



# Forest fires in the Mediterranean: A burning issue

## The issue

Forest fires represent an extremely serious environmental issue in the Mediterranean region. More than 5,000 fires burn an estimated average of 600,000 - 800,000 hectares every year. An area comparable to the island of Crete or the island of Corsica and equal to 1,3 – 1,7 % of the total Mediterranean forests.

Forest fires are part of Mediterranean ecosystems and societies, and small scale fires may always be expected as a part of the natural dynamics and the management of natural resources. But during the last decades the occurrence of human-caused large-scale forest fires <sup>1</sup> has dramatically increased throughout the region, mainly in the EU Mediterranean countries – Spain, Portugal, Italy and Greece- with huge social, economic and environmental costs.

The frequent occurrence of large-scale forest fires is diminishing the capacity of the Mediterranean ecosystems to naturally regenerate in many areas, and is threatening the ecological stability of extensive areas, through biodiversity loss, soil erosion and water scarcity.

Furthermore, the current trend of climate change in the Mediterranean region – causing longer and more intense summer season droughts, as well as the frequent occurrence of extreme-weather events - is increasing the risk of forest fires, and reducing the capability of Mediterranean forests to accommodate them.

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<sup>1</sup> In 1985, 1989 and 1994 the total surface of burnt forest land in Spain reached almost 500,000 ha, an area equivalent to the whole Balearic Islands.

# Underlying causes of forest fires

Forest fires from natural origin represent only between 1% to 5% of the total fires in the Mediterranean countries. On the contrary, human-induced fires – mostly due to deliberate lighting of forest fires and negligence - represent the vast majority (more than 95%). In most cases, the causes of human-related fires remain unknown in several countries, mainly because of the deliberate intention not to allocate responsibility for the damage.<sup>2</sup>

So far, government responses to forest fires have tended to focus on suppression and expensive technological solutions to fight fires instead of investing in adequate preventive measures. Instead of alleviating forest fire problems, these solutions have often increased the scale and magnitude of forest fires. It should be noted that in the past decade the increase in governmental investments in high technology (such as water-bombers) for forest fire-fighting has been accompanied by an increase in the number and the amplitude of large-scale forest fires.

WWF has identified the following as the main underlying causes of forest fires in the Mediterranean:

## 1. **Regional development trends**

- the collapse of the traditional rural socio-economic systems – rural abandonment in the north (e.g.: Spain, Italy and Greece), and rural mismanagement and overexploitation of nature resources in the south (e.g.: Turkey, Lebanon and Cyprus) - during the last decades have provoked a rapid and intense transformation of extensive areas of very valuable and ecologically important Mediterranean vegetation: the expansion of dense secondary forests and scrubs in the north, and the fragmentation and degradation of the few forest remnants in the south. These degraded and secondary forests and scrubs are characterised by the accumulation of high quantities of dry wood, which makes the vegetation much more inflammable and sensitive to fire events;
- huge land-use changes –mainly urbanisation and infrastructure constructions<sup>3</sup>- and related
- land-use conflicts (such as competition among land users) are linked to the vast majority of the human-induced fires<sup>4</sup>;
- the mass tourism development with related secondary house booming in the Mediterranean countries has provoked an increasingly seasonal presence of urban population in the forest land. Visitors sometimes provoke accidentally small fires (from smoking, cooking, etc) that can easily become a danger event due to people's lack of capability to properly react. Moreover, the widespread road construction has facilitated the free access to remote natural areas, which makes it incredibly difficult for the forest managers to monitor and be aware of the location of people in the forest land.

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<sup>2</sup> As an example, many forest fires provoked by powerlines' sparks are deliberately considered as from unknown origin.

<sup>3</sup> Powerlines and roads are recorded to have a significant role in forest fires in the recent years in Turkey, Spain, Greece, Italy. The rate of forest fires caused by powerlines in Turkey were: 3% in 1997, 15% in 1998, 2% in 1999.

<sup>4</sup> Fire as an instrument of land appropriation, mainly in countries where land property boundaries are not clearly established (incomplete or non-existent cadastre); fire as a way of affirming right of use, as for instance when the establishment of protected areas restricts people's rights; fire as a way of changing land use; fire as a means of subsistence, such as fires intentionally set by fire fighters as a way to maintain their jobs and increase their revenue; fire as the maintenance of old-fashion traditional management practices, related to pastures, agriculture, and hunting; fire as a way to mobilise the timber market, provoking the logging of burnt trees and the selling of timber (which is not affected by fire) at much lower prices.

## **2. Collapse of rural system and urbanisation (social dynamics)**

- the collapse of the rural systems which has brought about a decrease in the rural population in the northern part of the region and, in parallel, the general trend of urban population increase all over the Mediterranean countries, has led to the loss of a direct link between the population and its natural environment and of a proper knowledge on how to manage and prevent fires, which used to be an integral part of the traditional rural systems.

As a result, there is an almost complete lack of capacity to effectively respond to those small-scale fires events, that can rapidly become large-scale uncontrolled fires which even the most sophisticated technologies can not smother.

## **3. Collapse of economic systems related to forests (lack of adequate incentives)**

- the collapse of the rural economies has significantly reduced the market value of the multipurpose Mediterranean forest systems (wood and non-wood forest resources).
- As a result, land-owners pressure (legally or illegally) local authorities for allowing the conversion of rural land into urban land in order to get higher revenue;
- the lack of adequate economic incentives has contributed to a very high unemployment rate and, subsequently, to the depopulation of the rural areas of the northern Mediterranean countries (see social dynamics);
- there is a lack of adequate recognition of the contribution by the forest owners to the preservation of the high environmental and social value of the Mediterranean forests. Also, owners have to bear the additional costs for preventive management practices due to the new external services (such as cleaning the forest land around powerlines, roads, etc. ) brought by new land uses. These new land uses can contribute to the development of the fires.

## **4. Inadequate regional, national and local policies**

- there is a lack of adequate policies providing for fire risk assessment in land use planning and for the participation of all the stakeholders in fire prevention;
- the implementation of subsidies for rural development from the EU (i.e. the Common Agriculture Policy) is unintentionally promoting land uses (i.e. artificial plantations), which foster increased fire risk;
- due to the lack of adequate regulations at a national level, harmful agriculture practices, such as burning the harvested fields or grasslands, has been maintained;
- national policies promoting or not clearly banning land conversion from forest to urban use are widespread in many Mediterranean countries, and fires are used as an excuse for this change;
- the cadastre of many countries is either incomplete or does not exist at all. This generates ownership disputes and conflicts over use rights, provoking fires by arson and negligence.
- laws or administrative tools to punish those responsible for forest fires or to ensure that the costs for damage is recovered are inadequate or ineffectively applied.

## **5. Institutional failures**

- weak co-ordination exists among the different institutions responsible for fighting fires;
- there is a lack of specific training and appropriate tools for forest fire fighting by most of the actors
- (firemen, army, volunteers) involved;
- there is a lack of adequate participation and involvement of national and local stakeholders (public administration, local authorities, land-users, land owners) in the fire fighting chain, from prevention to restoration.

## **6. Political instability:**

- during the conflicts and wars that are still devastating large parts of several Mediterranean countries, fires are a quite frequent event.

# Concrete priority actions to be undertaken

## Put in place an effective fire fight chain

The root-causes of Mediterranean forest fires are very complex as they are related to different socio-economic and policy forces. A balanced fire management system – prevention, preparedness (prediction and pre-suppression), response (suppression/fire fighting) and recovery (restoration) - should be considered as an integral part of landscape planning in all Mediterranean areas at high risk of forest fire.

This would mean:

- assessing the vulnerability to fire (GIS mapping exercise of potentially dangerous land-uses, vegetation structure, etc) and the needs, from prevention to restoration of an area;
- providing the necessary land use planning measures, both in terms of preventive management practices and stakeholder's responsibility in managing fires;
- identifying priority actions for each component of the fire management system throughout the year;
- involving the public administrations and all different social and economic actors directly and indirectly affected by fires. This could be achieved by raising awareness, building capacity, clearly assigning roles and effective co-ordination for timely and effective fire management process.

In order to be successful, a fire fight initiative should invests most of its resources and efforts at the early stage of the fire fight chain: prevention.

## Some specific actions urgently needed

1. Adequate landscape level planning policies integrating forest fire risk assessment in all development plans and promoting sustainable rural development as part of the preventive measures.
2. Introducing effective environmental and rural development actions within the EU agriculture subsidy policies. Subsidies should promote the development of functional landscapes, in which both sustainable agroforestry systems and mature and highly-valuable forests (both in terms of biodiversity and socioeconomic value) help reduce the ecosystem's vulnerability to fires.
3. Evaluation from the governments of the total economic costs of forest fires. Both the direct and indirect loss should therefore be taken into account including human lives, houses, infrastructures, nature resources and biodiversity as direct losses and ecological degradation, water shortage, soil loss and many other aspects as indirect losses.
4. Evaluating in economic terms the additional services offered by the forest land to the society and other economic sectors (electricity, dam and road companies, tourism industry). Then providing adequate income to compensate for the additional work and costs generated by these services to the forest owners, for works which are part of the preventive measures against fires.
5. Serious commitment from governments to determine the causes of all forest fires, to identify those responsible and make sure the costs of the damage is recovered.

6. A common and adequate understanding by the governments of what prevention really means and an adequate definition of “forest fire”. Indeed, usually prevention is wrongly related to pre-suppression, and as a result most of the funding is allocated to pre-suppression and fire fighting. Priority should be given instead to economically support real preventive measures, such as stakeholders’ participation and training, the recovery of rural management systems to perform a preventive role, and legal and well-organised prescribed burning to reduce fuels where ecologically appropriate.
7. Reinforcement or establishment (when missing) of adequate laws and regulations prohibiting forest land conversion to urban use after fires, denying hunting rights to land owners using illegal fire practices, regulating the timber market of burnt wood to avoid price speculations and reforming the agricultural regulations to manage fire use and burning practices, preventing the use of these practices in sensitive areas or during the high-fire risk season.
8. Securing the cadastral bases in all the countries and making them publicly available.
9. Awareness raising campaigns targeted to different sectors of society (tourists, land owners, farmers, shepherds, etc) and educational activities (i.e. training about forest values and appropriate behaviour to prevent fires and react after fires start) to foster active participation.

# WWF in action

## Greece

In 1998, WWF Greece launched a campaign against forest fires. Called “Forests For Ever”, the campaign represents an ambitious effort to change forest legislation, improve fire prevention in selected forests of particular ecological importance and promote forest restoration through model demonstration projects.

WWF Greece has presented several studies addressing the root causes of forest fires and has proposed

relevant measures. At the same time, WWF Greece has prepared forest fire management plans for biodiversity “hotspots” in the country and has organised field activities with the participation of the public. Large media coverage was achieved, in order to secure the interest of the broad public and increase political pressure on the authorities. WWF Greece has succeeded in presenting a different – policy oriented – dimension of the problem of forest fires in the country. Numerous stakeholders have joined forces with WWF and more events and contacts have been organised. The most important achievements after three years of campaigning are:

- successfully block the constitutional reform that posed serious threats for forest ecosystems, especially after fire that was initially proposed by the two major political parties of the country;
- include 1,5 million ha of degraded forests in the forest maps that are prepared by the state;
- shape a new mentality on forest fire management through the relevant authorities;
- influence forest restoration practices and procedures;
- stop numerous actions threatening important forests that were reported by individuals;
- participate actively in several committees and working groups about forest protection and management, presenting proposals and pressing politically for their implementation and
- successfully restore 3 burnt forest sites in Athens and Thessaloniki;
- these pilot projects and the methodology used have been adopted by the state.

WWF Greece has linked forest fire management with the major forest policy issues of the country and uses the campaign “Forests For Ever” as the central point of its forest programme.

The future activities planned include the promotion of forest fire management in the local level and the increase of capacity building and awareness activities.

## Italy

A turning point in the fight against forest fire-raising has been marked by the “framework law on forest fires”, passed on 21/11/00 by the Italian Parliament, which presents several and important innovative elements, such as the judicial definition of “forest fire”, the harmonisation of the many laws related to forest fires, as well as an increase of fines and penalties.

WWF Italy, which has always been very active on the issue of forest fires, sent at the beginning of this summer a letter to the delegates of the Ministry of Interior in charge of the police districts (*prefetti*), calling upon them to enforce effective measures to prevent the crime of forest fires, through the strengthening of the police controls and activity in the area.

WWF Italy found out last year that 82% of the Italian municipalities had not updated their cadastral surveys by identifying burnt woods or lands, as prescribed by the law. Such breach of law consequently delayed the enforcement of the prohibition to build on burnt areas, allegedly giving green light to real estate speculation.

WWF Italy urged the Ministry of the Interior to put pressure on the municipalities to update their cadastral surveys and master plans. As a result, the municipalities have been required to report on their cadastre the areas burnt over the last five years and to declare such areas as “not included in the building sites”.

## Spain

In spite of huge investments in fire extinction and pre-suppression measures, the fire fighting policies in Spain have failed in reducing the frequency and intensity of forest fires.

The public administrations of the regional governments try to mask the statistics by providing wrong numbers and excluding small scale fires (< 1 ha) from the statistics.

WWF Spain proposes the following measures:

1. Increase investments on prevention measures, including sustainable forest management as an integral component of them.
2. Increase ad-hoc awareness raising and environmental education activities addressing the different social sectors affected by, or implicated in, forest fire fighting.
3. Analyse the underlying causes of forest fires, and identify all unknown causes and those responsible. All fire stakeholders should be involved in the investigation of the underlying causes of forest fires.
4. Policy measures:
  - 4.1 Promote adequate policy and regulations to:
    - oblige those responsible for the fire to cover the cost of suppressing it;
    - forbid the reclassification of rural land into urban land after fires;
    - deny hunting permissions in hunting properties using illegal fire practices;
    - regulate the timber market of burnt trees, to avoid speculation of timber prices;
    - clearly reform the code of agriculture practices to stop fire use and burning practices related to stubble and pastures, in sensitive areas or during high fire risk seasons.
  - 4.2 Subsidies: adequately apply subsidies for agriculture and for environmental measures to transform marginal land into forest land, and punish land managers, perhaps by removing subsidies, involved in forest fire events.

## Some figures

In most EU Mediterranean countries –Spain, Portugal, Italy, and Greece- the average total burnt area has quadruplicate from the 60's until nowadays.

Only few –tens to hundreds- out of the average 50,000 fires per year, are responsible of the majority of the total burnt forest land.

**Italy:** From 1970 to 2000 300.244 forest fires took place in Italy, destroying a total surface of 3.641.962ha (12% of the country territory).

Sardinia is in the forefront, with 160.000ha burnt from 1970 to 1990.

In year 2000, 8,595 forest fires took place; 114,648ha were destroyed, 24% more than the previous year.

**Spain:** an average of 221,390 ha (almost 10% of the total forest cover) were burnt annually between 1982 - 1995.

In only 10 years (1985-1995) the total surface of the burnt forest land has been 2,665,671 ha, equal to the island of Sicily.

Every year 20,000 forest fires take place in Spain. Only 1% of the responsables are punished.

**France:** between 5,000 and 20,000 forest fires each year; 18,000ha burnt on year 2000.

**Turkey:** \$10 million: was the damage from forest fires in 1999.

**Greece:** In 1997 alone lost 150,000 ha; in August 2000 the Island of Samos lost the whole of its brutia pine, which provided islanders with their only alternative income to tourism. Moreover, after the devastating fires of summer 2000, more than 50% of all bookings from tourists for 2001 were cancelled.