

Uphill for the trees of the world

September 24 2013



The forests of the future will to a greater extent be forced to grow on steep slopes all over the world. Credit: Colourbox

Human civilisation has had an impact on the world, and it continues to have an even greater impact. One of these is that the forests have been cleared and especially so in flat lowlands, so that they have gradually become restricted to steep terrain. This pattern is now emerging all across the world.

Developed countries have been particularly efficient at removing forests from fertile, flat areas of land. The process has been going on throughout the last centuries, for example in Europe. And there is a clear correlation. The better the economy, the better the political organisation,

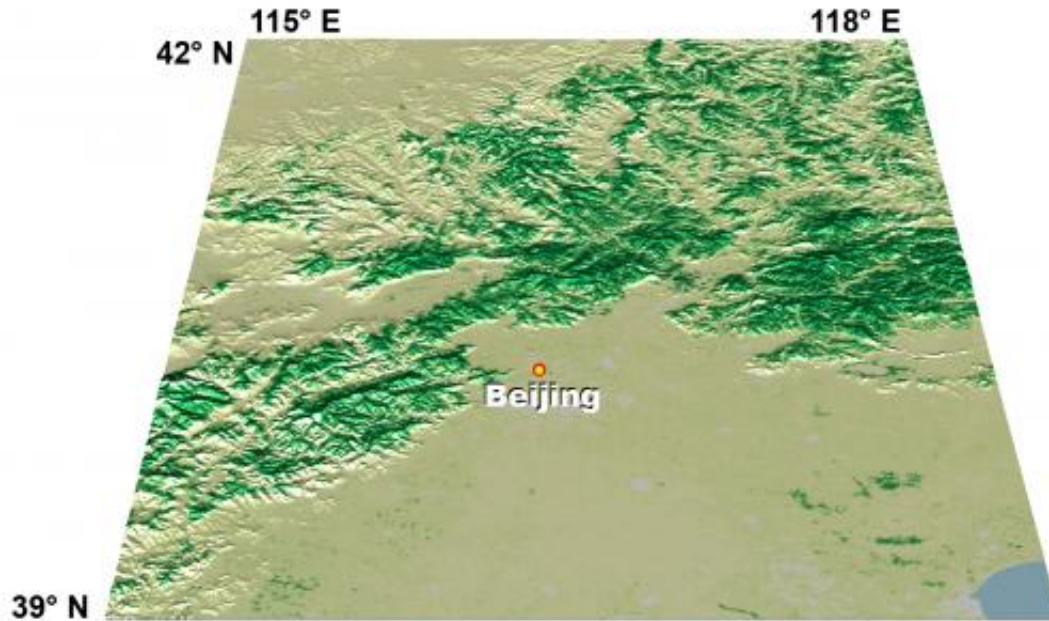
and the more orderly societal conditions a country has, the more efficient the population has been at restricting forests to steep areas, reflecting their lower utility and value.

Researchers at Aarhus University, Denmark, have reached this conclusion by making use of the rapidly increasing amount of data from satellites that monitor the [global environment](#) with a high level of detail. The researchers analysed high-resolution global satellite data describing the distribution of tree cover in the period 2000-2005, linking this to [global data](#) for terrain (slope), climate, human activity, and a number of political and socio-[economic factors](#).

The study is being published in *Nature Communications* on Tuesday 24 September 2013.

A tendency that is spreading

While the process has been going on in densely populated, [developed countries](#) for a long time, it has also accelerated in recent times in less well-developed countries and societies, which have also started to clear forests to make room for agriculture and [urban development](#). In thinly populated areas such as parts of Amazon, Siberia and Congo, there are still large, continuous stretches of unspoiled forests. As populations grow and human impacts increase, however, development will increasingly affect even these relatively isolated areas.



In the area near Beijing in China, intense human activity has to a large part restricted the forests to steep mountainous areas -- and this applies to natural forests in particular. Credit: Jens-Christian Svenning, Aarhus University

The more well-developed societies around the world are now increasingly replanting trees, just as forests are naturally regrowing in areas that have been abandoned as people move to the cities. These dynamics occur in steep areas in particular, given modern efficient land use practices cannot easily be implemented here, strengthening the development leading towards future forests becoming concentrated on slopes.

Less biodiversity

This development gives rise to concern about the biodiversity of the forests of the future, according to Brody Sandel, who is one of the researchers responsible for the study.

"The remaining forests on slopes are typically divided into smaller areas that are not continuous. For example, fragmentation reduces the availability of interior forest habitat that is preferred by many bird species. There are also a number of large predators, such as big cats like the tiger, which require extensive areas of continuous forest to be able to get enough food or avoid human persecution," explains Brody Sandel.

In addition, small and fragmented forests are subject to more wind impact, more intense sunlight on the forest floor, and more disturbance. This results in a hotter and drier microclimate, and will have an impact on species composition in the forests of the future, promoting species that do not require a stable, dense forest environment.

"On the other hand, species in steep mountainous areas can better track their preferred climate as it becomes warmer. Hence, considering future climate change, it's fortunate that forests will especially occur on [steep terrain](#) in the future. It's thus a blessing in disguise that the general loss of forests has less effect on slopes," adds Professor Jens-Christian Svenning, Aarhus University, who is spearheading the research project.

Provided by Aarhus University

Citation: Uphill for the trees of the world (2013, September 24) retrieved 27 April 2024 from <https://phys.org/news/2013-09-uphill-trees-world.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.