

Researchers test sustainable forestry policies on tropical deforestation, logging

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Jodi Brandt, a former postdoctoral researcher at Dartmouth College and now an assistant professor at Boise State University, and her colleagues show that policies aimed at protecting tropical forests in the Congo Basin may unexpectedly lead to increased deforestation and timber production. Credit: Jodi Brandt

New research by a Dartmouth scientist and her colleagues shows that policies aimed at protecting tropical forests in the Congo Basin may unexpectedly lead to increased deforestation and timber production.

The findings link tropical deforestation—in the Congo Basin and globally—with rising international demand for timber, foreign investment and other factors, and contradict the goal of collaborative efforts by governments, environmentalists and corporations to adopt sustainable forest management since the 1992 Rio Summit.

The two studies found that the problem isn't clear-cutting by illegal operators but primarily "indirect deforestation." Such causes include legal [logging](#) roads built by timber companies—in compliance with sustainable forestry policies—that require highly-selective logging. The research suggests that selective logging has a negative consequence of spreading out logging activities over larger areas and into interior forests. The researchers also found evidence that human settlements grow more where there are legal timber operations, leading to an increased human presence in these remote, interior forest regions.

The [new study](#) appears in the journal *Land Use Policy*. It follows a [study](#) published last year in the journal *Environmental Research Letters*.

"The global conservation community has invested tremendous resources in sustainable forest management principles and has supported policy changes in its favor," says lead author [Jodi Brandt, a former postdoctoral researcher at Dartmouth College and now an assistant professor](#) at Boise State University. "But our results suggest caution and highlight a need for more rigorous and systematic scrutiny of commercial logging practices and sustainable forestry policies in tropical forest ecosystems worldwide. Human activities often have unintended consequences, so we need to regularly assess, in an unbiased manner, the impacts of our activities and policies. We hope these papers stimulate a conversation

and more research about the sustainability of industrial logging not just in the Congo but in other tropical forests around the globe."

About one billion acres of tropical forests worldwide are managed for timber production, making up more than half of the world's remaining tropical forests. A growing proportion of these forests are managed under sustainable policies meant to reduce deforestation, promote biodiversity and improve incomes, but little is known about how these policies influence forest conservation.

In the Congo, Brandt and her colleagues analyzed deforestation patterns from satellite imagery and the forestry management practices of European, Asian and Congolese logging companies and their compliance with the Congo's sustainable forestry law during the 10 years after it passed in 2000.

In the first study, the researchers found that European companies had the highest core and edge [deforestation rates](#) despite being far more compliant with the sustainable forestry policies, which suggests the policies were behind the deforestation.

In the latest study, the researchers investigated that possibility by measuring timber production and deforestation in leases that implemented the sustainable policies compared to those that did not. They found that timber production was higher, and more stable, in compliant leases versus non-compliant leases. Additionally, deforestation rates were up to two times higher in the compliant leases than in the non-compliant ones.

Forest management plans, which are detailed plans for selective logging in certain areas for a specific time, are designed to allow harvestable trees time to mature before the next logging cycle. The concept of sustainable forestry was conceived in Germany in the 1700s in response

to a severe timber scarcity. The forest management plan framework was subsequently developed as a means to ensure long-term timber stocks. Since the early 19th century, forest management plans have been attempted in tropical forests and now are used in 46 percent of tropical production forests worldwide. The plans are considered a key tool for climate change mitigation and biodiversity conservation because they are expected to limit deforestation and forest degradation.

The impact of [forest management](#) plans assumes a greater global importance in the Congo Basin, which holds the second-largest intact tropical forests in the world and represents 25 percent of the carbon stored in [tropical forests](#) worldwide. It also is the last core habitat for a number of endangered wildlife species, including the western lowland gorilla, forest elephant and bonobo. In the 1990s, logging expanded throughout the Congo Basin with disastrous impacts for wildlife. In an effort to achieve both forest conservation and economic development, Congo Basin countries implemented a unified "conservation landscape" approach, which includes protected areas surrounded by logging leases operating under [sustainable forest management](#) principles.

More information: [dx.doi.org/10.1016/j.landusepol.2015.11.028](https://doi.org/10.1016/j.landusepol.2015.11.028)

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