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State of Mediterranean Forests in 2013

by Marion BRIENS and Valentina GARAVAGLIA

The opening of the 3rd Mediterranean Forest Week, which was held in Tlemcen in Algeria in March 2013, was the opportunity to present the first State of Mediterranean Forests. This report, coordinated by FAO and the Blue Plan involved many scientific and technical institutions and NGOs. A high-quality work, supported by a dynamic cooperation between all countries of the Mediterranean, and which should be updated every 5 years.

State of Mediterranean Forests 2013: the process of preparation

During the first Mediterranean Forest Week held in April 2010 in Antalya, Turkey, members of the Committee on Mediterranean Forestry Questions-Silva Mediterranea requested to FAO, to prepare a report on the state of Mediterranean forests.

It was agreed to use the already-available data collected by regional and international institutions in the context of other environmental assessment processes, such as the state of the environment and development in the Mediterranean process (PLAN BLEU, 2009) and FAO's five-yearly Global Forest Resources Assessment (FAO, 2010).

Therefore, under the coordination of Plan Bleu and FAO, scientific institutions (EFIMED in Barcelona, JRC/EFFIS in ISPRA, INRA in Avignon, Centre for Agricultural Research in Arezzo, etc.), technical institutions (Mediterranean Institute on Cork, Haut Commissariat aux eaux et forêts et à la lutte contre la désertification, Centre technologique forestal de Catalunya, Office national des forêts in France and Corpo Forestale dello Stato in Italy, etc.) and non-governmental organizations (Mediterranean Model Forests Network, Association internationale forêts méditerranéennes, and the Mediterranean offices of the World Wildlife Fund and the International Union for Conservation of Nature) contributed to this first State of Mediterranean Forests (Fig.1).



Figure 1:
State of Mediterranean
Forests 2013 (SoMF)

Undoubtedly this first edition of the State of Mediterranean Forests can be improved. Some available data do not always include the «Mediterranean forest» type and cover other types of forest ecosystems (e.g. France, Italy, Spain).

Despite these difficulties, the SoMF 2013 has been presented during the III Mediterranean Forest Week organized in Tlemcen, Algeria (17-21 March 2013).

The strength of this collaborative product shows that regional cooperation on Mediterranean forests exists and is alive. Further editions of the State of Mediterranean Forests will be produced every five years, providing further opportunities to unify and mobilize partners in the management of Mediterranean forests and other wooded lands.

The Mediterranean: a challenging context

The Mediterranean region, with 507 million inhabitants in 2010 (which could reach 625 million in 2050) distributed on three continents and with a rich natural and cultural heritage, is an «ecoregion» where human development and economy is heavily dependent on natural resources, sometimes rare, and on a vulnerable environment.

After millennia of interactions between ecosystems and societies, human activities have now significant implications for pressures on natural resources, with disparities between northern, southern and eastern rims of the Mediterranean. These growing pressures on ecosystems and biodiversity can be explained by demographic and economic dynamics, and are exacerbated by the impacts of climate change. They are especially evident in the countries of southern and eastern rims with a strong water stress. Disparities in the region are very strong, both in terms of availability of natural resources and their exploitation.

Forests in the Mediterranean region as a source of valuable goods and services threatened by climate change

The total forest area in the countries of the Mediterranean region was 85 million hectares in 2010, corresponding to 2% of the global forest area (Fig.2). Typically Mediterranean forests represent 25 million hectares and other Mediterranean wooded lands about 50 million (Fig. 3).

The Mediterranean region is a very complex environment based on multiple factors such as climate, geomorphology, soils, hydrology and land use. There are over 25 000 species of plants in this region against 6 000 species in total for central and northern Europe (SCARASCIA-MUGNOZZA *et al.*, 2000). Mediterranean forests have nearly twice as many woody species as European forests (247 as opposed to 135), with 158 woody species unique to the region or widely preferred, compared with 46 exclusive to central and northern European forests.

Mediterranean forests provide many goods and services, sometimes region-specific: wood products, non-timber forest products (cork, pine nuts, mushrooms, honey, etc.) and environmental and social services. They exclusively provide cork: cork oak landscapes are 2.5 million hectares, or about 10% of typical Mediterranean forests.

Ecosystem services provided by the Mediterranean forest ecosystems are more and more recognized: biodiversity conservation, regulation of the water cycle and

improving its quality, soil protection, erosion and desertification control, sequestration of greenhouse gases, recreational and cultural uses. These services, however, are in part threatened by the overexploitation of the resources in the South, on the other hand the risks of forest fires in the North is growing due the decline of grazing and scrub overgrowth, as well as the increased length and severity of dry periods related to climate change.

Forest fires are one of the most important threats to Mediterranean forests. The total burnt forest area for the period 2006-2010 was 2 000 000 hectares, with more than 269 000 forest fires reported (Fig. 4). Fires are a major cause of degradation in the region and this is likely to rise further. Indeed, climate change projections foresee a significant increase in the frequency and length of droughts and heat waves. This would increase the length of the forest fire season and its severity, the forest area at risk and the probability of large forest fires which can exacerbate desertification.

Mediterranean forests share many common features and also many health problems such as pests, diseases, other biotic factors (e.g. woody invasive species, overgrazing) and abiotic factors (e.g. pollution, storms). Damage due to insect pests have been estimated at more than 5 million hectares of forest, which represent approximately 14% of total damage in the world and nearly 6% of the total forest area in the Mediterranean region.

Several threats that affect the Mediterranean region are exacerbated by climate change: by 2100, the Mediterranean

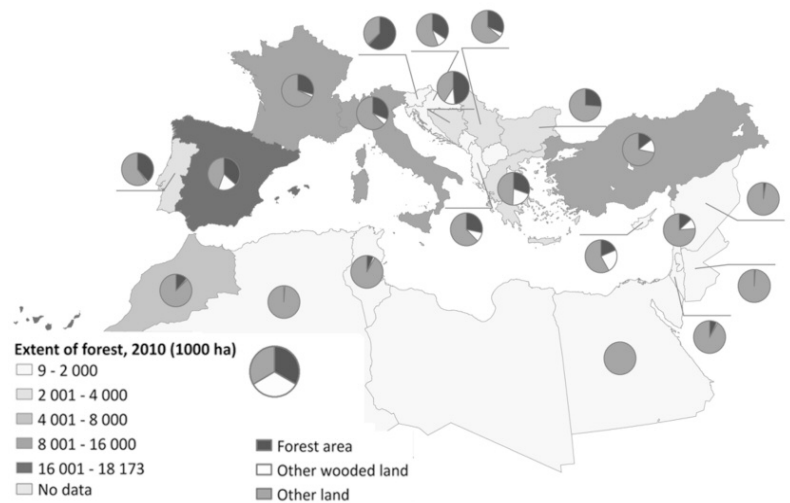


Figure 2: Forest area in Mediterranean countries, 2010
Source : SoMF 2013

climate will change with rising temperatures between 2° to 4°C while reduced rainfall should be between 4% and 30% (IPCC, 2007). These climate changes have caused or contributed to the phenomena of tree mortality in some forest stands (BENTOUATI 2008; CHENCHOUNI ABDELKRIM and ATHMAN, 2008; SEMERCI *et al.*, 2008.) and have a negative impact on carbon and water cycles in many Mediterranean forests (MARTÍNEZ-VILALTA *et al.*, 2008).

Current climatic conditions, which are already affecting forest growth, will continue to worsen in all greenhouse gas emissions scenarios provided by the Intergovernmental Panel on Climate Change (IPCC). Beyond the vulnerability assessment to climate change, adaptation to these changes requires the use of existing appropriate management practices and the development of innovative practices.

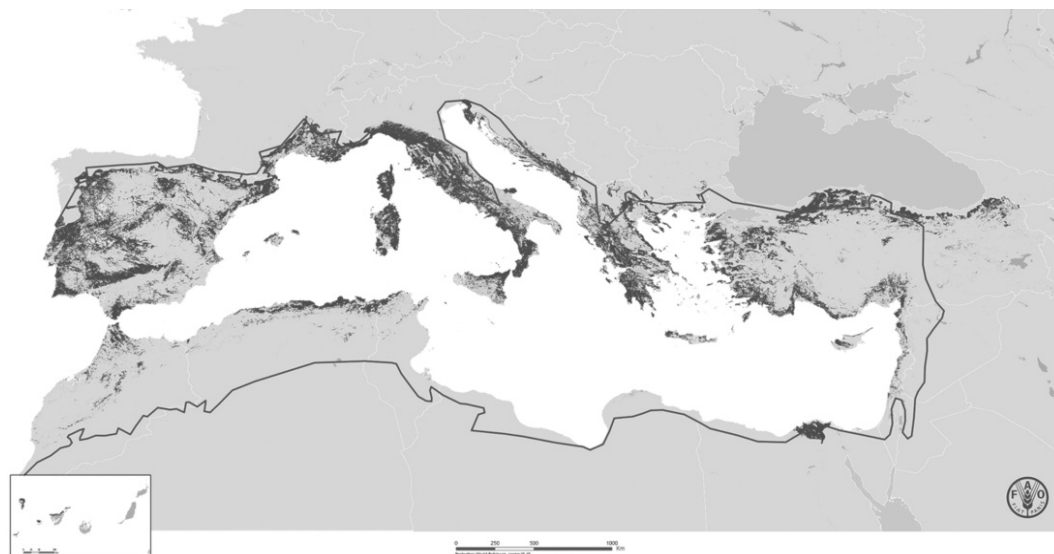


Figure 3: Distribution of Mediterranean forests and other wooded lands
Note: in dark gray = percent of forest cover; in light gray = OWLs (wooded areas with less than 10 percent canopy cover); gray line: mediterranean bioclimatic limit
Source Quézel, 1985

Adaptation strategies are needed to cope with the many uncertainties impacts of increased frequency and intensity of extreme events, the capacity of ecosystems to respond to potential changes and future ecosystem response to current adaptation practices. Therefore, adaptation strategies at the local level (forestry silviculture and forest management) and larger scale (land use and governance) must be robust and flexible. Exit strategies may also be required (e.g. diversify rather than restrict the range of forest reproductive material available for plantations).

The importance of Mediterranean forests for adaptation strategies to climate change is therefore threefold: i) projections of climate change in the region are particularly worrying and Mediterranean forests provide the main gene pool for future adaptation of ecosystems, ii) Mediterranean species that are threatened in their current distribution areas are potential resources for other areas iii) the Mediterranean forestry sector, already facing climate constraints, can provide expertise to other regions that could be suffer in the future current Mediterranean conditions.

Adaptation and development of new forestry practices are therefore essential and urgent. This is a difficult challenge due to many uncertainties; future environmental conditions in 50 or 100 years cannot be accurately predicted. However, the trends of these changes are clear. Innovative forestry practices are needed and the objective now is to combine immediate objectives and long-term challenges.

Governance of Mediterranean forests: a diverse situation, but a growing interest to improve participatory governance of forest ecosystems

Political, legal and institutional contexts of the management of forest ecosystems are very different depending on the countries of the Mediterranean region, on their more or less marked decentralization and the importance of forest cover. Some countries have developed a specific regulatory and institutional system for forests, while others manage these areas as part of their environmental policies, rural development and poverty reduction, the fight against desertification and/or mitigation and adaptation to climate change.

This variety limits the value of comparing political, regulatory and institutional frameworks. Moreover, the analysis is affected by the low availability, reliability and consistency of data. However, the first SoMF highlighted some key issues and specificities.

One of the main specific features of Mediterranean forests, marked by a strong multifunctionality and low biomass productivity, is the role and value provided by considerable non-market goods and services, environmental and social. This led regulations to hold an important place in political and legal frameworks for forest management, whether these are national (e.g. Morocco, Turkey) or sub-national (e.g. Spain, Italy). Policies, strategies and forestry programs, and institutional frameworks are thus strongly influenced by the government.

Nowadays, most targeted issues by forest policies of Mediterranean countries are: forest fires prevention, forest health and adaptation to the impacts of climate change. Wood and non-wood forest products, often crucial for forest user (i.e. local populations) are still inadequately treated.

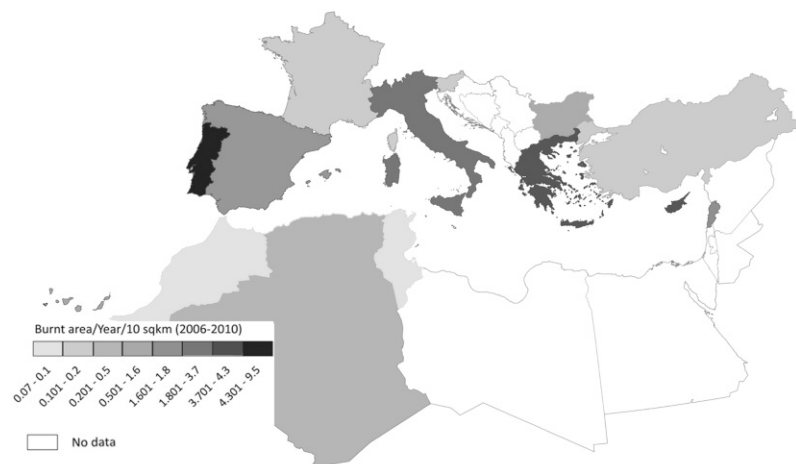
There is a growing interest and efforts to improve governance of forest ecosystems, particularly in terms of stakeholder participation in management decisions and implementation, especially through participatory management approaches at local level. This is also marked in the dynamic of creation and revision of National Forest Programmes in the Mediterranean countries (16

Figure 4:

Burnt area (ha) per year, Mediterranean region, 2006–2010

Note: Countries shown in white did not provide complete data on burnt area for the period. Burnt area = hectares burnt per year per 1 000 ha of wildland area, where wildland area is the area potentially affected by wildfire (i.e. land area, excluding urban areas).

Source : SoFM 2013



Mediterranean countries so far), national processes of formulation, planning and implementation of forest policies at national and subnational levels, including participatory approach as essential component.

So far, no efforts made to move towards sustainable management of forest ecosystems were adequate to ensure sustainable production of goods and services, including non-market ones, in a context of increasing anthropogenic pressures on ecosystems, climate change and of growing social demand for non-market services. Thus, it is necessary for Mediterranean forest policies to recognize and value these services essential to the well-being of populations. It is also crucial to allow and encourage participation of stakeholders in the management of forest ecosystems, particularly at the local level, to ensure a more equitable and sustainable management, to promote dialogue and synergies between the different sectors as also the coherence of territorial policies and strategies for sustainable development, poverty reduction and climate change adaptation.

Financing of forest management remains a critical issue, especially to ensure the production of multiple goods and services. The non-market nature of most of these goods and services has led public, national or subnational authorities, to be heavily involved in the management of forest areas, but they are becoming less able to fulfill this role because of the more and more limited human and financial resources.

Some government functions could possibly be substituted, at least partially, by market mechanisms (e.g. Payments for Environmental Services [PES]).

However, it remains inappropriate in cases where the forest resource is small and/or with very low productivity, where uses and users are multiple, and where the social, cultural and governance is unfavorable (for lacking in transparency or efficiency) for this type of mechanism. These situations are often observed in the Mediterranean region and prospects for developing such market mechanisms in the region appear to be limited. The issue of funding in forest management remains a major challenge and needs to develop and test innovative instruments to meet current challenges and constraints.

To best meet these issues, a capacity building within governments but also multiple

actors involved in forest management is essential. Exchanges of information and experience among users and stakeholders (even experts between institutions) through cooperation networks such as the FAO Committee on Mediterranean Forestry Questions-Silva Mediterranea and the Collaborative Partnership on Mediterranean Forests (CPMF) are a considerable asset to encourage the development of practical and sustainable management strategies.

The first State of Mediterranean Forests showed once again the importance of the "Mediterranean forest" resource but also the growing pressures, anthropogenic or related to climate change, to which it is submitted. This first SoMF is an initial assessment of available information which also reveals gaps that may be further be improved with contributions from countries and may become a major tool for a more objective communication with the general public, a support for the development of strategies and programs, and a key document of the Collaborative Partnership on Mediterranean forests (CPMF) and all those interested in the future of Mediterranean forests and other wooded lands.

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Summary

Forest ecosystems and other wooded lands contribute significantly to rural development, poverty alleviation and food security. They are sources of wood, cork, energy, food and incomes, and important ecosystem services (biodiversity conservation, soil and water protection, recreation and carbon storage), which are crucial for many of the region's economic sectors (food supply, agriculture, soil and water conservation, drinking water supply, tourism and energy).

Global changes (changes in societies, lifestyles and climate) which strongly affect the Mediterranean region could lead to the loss of biodiversity, an increased risk of wildfire, the degradation of watersheds, and desertification, with serious consequences for the sustainable provision of forest goods and ecosystem services. It is therefore urgent to develop a tool for information and monitoring in order to regularly assess these changes and to communicate based on objective and reliable data with the different stakeholders involved in the management of Mediterranean forest ecosystems.

Résumé

Les écosystèmes forestiers et autres espaces boisés méditerranéens contribuent de façon significative au développement rural, à la réduction de la pauvreté et à la sécurité alimentaire des populations des territoires méditerranéens. Ils sont à la fois sources de bois, de liège, d'énergie, de nourriture, de revenus et de multiples autres biens et services environnementaux (préservation de la biodiversité, conservation des eaux et des sols, fourniture d'espaces récréatifs, stockage de carbone) souvent cruciaux pour de nombreux secteurs économiques de la région (agriculture et alimentation, conservation des eaux et des sols, fourniture d'eau potable, tourisme, énergie).

Les changements globaux (évolutions des sociétés et des modes de vie conjugués aux changements climatiques) qui affectent fortement le pourtour de la Méditerranée hypothèquent l'avenir des écosystèmes forestiers et autres espaces boisés, et remettent en cause la fourniture durable des multiples biens et services en faveur des populations. Il devenait donc urgent de se doter d'un outil d'information et de suivi capable de mesurer régulièrement ces changements et de communiquer avec les différents acteurs impliqués dans la gestion des écosystèmes forestiers méditerranéens.