



# The Forest Identity

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## Expanding Forests Key to Meeting EU Climate Change Goal for 2020

*Credit for forest expansion likely needed by EU to reach ambitious post-2012 goal of cutting greenhouse gas emission 20% by 2020 from 1990 levels*

*Co-author Pekka E. Kauppi is available for advance interviews. Please call to schedule a time. High-res images for potential media use are online at [www.helsinki.fi/press](http://www.helsinki.fi/press). The full paper, peer-reviewed by the UK journal *Energy Policy*, is available for media preview on request ([terrycollins@rogers.com](mailto:terrycollins@rogers.com)).*

European Union countries likely require an old ally – Mother Nature and her forests – to meet an ambitious post-Kyoto goal for cutting greenhouse gas emissions 20% by 2020, according to new research.

The University of Helsinki study says that despite rising population and affluence, the EU can meet its obligations post-Kyoto (2012-2020). However, it will likely require more than energy savings, new technologies and mitigating non-CO<sub>2</sub> gasses such as methane; partial credit for expansion of the region's forests could be decisive, say researchers Pekka E. Kauppi, Laura Saikku and Aapo Rautiainen, whose report, *The Sustainability Challenge of Meeting Carbon Dioxide Targets in Europe by 2020*, is published today in the peer-reviewed UK journal *Energy Policy*.

The study finds that between 1990 and 2005, expansion of above-ground tree vegetation in the 27 EU countries annually absorbed an additional 126 teragrams (126 million tonnes) of carbon – equal to 11% of the region's emissions.

The rate varied from 10% in the 15 old member states (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal,

Spain, Sweden, UK) to 15% in the 12 new members (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia).

The findings were surprising, says study leader Prof. Kauppi, who with colleagues in 1992 estimated the rate of increase of CO<sub>2</sub> absorption through the expansion of forests at no more than 5%.

The study shows that total CO<sub>2</sub> sequestered by EU forests relative to national emissions varies widely from country to country. In Latvia, for example, forests more than offset per capita emissions. And forests in Lithuania, Sweden, Slovenia, Bulgaria and Finland absorb a large part of national emissions. At the other end of the scale are lightly-forested countries such as Belgium, Ireland, the Netherlands, Cyprus and Denmark.

The new paper builds on work reported last year by Prof. Kauppi and international collaborators, who revealed the shift from deforestation to afforestation in the world's most forested nations. They advanced a more sophisticated approach to measuring forest cover that considers not just forested area but density of trees per hectare.

Their "Forest Identity" calculation also quantifies the biomass and atmospheric carbon stored in forests. They reported that, amid widespread concern about deforestation, growing stock has in fact expanded over the past 15 years in 22 of the 50 countries with most forest, including several EU members.

"The good news is that trees are extremely efficient mechanisms for capturing and storing carbon," says Prof. Kauppi, a member of the Nobel-laureate UN International Panel on Climate Change. "The better news is that Europe's forests are thriving and expanding and therefore will play an increasingly important role in helping the EU to reach its environmental goals."

"Every year, the expanding European forests remove a surprisingly large amount of carbon from the atmosphere," says co-author Aapo Rautiainen. "According to rough estimates, their impact in reducing atmospheric carbon may well be twice that achieved by the use of renewable energy in Europe today."

Under the Kyoto Protocol, the EU committed to an 8% reduction of annual greenhouse gas emissions by 2012, using 1990 as the base year. Under the protocol, countries do not get credit for increasing natural carbon sinks through forestry and agriculture. Negotiations on an accord to cover the post-Kyoto period 2012 to 2020 are underway.

The researchers note the daunting challenge confronting EU nations in order to meet a post-Kyoto commitment to reduce emissions 20% from 1990 levels by 2020: a dramatic reduction of energy used per unit of GDP and de-carbonization of energy supply against a backdrop of rising population and affluence.

CO<sub>2</sub> emissions in EU nations grew by an average of roughly 1% every three years between 1992 and 2004. To reduce CO<sub>2</sub> emissions in EU27 by 20% in the next 12 years, carbon emission per economic output needs to at least halved (49 to 64% depending on the growth of population and economy).

The report's authors note that Europe-wide emissions have not yet started to decline and that time is running out for the EU to successfully embark on its ambitious 2020 goal.

“Policies that accelerate the expansion of our forest biomass not only represent a win-win for climate change and biodiversity, they also open up economic opportunities,” says co-author Laura Saikku. “Land owners can benefit with new industries like forest-based bio-energy production. This could also help to reduce one of the main threats to sustained forest expansion – the need to open land to produce agricultural biofuels as alternatives to fossil fuels.”

Publication of the research, funded by IFEE-consortium of the Academy of Finland, coincides with a Group on Earth Observations ministerial meeting in Cape Town, South Africa, the focus of which is the monitoring of forest and other ecosystems.

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