



## European briefings

# Forests



Forests provide a range of ecosystem services from capturing and storing carbon to providing bio-fuel, timber as well as social benefits. However, our forests, which have increased in area by 17 million hectares since 1990, face growing pressure from fragmentation, expanding urban areas, climate change and loss of biodiversity.

The claims on forests services are increasing. Understanding the role of more than 14 million forest owners/managers is imperative to developing balanced, sustainable policy on forest resources.

## Context

The use and management of forest resources vary greatly across Europe and depends on factors such as local social and economic situations, history, traditions and government policies both within and outside the forest ecosystems. Europe's forests reflect this variety of economic, social and environmental conditions in the region (see Table 1).

Increased land use, expanding urban areas, and climate change have contributed to place more pressure on forests. Forest management is complex as forests can produce a wide variety of goods and services. Many of these outputs can be produced simultaneously, and trade-offs may occur especially between commercial and non-market outputs from forests.

For example, intensified harvesting of trees to meet the demand for biomass puts pressure on forest management, old growth forests, and levels of deadwood.<sup>[1]</sup> The demands for these outputs vary between countries and over time. They are mostly increasing and might be competing, leading to more complicated decisions for forest managers and policymakers. Healthy, e.g. productive and resilient, forests are essential to encounter these demands.

There is no common forest policy in Europe. The European Union's (EU) Forest Strategy<sup>[2]</sup> highlights the importance of European forests as key repositories for biological diversity and as key providers of ecosystem services such as soil and water protection, absorption of carbon from the atmosphere, bio-fuels, timber production, amenity, and that they provide social benefits.

Meanwhile forest-related objectives such as nature conservation, climate change mitigation and the supply of biomass and wood products are being stepped up by policymakers from different sectors.

For example, the importance of maintaining healthy forest ecosystems has gained more attention through the implementation of the Natura 2000 network of protected areas.

Climate change and energy issues and efforts to combat illegal logging and improving forest governance outside Europe (e.g. the EU Timber Regulation<sup>[3]</sup>), are other examples of forest-related legislative acts.

The EU's Forest Strategy seeks to amend this lack of coordination and coherence between the various forest-related policies.

## Key trends

Forest area in Europe has increased since 1990 by 17 million hectares (ha) of which more than half are planted forests. This has been the result of afforestation (e.g. planting and seedling of trees on land that was not previously forested) and through natural expansion of forests such as on abandoned land. The area of forests undisturbed by man has overall remained stable at around 3% of the land area (Table 1). Today forests amount to about 180 million ha making Europe one of the most forest-rich regions in the world with more than 40% of land covered by forests.

**Table 1: Key facts on European forests by region and for EU-28<sup>[4]</sup>**

	North <sup>1</sup> 1 <sup>5</sup>	Central- West <sup>1</sup> 1 <sup>6</sup>	Central- East <sup>1</sup> 1 <sup>7</sup>	South- West <sup>1</sup> 1 <sup>8</sup>	South- East <sup>1</sup> 1 <sup>9</sup>	EU-28 <sup>1</sup> 1 <sup>10</sup>
Forest and other wooded area, 10 <sup>6</sup> ha	75	39	23	42	45	180
Forest and other wooded area,% of total land	56	28	30	48	35	41
Forests available for wood supply, 10 <sup>6</sup> ha	55	34	20	25	22	133

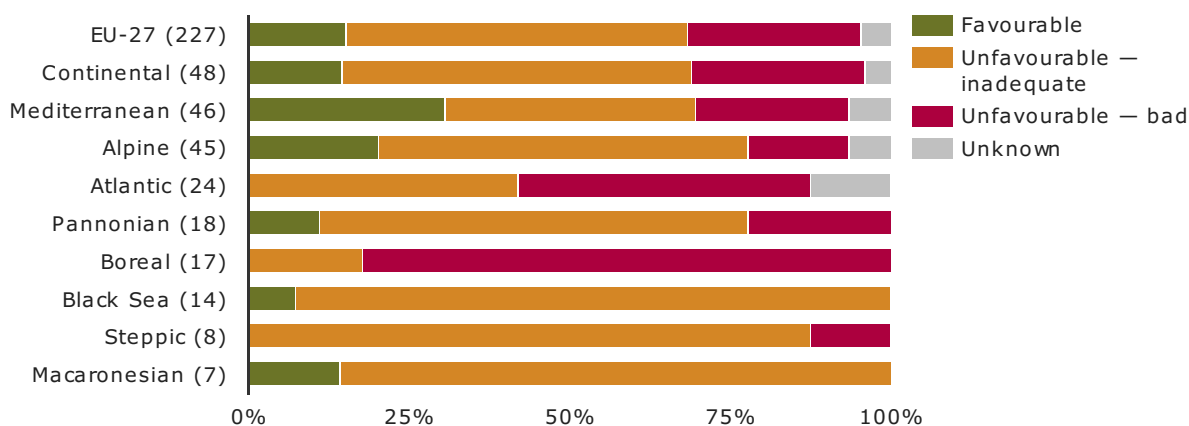
Growing stock, m <sup>3</sup> /ha	117	227	<b>237</b>	81	140	154
Net annual increment, m <sup>3</sup> /ha	5	8	<b>8</b>	4	6	6
Fellings, 10 <sup>6</sup> m <sup>3</sup>	<b>181</b>	172	93	29	17	469
Fellings/net annual increment,%	<b>71</b>	65	66	37	47	65
Forest undisturbed by man,%	<b>6</b>	0,3	2	0,4	6	3
Semi-natural forest,%	<b>92</b>	86	91	86	77	89
Plantations,%	2	14	7	14	<b>17</b>	8
Forest dominated by introduced tree species	2	<b>11</b>	4	7	1	5
Forest area protected for biodiversity	7	10	4	<b>23</b>	6	11
Forest area protected for landscape	2	<b>26</b>	12	6	1	10
Forest area designated for the protection of soil, water and other ecosystem services	12	18	25	<b>42</b>	10	20
Forests in private ownership	71	62	27	<b>73</b>	17	60
Forest sector work force 1 000 fte <sup>[11]</sup>	346	<b>923</b>	658	582	405	2 560

Forests in Europe are increasingly at risk from environmental stresses due to human induced pressures. The condition of forests is an important dimension when looking at trends in forest resources, however difficult to measure. The loss of foliage in European forests was monitored to assess damages by air pollution on forests. This was triggered by a decline in forests in Central Europe from the 1980s until 2009. Most of the forests monitored showed no change in defoliation although damaged forests have been observed in Central Europe and in Mediterranean coastal areas.

Catastrophic events, primarily the result of climate change, have an increased negative impact on forest growth and condition. The number of fires has increased in recent decades.<sup>[12]</sup> Most forest fires occur in the Mediterranean region and destroy around 400 000 ha every year. Between 1990 and 2005, the recorded forest area affected by insects and diseases had nearly doubled in Europe (2.7% of the forest area). Damages resulting from storms, wind and snow are estimated to affect 0.4% of the forest area. Such threats to forests are likely to lead to higher rates of tree mortality and make forests more vulnerable to natural hazards and human made pressures.<sup>[13]</sup> Some threats can be mitigated by forest management creating more resilient forest structures.

The development of human infrastructure, land-use change, excessive forest harvesting and forest fires in Europe has resulted in a landscape of fragmented forests.<sup>[14][15]</sup> This reduces the capacity of forest-dependent species to move to other forested areas and their ability to survive and adapt to climate change. Forests play an important role in the conservation of biological diversity. The area of protected forests in Europe increased by around half a million hectares annually between 2000 and 2010. Half of the protected forests are managed for conservation of biodiversity. In Europe, protected forest areas account for more than 45% of the Natura 2000 protected areas, 31.3% of the national designated protected areas, and about 12% of the total forest area. Despite the efforts to halt loss of biodiversity, 80% of forest habitat assessments still have unfavourable conservation status (see Figure 1).

**Figure 1: Conservation status of forest habitat types by region**



**Note:** The habitats referred to are those covered by Annex I of the Habitats Directive 92/43/EEC

**Data sources:**EEA. Conservation status of habitat types and species (Article 17, Habitats Directive 92/43/EEC)



An increase in the scarcity of water has led to a focus on the provision of drinking water from forests. Forests serve to replenish and provide clean drinking water. Following efforts in recent years, more than 20% of European forests are dedicated to protect water and soils, mainly in mountainous areas. One third of European lakes are located in forested catchment areas.<sup>[16]</sup>

Forests growing in flood plains have significant roles in water retention. 4.5% of European forests can be defined as floodplain forests. One third of European rivers are flowing through forested catchment areas.

Forests play an important role in mitigating climate change by absorbing carbon from atmosphere. Europe's forests store almost 80 billion tonnes of carbon in their biomass. The stock of carbon in forest biomass has increased by around 3 billion tonnes since 1990. This means that forests absorb around 7% of the annual greenhouse gas (GHG) emissions from the region.

## Prospects

The restoration and maintenance of biodiversity in forests will support resilience to natural and human induced pressures, including the expected impacts of climate change. Current policy targets support this approach. These include halting biodiversity loss by 2020, reducing GHGs by 20%, increasing biomass energy from wood, and ensuring legal compliance for wood or forest products imported in the EU.

Targets are set to halt global forest cover loss by 2030 and to reduce gross tropical deforestation by at least 50% by 2020 (EU Deforestation Communication of 2010, reiterated in the 7th EAP<sup>[17]</sup>). The Biodiversity Strategy<sup>[18]</sup> and the EU's Forest Strategy<sup>[2]</sup> emphasise the need for improved integration of biodiversity measures in forestry to support halting the loss of species and habitats. These include maintaining deadwood, preserving high nature value (HNV) forest areas<sup>[19]</sup>, applying ecosystem-based measures to increase the resilience of forests, ensuring that afforestation is carried out respecting the diversity of domestic species and adapting to the effects of climate change.

The use of wood can substitute fossil fuels and other carbon intensive materials but can reduce the carbon stock in the forest. Optimal climate change mitigation strategies depend on sustainable forest management and will vary from place to place taking into account regional and local conditions. As such, protecting these forests should be a high priority in order to protect their generally large carbon stocks. In most semi-natural forests in Europe, efforts to promote carbon sequestration and biodiversity are mutually supportive.<sup>[20]</sup> The option of including the net value of the carbon absorbed by forests into emission trading and reduction targets is currently under consideration.

Understanding the role of forest owners and managers is imperative in order to properly address the trade-offs in the use of forests and integrating conservation and sustainable use goals. The competence and judgement of public sector agencies, private sector companies and other advisory actors will impact the way in which the policy can be implemented.<sup>[21]</sup>

A coherent policy approach to European governance of forest resources is needed to protect and maintain forests and their functions within sustainable limits. Monitoring at the European level is essential to build a knowledge base on forests. Forest data and information are collected at national levels, but this information is not available and seldom comparable from country to country. The EU's Forest Strategy calls for such harmonisation of forest information and suggests using national forest inventories and monitoring systems.



## SOER 2015

SOER 2015 European briefings present the state, recent trends and prospects in 25 key environmental themes. They are part of the EEA's report SOER 2015, addressing the state of trends in and prospects for the environment in Europe. The EEA's task is to provide timely, targeted, relevant and reliable information on Europe's environment.

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