean is explained by the overexploitation of groundwater by multiple, unsupportive and short-term users, and the increased use of fossil resources.

The erosion-generated silting of reservoirs is another cause of unsustainability, with annual loss of useful capacity being as much as 2 to 3 percent in northern Africa. Half of this useful capacity will be lost by 2050 in Morocco.

The overexploitation of coastal aquifers has already caused a lot of nearly irreversible invasion by seawater.

More than half (and up to 90 percent in some places) of the Mediterranean wetlands have disappeared, creating a huge impact on ecosystems.

Conflicts of use and interest between upstream and downstream areas, cities and farming, the short- and the long-term are about to get worse.

Water-resource management costs are growing (water protection, urban sanitation and pollution control).

THE SUSTAINABLE MEDITERRANEAN WATER SCENARIO

The question is: How to avoid a breakdown in the balance of water supply and demand, while stabilizing pressure on the natural milieu at an acceptable level and taking social and economic issues into account?

The answer calls for closely combining resource management and water demand in order to stabilize the latter, particularly through reducing loss, increasing efficiency in use and arbitrating in resource allocation.

This implies much determination and a new water “culture”, as well as renewed water policies. In particular, it means adopting performance and environmental and social conditionalities with the definition of quantified objectives, a new allocation of roles between the public and private sectors, a change in behaviour with degree of decentralization of management and increased participation by players in management, and the use of technical and economic tools.

Above all, it encourages structural adaptations of agricultural and rural development policies in the Mediterranean region, which should teach better consideration of environmental and social issues while seeking higher irrigation efficiency.

For these reasons, Plan Bleu hopes the results of the study presented by Mr Fé d’Ostiani will contribute, by dissemination and exchange of information on watershed management policies in the Mediterranean region, to provide elements of orientation for the formulation of new approaches.