

# The importance of EU forests for biodiversity conservation and ecosystem services

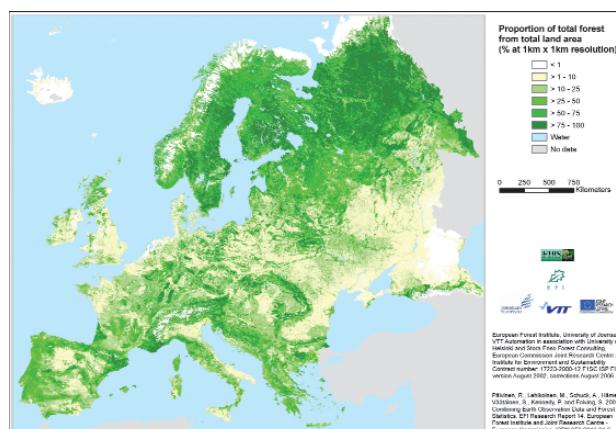
Forests are crucial for climate change. The deforestation process is one of the main greenhouse gases emission sources in developing countries and it is also greatly important at the global level. New mechanisms to fight this process are under development and implementation at the national and international level. At the same time, the UNFCCC negotiation process seems to go through one of the main crises ever seen before. The real risk is that the Kyoto Protocol and maybe the entire UNFCCC process may collapse. In this context, forests may find a new role to move from one of the main causes of climate change to one of the most important potential solutions. In the view of the Rainforest Coalition, REDD+ could be the right key for this change

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### Ecosystem services provided by EU forests

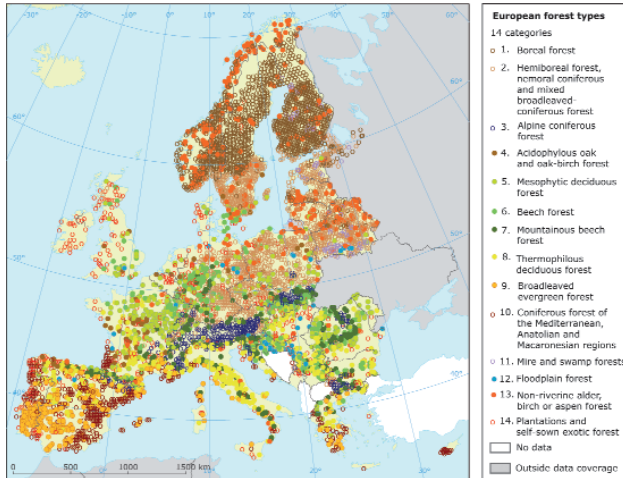
The forests of the EU are just as important as farmland in terms of the area they cover and the range of services they provide but until recently their contribution to ecosystem services has received comparatively little attention. Europe's forests and other wooded land occupy 42% of the EU-27 land area, a total of 177 million hectares of which 89 million hectares are used to obtain wood and other products for the market (EC, 2011). These include sawn timber, wood-based panels, pulp for paper, cork, woodfuel for renewable energy, and non-wood products such as berries, mushrooms and wild game. All forests, whether harvested or not, have the capacity to provide a wide range of 'non-market'

ecosystem services including the protection of soils and water and the storage and sequestration of carbon, all underpinned by the biodiversity of EU forests.



**FIGURE 1** Forest land as proportion of total land area  
 Source: European Forest Institute, 2011

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**FIGURE 2** Main categories of European forest types  
Source: EEA, 2008

The largest forest areas are found in Sweden, Finland, Spain and France but, as Figure 1 shows, some parts of Europe now have very little wooded land. In sharp contrast to concerns about deforestation in other parts of the world, forest cover in the EU has increased over the past few decades, as a result of public investment in afforestation and natural regeneration on marginal land. An area the size of Hungary has been afforested since 1990, and at the same time the volume of standing timber in the EU has been increasing too, not just because of the larger area of forests but because only about 60 or 70 per cent of the annual timber growth in the EU is harvested, and some forests are no longer managed.

There is great diversity in the forests of Europe, both in terms of the characteristic tree species (Figure 2), and the objectives for which they are managed. Three broad types of forest management can be described as:

- **mono-functional forests** managed for intensive production of a timber and other wood products; in some parts of the EU these are mainly plantation forests of non-native species;
- **multi-functional forests** managed to produce timber alongside ecosystem services (protecting air, soil, water, and carbon), biodiversity conservation

and the provision of social benefits (cultural heritage, recreational opportunities and aesthetic landscapes); the management of these forests is 'closer to nature' than that of mono-functional forests, but likely to require some trade-offs between the many different objectives;

- **conservation forests** are managed primarily for their biodiversity value, for specific ecosystem services and/or for the benefit of people; this group includes old-growth native forests with very little intervention, nature reserves and also protective forests and urban forests.

## Forest biodiversity

Forest species make up the greatest assemblage of biodiversity in any terrestrial ecosystem, and have been important in our lives for such a long time that trees and forests are a treasured part of our cultural and historical heritage, and still shape our landscapes. Very few 'old growth' forests are left in Europe now, accounting for only around 1% to 3% of all forests in the EU (the largest of these in Romania and Bulgaria) but many other forests that have been modified by man are still very important for biodiversity. A total of 13% of EU forests are protected areas, while 30% of Natura 2000 sites are forest habitats, covering 23 million hectares<sup>1</sup>.

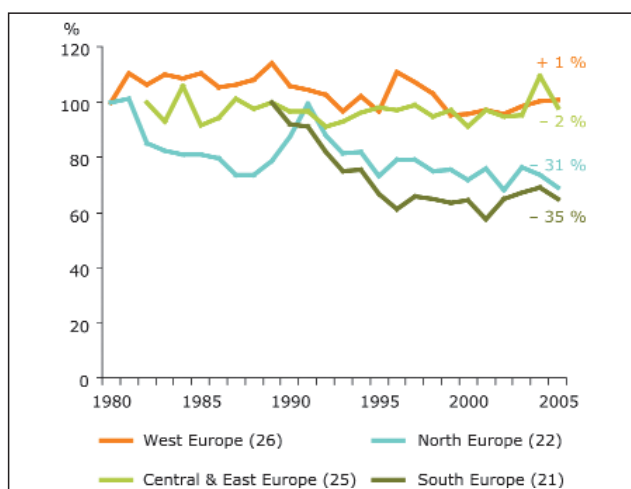
Because of their structural complexity, forests provide ideal habitats for a particularly rich array of plants and animals and a natural refuge for many large carnivores, such as bears and wolves, which were once a characteristic feature of many of Europe's wooded landscapes, and are still found in some forests, especially in Eastern Europe. Forests of high biodiversity value are likely to share some of the following characteristics:

- native tree, shrub and ground cover species in forests with a high degree of naturalness;
- forests of tall trees, including old and dead trees, with deadwood on the forest floor;

- forests with a sizeable area that have been managed sustainably for quite a long time.

So far, Europe's efforts in halting biodiversity loss in forests has had mixed results. Nearly 170 species of European interest (identified in the EC Habitats Directive) are linked to forest ecosystems, but EU Member States report that only 14% of these species and 16% of important forest habitats are in 'favourable conservation status', with the highest percentage of favourable assessments in the Mediterranean and the Alpine regions, but no favourable assessments reported in the Macronesian, Boreal and Atlantic regions (EEA 2011). According to IUCN, 11 mammal species depending on forest in some stage of their life cycle should be considered as threatened, including the 'critically endangered' Bavarian vole, *Microtus bavari-cus* and Iberian lynx, *Lynx pardinus* (EEA, 2008). In the case of forest birds, common populations show a decline in Northern and Southern Europe, while they are largely stable in the West and East (Figure 3).

Managing forests for biodiversity requires silvicultural systems that recognise the importance of letting nature take its course. For example many specialised



**FIGURE 3** Regional indicators of common forest birds in four European regions  
Source: EEA, 2008

woodland plants and animals depend on a supply of dead wood as food and living space, breaking it down to be returned to the soil. The amount of deadwood in forests is rather low in the intensively managed production forests of northern Europe and in dry Mediterranean areas where foresters clear it away because of the fire risk. Changes in land use, logging operations and forest fires can reduce the movement of forest species and affect their ability to survive and adapt to climate change. The natural genetic diversity of native forests could be the most important resource of all, when we need to find disease and drought resistant strains of timber-producing trees to combat the effects of a changing climate.

### EU forests - a carbon sink or a carbon source?

The EU's forest stores large reserves of carbon as biomass, 73% of it above ground, 20% below ground and 7% in deadwood. Old-growth forests with little management intervention are some of the richest repositories of both carbon and biodiversity. Where forests are managed for timber production there are opportunities to improve both carbon sequestration and biodiversity, for example by:

- establishing forest reserve areas within conservation forests, where withdrawal of management interventions can enhance carbon sequestration, even in old growth forests;
- restoring forest wetlands can provide benefits for climate mitigation if the effect on emissions of other greenhouse gases from the wetland is properly taken into account;
- changing to a silvicultural system of continuous cover forestry, already a well-established policy in the public forest estate, which can potentially increase carbon sequestration in growing stock;
- preventing forest fires, especially in the Mediterranean region. Specific silvicultural management can lower the risk of fires while increasing the yield of biomass for energy substitution, raising

the marketable timber output and enhancing biodiversity (ECCP,2003).

At present EU forests are a carbon 'sink', storing more carbon than they produce, but this could change quite quickly, because the demand for biomass for renewable energy from agricultural and forest sources may increase by a factor of two or three to meet EU renewable energy targets. If this stimulates an increase in harvesting timber that exceeds the annual rate of growth, some EU forests could become a temporary source of carbon within the next ten years.

### **Protecting soils water and contributing to the quality of life**

Forests protect vulnerable soils from erosion by limiting run-off and reducing wind speed, and also enrich the soil organic matter, helping to store and purify rainwater, thus improving water quality and reducing flooding. These protective functions of forests are particularly important in the alpine and Mediterranean regions of Europe. Forests have a considerable effect on the micro-climate and can provide a valuable buffer around urban areas to moderate the effects of extreme weather, as well as offering recreation opportunities and improving the physical and mental health of residents.

### **Ensuring the future supply of forest services**

There are clearly trade-offs to be made in future between the different types of forest management needed to deliver all these ecosystem services, while continuing to conserve the biodiversity of Europe's forests. Some of these decisions will be difficult to make – for example in terms of climate change mitigation is it better in the short-term to increase the carbon stored in forest biomass or to harvest much more of this biomass to use as a source of renewable energy? Only healthy forests can supply these multiple for-

est ecosystem goods and services, and it is essential to make EU forests resilient to the potentially damaging effects of climate change, and to preserve their genetic diversity.

At EU level the main funding mechanism to support forest management for biodiversity and ecosystem services is Pillar 2 of the CAP, co-financed by the Member States, who can choose from seven measures specifically for environmental forest management. Many of the beneficiaries are small forest owners, who play an important role in sustainable forest management.

A total of €5.5 billion EU funding has been allocated to these measures for the 2007-13 period across the EU-27, but uptake of some of the key incentives has been very disappointing, including the annual payments for forest-environment and Natura 2000 management that were introduced in 2005.

Last year the EU launched a public consultation on forest protection and climate change<sup>2</sup>, which emphasised the environmental role of forests in protecting soil, regulating freshwater supplies, and conserving biodiversity. Worryingly, research suggests that there is a significant gap between the understanding of forest issues in Europe and the reality, both among the public and some policy makers. For example, the majority of European people perceive that the total forest area in the EU is decreasing, when in fact it has increased over the past two decades. Most EU citizens support more active management of forests, yet harvesting and management are seen as being some of the biggest threats to our forests.

Today, forestry in Europe aims at supporting the multiple forest functions by the sustainable management of forest resources. Sustainable forest management (SFM) is defined as *'the stewardship and use of forests and forest lands in a way, and at a rate, that maintains*





*their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems*'. Despite the consensus on guidelines, criteria and indicators, SFM is not implemented consistently throughout Europe. According to Forest Europe's recent 'State of European Forests' report, there are substantial differences among regions. It is clear that SFM needs to improve the state of Europe's forests and to ensure that they continue to fulfil their multifunctional role, while taking into account regional differences (EEA 2011).

Some of the key points to be considered in the forthcoming debate on CAP reform and the role of forestry support include:

- developing a common standard for a baseline of good forestry practices, to be applied to all forest support payments;
- in delivering EU policies, striking the appropriate balance of support between sustainable forest management and sustainable management of farmland;
- ensuring future EU support for sustainable forestry is fully coherent with EU environmental, biodiversity, energy reduction and efficiency policies;

- prioritising improved forest management to deliver ecosystem services and climate benefits, while protecting biodiversity and improving resilience to climate change;
- ensuring that afforestation protects soil and water resources and does not harm biodiversity.

These are major challenges, and meeting them will require a significant change in the management of large areas of Europe's rural land, supported by a coherent programme of research, information, advice and funding. Forestry is a long-term activity and changes now will have an effect in decades to come.

#### Notes

- 1 [http://ec.europa.eu/agriculture/fore/publi/leaflet-2010\\_en.pdf](http://ec.europa.eu/agriculture/fore/publi/leaflet-2010_en.pdf)
- 2 <http://eur-lex.europa.eu / LexUriServ / LexUriServ.do?uri = COM : 2010 : 0066 : FIN : EN : PDF>

#### References

- [1] EC (2011) Europe's forests sustaining life. Directorate General for Agriculture and Rural Development, European Commission, Brussels. [http://ec.europa.eu/agriculture/fore/publi/leaflet-2010\\_en.pdf](http://ec.europa.eu/agriculture/fore/publi/leaflet-2010_en.pdf)
- [2] ECCP (2003) Conclusions and recommendations regarding forest related sinks and climate change mitigation. European Climate Change Programme - Working Group on Forest Sinks [http://ec.europa.eu/clima/policies/forests/docs/forest\\_sinks\\_final\\_report\\_en.pdf](http://ec.europa.eu/clima/policies/forests/docs/forest_sinks_final_report_en.pdf)
- [3] EEA (2010) Forest: deadwood (SEBI 018) - Assessment published May 2010. European Environment Agency, Copenhagen.
- [4] EEA (2011) Europe's forests at a glance: a breath of fresh air in a changing climate. European Environment Agency, Copenhagen.