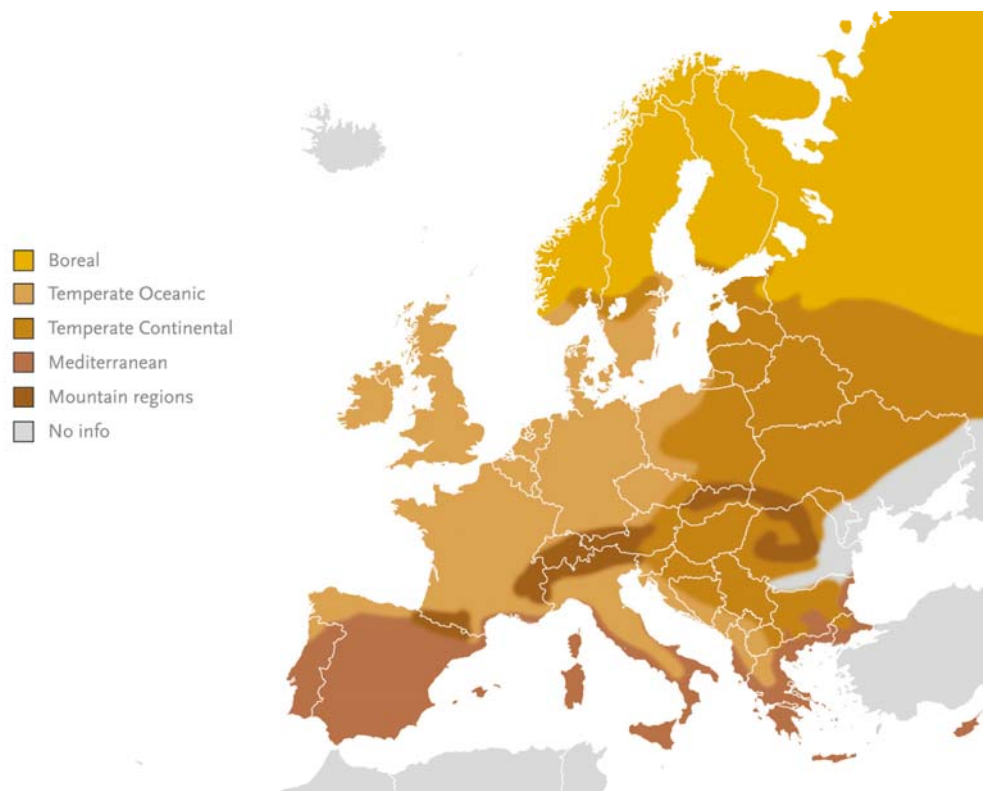


MOTIVE factsheet

Climate change sensitivity, impacts and vulnerability

About 44% of the land area in Europe is covered by forests. European forests have extremely variable ecological and socio-economic conditions – this means the impacts of climate change on European forests are likely to be unevenly distributed, not only across different bioclimatic zones but also among different forest ecosystems in each zone.



Projected climate change impacts vary in different bioclimatic regions.



An example of forest goods in boreal zone; lingonberry. Photo: M.Kolström.

The concepts of *climate change sensitivity*, *impacts*, *vulnerability* and other related terms are often used in different ways by different groups. Here are some terms explained:

Impacts are the consequences of climate change that are likely to affect forest goods and services and forestry activities, due to exposure and sensitivity to changes.

Impact factors are climatic, physical, and biological variables that are influenced by climate change and cause the impacts in the system. These factors include atmospheric CO₂ increase, changes in temperature and precipitation, abiotic disturbances (non-living factors which affect ecosystems, like wind patterns, precipitation, temperature) and biotic disturbances (changes in living organisms).

MOTIVE factsheet

Climate change sensitivity, impacts and vulnerability

Sensitivity describes the degree to which a system is affected, either adversely or beneficially. The effects of climate change may be direct (e.g., changes in forest growth in response to a change in temperature or precipitation) or indirect (e.g., damages caused by an increase in the frequency of fires or a new biotic pest species).

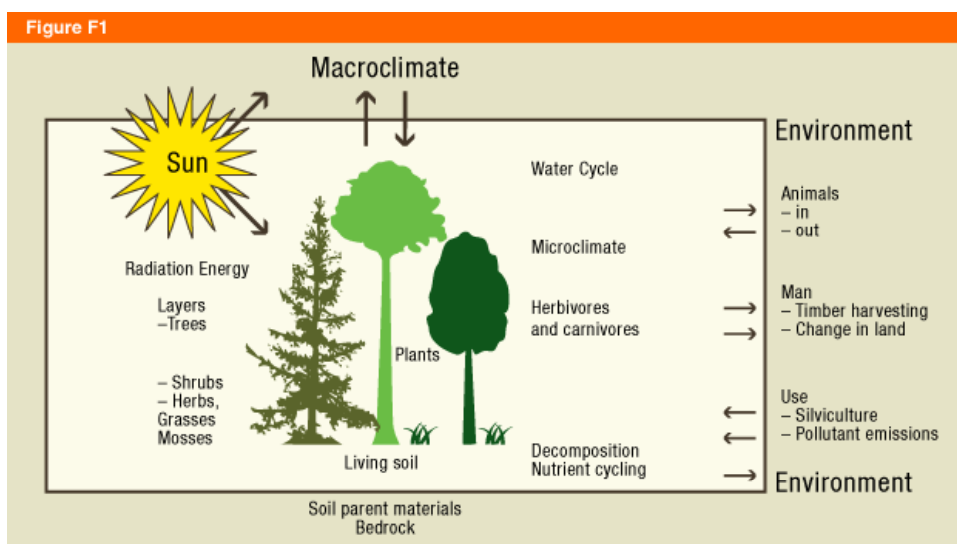


Figure F1: The forest ecosystem and its individual components and the environmental factors affecting the ecosystem (Hannellius & Kuusela 1995).

Adaptive capacity describes the ability of a system to adapt to changes in climate.

Socio-economic adaptive capacity is the ability of human sectors, like forestry, to implement planned adaptation measures.



Vulnerability of a community depends on how well its people and businesses have adapted to the consequences of climate change. Photo: A. Breeden, Fotolia

Vulnerability can be defined as the degree to which a system is susceptible to being affected by the adverse effects of climate change. The vulnerability of a given system is a function of the climate variation to which this system is exposed (exposure), its sensitivity (together resulting in impacts on goods and services), and its adaptive capacity.

The project **MOdels for AdapTIVE forest management (MOTIVE)** is a large-scale integrated project (project number 226544) in the 7th Framework Programme of the EU that develops tools to support decision-making in forestry in response to climate and land use change. It encompasses 20 partners from 14 European countries. It has an overall budget of almost 9 million €, from which 7 million will be paid as EU contribution. The project is coordinated by the Forest Research Institute of Baden-Württemberg with duration of 4 years.