

The carbon sink services provided by European forests were predicted to be functional for decades, however since 2005 there have been signs of sink saturation, reports work published in Nature Climate Change. The paper suggests that declining volume of trees, deforestation rates and higher vulnerability to natural disturbances such as fires, storms and insects play a part in this slow-down.

Carbon sinks remove CO<sub>2</sub> from the atmosphere and the Kyoto Protocol has promoted their use as a form of carbon offset. Gert-Jan Nabuurs and colleagues looked at forest inventories for the whole European area and found that since 2005 there has been a decline in the rate of tree volume increase, and therefore also in sink capacity. This was calculated using the average annual volume of forest increment minus the average annual volume of natural mortality of trees. The authors suggest that a few conditions may explain this. As European forests are increasingly mature, they are dominated by older trees. This condition, combined with reduced nitrogen deposition from the atmosphere and decreased summer air humidity due to climate change, can explain the lower growth in forest volume that curbs the carbon sink. In addition, urban sprawl and infrastructure expansion are driving deforestation rates, even if only on a modest scale, with effects on the sink strength. Finally, evidence shows that the older European forests are more susceptible to damage caused by natural disturbances, leading to release of carbon into the atmosphere.

The researchers conclude that although managed European forests are closer to capacity than previously thought, changes in management practices can improve volume growth and slow down saturation of the carbon sink.

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