



# Mediterranean woodlands



## key to sustainable development

Biological diversity, landscape quality, water resources conservation, desertification control, well-being of Mediterranean people: facing all these challenges, the multiple functions of wooded lands offer fruitful opportunities for environmentally sound development.




This is the reason why Mediterranean countries, together within the framework of *Silva Mediterranea*, have decided to reinforce their co-operation efforts in order to more fully recognize and promote the contribution of the forestry sector to sustainable development.

Almost ten thousand years of increasingly intensive human presence have radically changed the landscapes around the Mediterranean. Man has gradually transformed them into a complex mosaic of horticulture, fields, vineyards, olive groves, orchards, range lands, semi-natural forests, scrub and dry grasslands. This continuous, active human presence has played a major role in the development of the Mediterranean's diverse ecosystems.

### The woodlands of the Mediterranean Basin



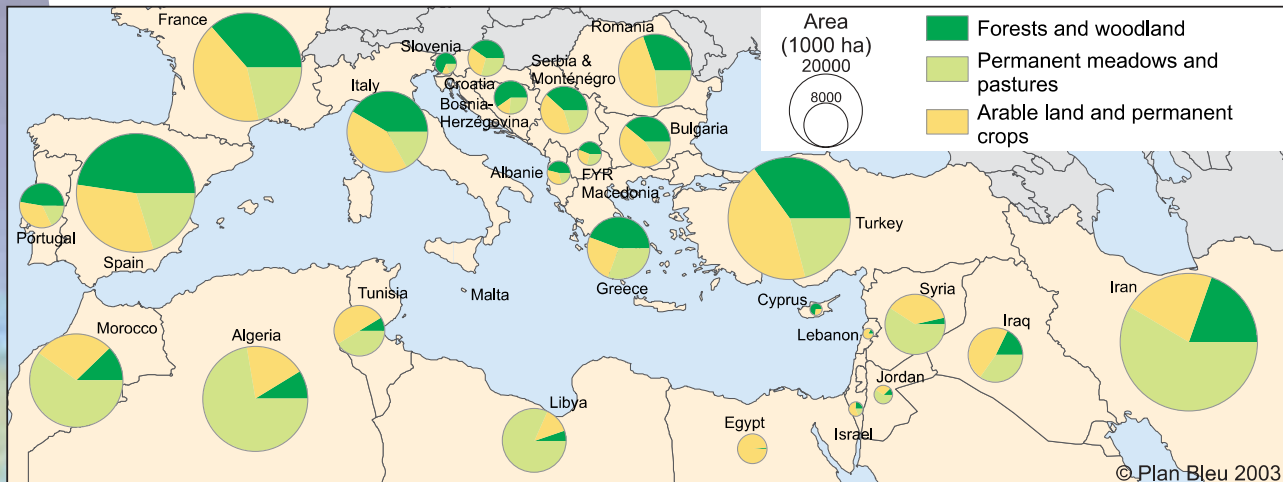
Source : FAO

-  Closed forest – land covered by trees with a canopy cover of more than 40 percent and height exceeding 5 m. Includes natural forests and forest plantations.
-  Open and fragmented forest – land covered by trees with a canopy cover of between 10 and 40 percent and height exceeding 5 m (open forest), or mosaics of forest and non-forest land (fragmented forest). Includes natural forests and forest plantations.
-  Other wooded land – land either with 5 to 10 percent canopy cover of trees exceeding 5 m in height, or with shrub or bush cover of more than 10 percent and height less than 5 m.

By providing many renewable resources, woodlands have always played an important role in the day-to-day lives of the Mediterranean peoples and have been an integral part of their socio-economic activities.

Trees and forests continue to be an effective or potential source of such resources in a variety of areas, including agriculture, livestock production, industry, handicrafts, urbanism and leisure. They contribute to the development of numerous activities and jobs in rural areas and help combat poverty. Finally, they are essential for the functioning of Mediterranean ecosystems, contributing to the renewal and conservation of essential resources such as water (watershed management), wood and non wood forest products (forestry), soils (erosion and desertification control), biological diversity and Mediterranean landscapes.

### Importance of forest, agricultural and range lands in the Mediterranean area



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Source: FAOSTAT

Unfortunately, nowadays, increasingly rapid changes no longer allow woodland renewal process to take place, with serious negative consequences for the environment. High population density and urbanisation in the coastal areas, the development of mass tourism, the sharp rise in consumption and intensive farming practices have increased demand for natural resources such as water, soil and vegetation.

Although woodlands cover more than 37% of non-desert lands in the northern Mediterranean, they only cover 14% of land in the south and 5% of land in eastern Mediterranean.

This can be explained naturally by wide variations in aridity (the main feature of the Mediterranean climate being the severity of the summer drought), but also by socio-economic differences:

- In the northern part of the Mediterranean Basin, the migration of traditionally rural populations to the cities and the concentration of agricultural production and forestry in the most fertile, best irrigated and most accessible areas have left many Mediterranean woodlands lying idle. This has led to a fairly rapid increase in the area of the forests and in the standing volume. Such conditions are suitable for the establishment and development of groups of rare species, formerly found in ancient forests, but not often present in the Mediterranean nowadays. However, this may lead to a loss of heterogeneity, not conducive to high levels of biological diversity and landscape diversity, and would certainly increase fire risks.
- The southern and eastern parts of the Mediterranean Basin are still home to many rural communities, some of which are still growing. Nowadays, the woodlands that have always been an integral part of agro-pastoral systems are all too often over-exploited. For example, the large number of sheep and goats in the Maghreb - estimated at about 50 million – has led to over-grazing of the rangelands; fuelwood consumption by the local people has been put at 0.35 m<sup>3</sup> per inhabitant per year. The continuous growth of such requirements often leads to imbalances and spiralling degradation (increasing demands placed on areas less and less capable of meeting them).

Such trends can only be reduced by better integrating forest policies into overall land management policies.

More and more frequently, consultation between players has helped to identify conflicts of interest, redefine priorities, draw up collective rules of use and improve the distribution of funds for sustainable resource management.

*With this in mind, in 2001, French lawmakers produced a specific tool: the Charte Forestière de Territoire (Territorial Forest Charter). It was made available to elected representatives, forest owners, economic operators and community group representatives to enable them, on their own initiative, to jointly resolve their conflicts and draw up forest management options based on a shared sustainable development project. Two years after its creation, this tool seems to have responded to local requirements as around 40 area forest charters have already been drawn up, 10 of which are in Mediterranean departments.*

Schemes of this kind are all the more essential given the high value attached to Mediterranean woodlands due to the many functions they have always provided.

*In the case of the Moroccan forests, a study undertaken as part of the MEDFOREX regional project concluded that the total economic value of these forests include a wide range of uses, such as fuelwood harvesting (30%), livestock grazing (23%) and the protection of the water cycle (18%). However, erosion (11%) and deforestation (7%) have a negative impact.*

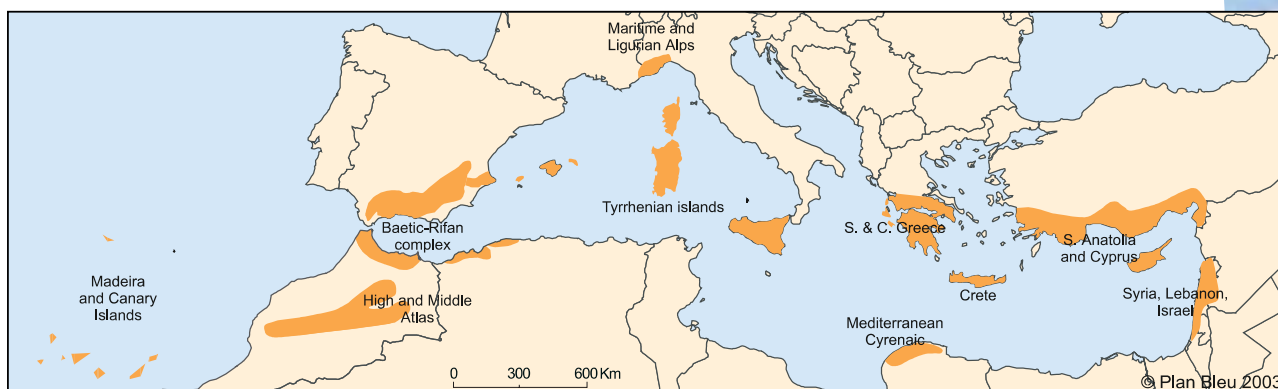
## Forests for preserving a very high biological diversity

The Mediterranean Basin, a refuge zone during the great quaternary glaciations, is the site of exceptional biodiversity, expressed in terms of genetics, an abundance of species and a variety of vegetation types.

With 25,000 phanerogamic species, the region contains 10% of the world's flowering plants on less than 2% of the Earth's surface.

Endemic species abound (around 13,000, i.e. half of the total flora), making the Mediterranean Basin the second region in the world in terms of abundance of endemic flowering plants.

### Ten key areas in the Mediterranean Basin with high levels of biodiversity



Source: Médail and Quézel

Mediterranean plants are adapted to a difficult environment, subject to frequent disruptions, both natural and human, and to high levels of climatic and seasonal stress.

Nevertheless, geographical isolation due to fragmentation and the loss of some habitats now constitutes a serious threat to the survival of many species.

Around 5,000 of Mediterranean plant species (17% of the total flora) are classified by the IUCN as being under threat, rare or vulnerable and are on the red list of endangered species.

In the European Union, 80% of the plants covered by the Habitat Directive are present in the Mediterranean countries.

The Mediterranean forests contain about 290 tree species, 200 of which are exclusively or largely dependent on these forests. More than 60 species are currently classified as rare, vulnerable or under threat.

### Main characteristics of Mediterranean forest species, by bioclimatic levels

Bioclimate	Arid	Semi-arid	Sub-humid	Humid
Annual rainfall	100 - 300 mm	300 - 600 mm	600 - 800 mm	> 800 mm
Main species	<i>Argania spinosa</i> <i>Pistacia atlantica</i> <i>Zizyphus sp.</i> <i>Acacia gummifera</i>	<i>Olea europea</i> <i>Pistacia lentiscus</i> <i>Pinus halepensis</i> <i>Pinus brutia</i> <i>Tetraclinis articulata</i> <i>Juniperus phoenicea</i> <i>Cupressus sp.</i>	<i>Pinus halepensis</i> <i>Pinus brutia</i> <i>Pinus pinaster</i> <i>Pinus pinea</i> Sclerophyllous oaks ( <i>Quercus sp.</i> )	Mediterranean firs ( <i>Abies sp.</i> ) <i>Pinus pinaster</i> <i>Pinus nigra</i> <i>Quercus suber</i> Deciduous oaks ( <i>Quercus sp.</i> ) <i>Cedrus sp.</i>

Source: O.M'Hirit

In the northern Mediterranean countries, the decline of agriculture and of sheep and goat grazing has led to an extension of the areas colonised by pioneer plant species, e.g. conifers, followed by the development of pre-forest vegetation types to the detriment of open spaces, grasslands and meadows.

In the southern and eastern Mediterranean countries where the pressure due to over-grazing, over-exploitation of fuelwood, and the cultivation of marginal lands is still very strong, forest degradation is becoming commonplace, the species preferred by livestock are becoming scarce and erosion is increasing – a state of affairs which could lead to desertification.

A concerted change in land use is essential in order to allow the development of sound and sustainable practices compatible with the renewal of the biological resources of the areas concerned.

## Forests too often hit by fires

Whilst fire may be a means of regenerating the Mediterranean forests provided it does not become a frequent occurrence, increasing numbers of forest fires have become one of the main causes of the loss of wooded ecosystems. In northern Mediterranean countries, the proliferation of brushwood in the abandoned areas has increased the likelihood of fires breaking out and spreading. Costly mechanized clearing could help reduce such risks, to protect inhabited areas.

More than 95% of forest fires are mainly due to carelessness and the uncontrolled burning of grass in an effort to regenerate the rangelands.

The number of fires has doubled since the 1970s. There are now 50,000 outbreaks every year, with forest fire fighting costing more than one billion euros annually.

Despite these efforts, more than 600,000 hectares of Mediterranean woodlands burn every year.

The forest fire monitoring, warning and fighting systems need to be very efficient. However it is not enough to have a coherent forest fire defence policy. Indeed, many other policies impact upon forest fires including usage and ownership rights, urbanisation and agricultural development. Therefore, all these factors must be taken into account if prevention strategies are to be effective.

*Silva Mediterranea* has set up an *ad hoc* working party to promote regional cooperation in this field. This cooperation could be strengthened by improving the sharing of knowledge about the implementation of land-based and aerial measures, exchanging information on the laws and regulations best suited to the national and local contexts, drawing up multilateral agreements and signing new mutual assistance agreements.

## Forests to maintain the quality of Mediterranean landscapes

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The 46,000 km of Mediterranean coasts are becoming highly urbanised and increasingly artificial, with the resulting conflicts for access to land and resource management problems.

In 1970, the average population density of the Mediterranean coastal regions was 100 inhabitants/km<sup>2</sup>; by 2000 it had risen to 150 inhabitants/km<sup>2</sup>; and it could exceed 180 inhabitants/km<sup>2</sup> by 2025.

The proportion of urban dwellers - only 62% in 1970 - is currently close to 70% and could reach 75% by 2025.

These coastal areas risk being gradually transformed into vast conurbations, prone to congestion, pollution and landscape degradation.

Furthermore, by reducing biological continuity, fragmentation could lead to the isolation of plant populations, and even to their extinction.

With more than 260 million visitors per year expected by 2020, the major objectives of any urban and coastal development schemes should be to maintain and restore local landscapes in an effort to preserve both the quality of life of the local people and the tourism potential of the coastal areas.

## Forests to conserve natural resources, and water in particular

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With only 1% of the world's fresh water resources, the Mediterranean countries are home to more than half the world's "water-poor" population (i.e. countries with an average water supply of less than 1000 m<sup>3</sup>/inhabitant/year). By 2025, the number of people in this situation could total 165 million, 63 million of whom would be in dire need of water (renewable water availability of less than 500 m<sup>3</sup>/inhabitant/year).

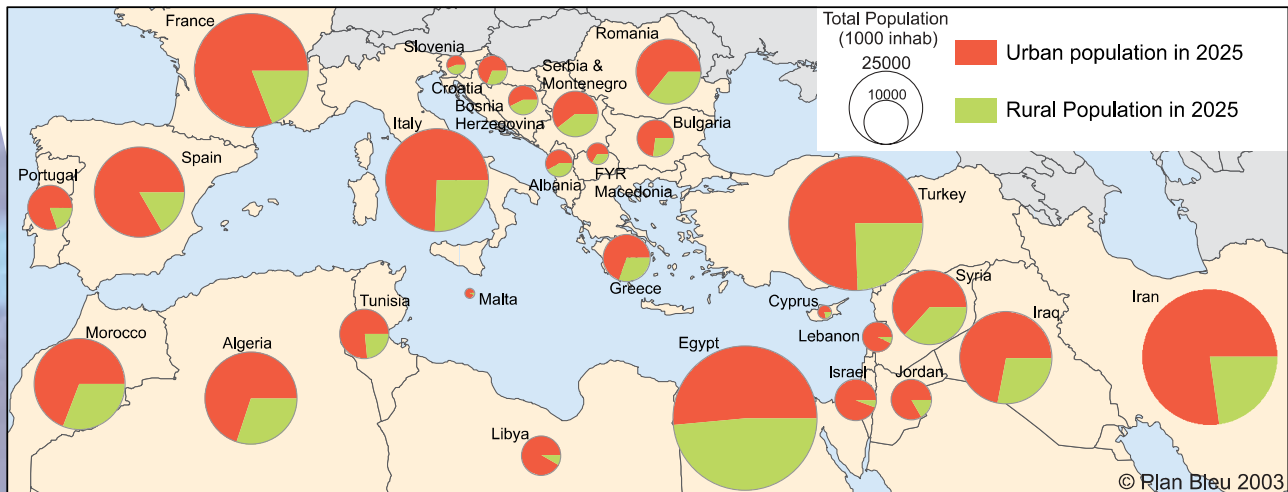
Better water demand management and integrated watershed management throughout the entire river system are the two lines of action that need to be given priority in order to preserve and improve the scarce, usable water potential.

*In Spain, the main roles of almost 88% of the forest areas are to protect the steep slopes from erosion and to regulate the water cycle, fed by low, irregular rainfall.*

The water and soil conservation measures (i.e. re-greening, farming practices, civil engineering, etc) taken by foresters in association along with other activities help significantly to increase the rainwater holding capacity of the soils, at the same time reducing erosion and the silting up of dams.

*As part of a project aimed at sustaining water resources in Morocco, a participatory approach involving farmers and local community groups has helped to provide a detailed analysis of the soil loss problem in the Oued Nakhla watershed in Morocco's Rif mountains. This has led to the establishment of an action plan combining direct steps to slow down soil loss (plantations, etc) and preventive measures aimed at reducing stress on scrublands (improved cropping and grazing practices, etc).*

## Projected Mediterranean population distribution for 2025



Source: UNPD

The population of the Mediterranean Basin rose from 225 million in 1950 to 450 million in 2000 and could reach 550 million by 2025 and 600 million by 2050.

## Forests to combat desertification and poverty

The region's main features are the arid, semi-arid and dry zones covering 156 million hectares on the rim of the Mediterranean Basin. These are the transition zones leading into the immense southern and eastern deserts.

For the 109 million inhabitants of these areas – poor rural people for the most part - the risk of desertification is a major environmental and socio-economic problem.

More than half of the Mediterranean Basin is currently affected by the impoverishment of the natural resources and of the people whose livelihoods depend on them.

In an effort to combat spiralling degradation and poverty, current development strategies are targeting diversification and seeking to achieve a synergy between the various development methods used in these areas (integrated multifunctional management), in an effort to improve job distribution and resource use in terms of time and space.

The inclusion of tree and shrub cultivation in such development schemes may help improve:

- crop production: by preventing soil erosion and increasing the soils' humus content (wind-breaks, shelter-belts, dispersed trees, etc)
- pastoralism: by providing a fodder reserve for livestock during drought periods (forage trees and shrubs),
- the production of domestic energy (fuel wood and charcoal) and small wood (poles and small wooden structures),
- handicrafts and trade (fruits, tannins, gums, resins, oils, fibres, medicinal plants, honey, etc),
- "green" tourism.

*In the western part of the Mediterranean basin where the natural cork-oak formations (*Quercus suber*) extend over 2 million hectares, cork oak cultivation is a potential means of woodland development in areas that have been reduced to maquis. Where the practice still exists, the use of cork for the cork stopper industry is the driving force of agro-silvo-pastoral systems which, like the dehesa and montado landscapes of the Iberian peninsula, combine cork oak cultivation with activities such as de-barking, the development of by-products for use as fuel, cereal growing and livestock grazing in the under-story. The uncertainties currently hanging heavily over the natural cork stopper market constitute a real threat to all these systems.*

## A regional forum in 2004

The future of Mediterranean woodlands is not only influenced by the technical and economic issues of forest production and by environmental protection problems, but also by many sectoral and intersectoral dynamics and by policies integrating rural and urban management.

In order to optimise the responses of the Mediterranean forestry sector to the many expectations regarding sustainable development, public and private operators would have to share the same long-term view of:

- the demands on the many potential uses of forestry resources, by assessing their capacity to meet those demands in terms of sustainable development,
- the ways and means (institutional, human and financial) of adjusting these demands to ensure that they are compatible with each other and within the limits of available resources,
- the value of the uses (active or passive) of Mediterranean woodlands and the direct and indirect beneficiaries of those uses, such that the overall importance of forest functions, services and forest products may be fully appreciated by the decision makers and funding agencies, when they are asked to contribute to the implementation of improvement measures.

In an effort to enable the Mediterranean countries to share their experiences and analyses in this area, a regional forum on “Mediterranean woodlands and sustainable development” will be jointly organised in 2004 by FAO and Plan Bleu, with the support of France.



Cyprus, near Paphos.

Photographer's credit: Jean Iotti, Plan Bleu

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# *Silva Mediterranea*

## a Mediterranean forestry cooperation tool

As far back as 1911, *Silva Mediterranea* was created by the Mediterranean countries, which recognised the need to work together on common forest problems. It became a statutory body of FAO in 1948.

*Silva Mediterranea* analyses regional trends in woodland use and draws up a list of common priorities for research and studies for the forestry sector. Based on that list, the member countries regularly determine areas of collaboration where they exchange information and share resources.

In 1993, following the recommendations of the Rio Earth Summit and the Paris World Forestry Congress, *Silva Mediterranea* prepared the Mediterranean Forest Action Programme to serve as a common reference. Following updating, several of its objectives are currently being implemented through the national forest programmes developed by the Mediterranean countries as part of an international mechanism.

In 2002, in an effort to combat poverty and participate in the implementation of the international conventions on desertification, climate change and biodiversity, and according to the United Nations Forum on Forests action plan, *Silva Mediterranea* decided to attach top priority to improving the forestry sector's contribution to sustainable development. FAO has signed a partnership agreement with the Blue Plan in order to strengthen its activities in these areas.

## *The Blue Plan*

### for the environment and development in the Mediterranean

The Blue Plan (Plan Bleu) was drawn up by the Mediterranean Basin countries and the European Union following an intergovernmental meeting held in Split in 1977, in the framework of the Mediterranean Action Plan (MAP), the latter under the aegis of the United Nations Environment Programme.

Its mission is to develop cooperation in the Mediterranean, by providing the authorities of the different countries with analyses to enable them to achieve optimum sustainable socio-economic development without causing environmental degradation.

The systematic long-term studies carried out under Plan Bleu, currently being updated, show that sustainable development in the Mediterranean will only be possible if scenarios change significantly through the implementation of new strategies and policies for integration of environment and development, at local, national and regional levels, and stronger regional cooperation, e.g. under the framework of the Euro-Mediterranean partnership.

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This document was produced by the Blue Plan for the Environment and Development in the Mediterranean (Plan Bleu), in partnership with the Committee on Mediterranean forestry issues - *Silva Mediterranea* - of the Food and Agriculture Organisation of the United Nations (FAO), as part of the support provided by France to the Committee's programme. (English version provisional)

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