

FOREST PRODUCTS LABORATORY

Rooted in Research

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**Commercial Forestry and Conservation Can Coexist:
Economic Implications of Increased Forest Protection**

Forests around the world serve a wide variety of functions, from providing habitats for many species to delivering economic benefits for communities. Conserving forests is often seen as a cost to commercial forestry in that removing land from production could reduce wood supply and jobs. Research led by scientists with the U.S. Department of Agriculture, Forest Service, however, shows that increased conservation may not necessarily come at a cost.

A new study published in *Nature Communications* by researchers at the Forest Products Laboratory and the Southern Research Station, and their collaborators, tested several global forest conservation scenarios and evaluated how these scenarios affected harvestable area, roundwood production, and prices within the global forestry sector. Building on previous studies, they considered how forest protection could change prices and expanded their analysis to include 180 countries. These new results challenge previous findings and suggest that increased forest protection could, for most countries, result in a net economic gain.

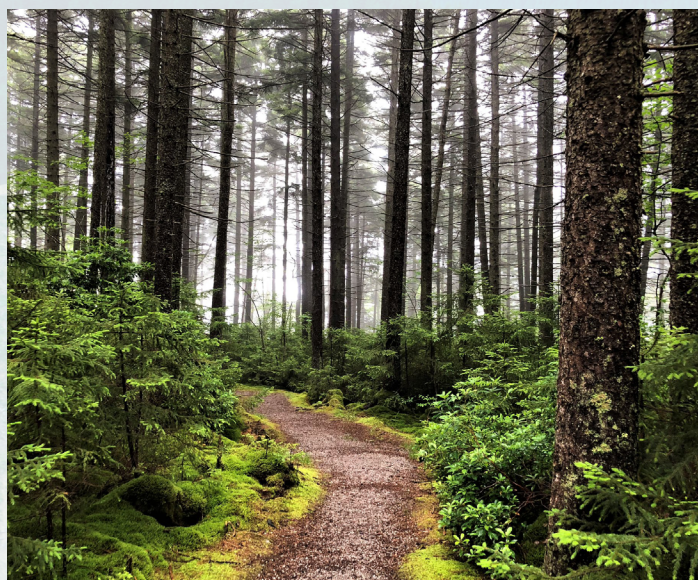
Testing Three Scenarios

The research team tested three different scenarios in which more land was protected for conservation, agriculture, or both. They used an optimization technique called integer linear programming to determine the ideal set of protected areas using several constraints. These scenarios include:

- **Biological Focus:** uses integer linear programming to protect 30 percent of forests globally without any consideration of the economic consequences of doing so.
- **Agro-economic Focus:** removes all natural areas that could potentially be converted to agriculture to meet food production needs from consideration before using integer linear programming to protect 30 percent of forests.
- **Biological-agroeconomic Compromise:** compromises global forest protection and food production needs.

PUBLIC BENEFITS

Study results suggest that increased forest conservation can coexist with commercial wood production, supporting ecosystem services without sacrificing economic prosperity.



View from Gaudineer Scenic Area, one of the first two scenic areas on the Monongahela National Forest protected for scientific and educational purposes. Forest Service photo.

KEY MANAGEMENT IMPLICATIONS

1. Conserving 30 percent of forests globally by 2030 may reduce total harvestable area by 6 to 16 percent and roundwood production by 0.7 to 1.8 percent.
2. Despite harvest reductions, global net output value is expected to increase by 1.5 to 5.4 percent by 2060, which leads to a net economic gain for most countries.
3. Protecting a substantial amount of global forests may not come at as high a cost to the wood products sector as previously thought and may actually result in a small benefit for most countries.

The scenarios were tested using the Global Forest Products Model, which only analyzes the forest products market while assuming conditions for all other markets remain constant. The researchers considered 14 categories of forest products in 180 countries and estimated economic outcomes (e.g., production, consumption, prices, revenues), as well as changes in forest and wood volume. They calculated the net output value for each country, which subtracts the production costs from the revenues, to estimate net economic gains or losses. They used forestry costs (e.g., costs associated with harvesting, transportation) based on 68 peer reviewed or gray literature studies in their model.

To determine the robustness of their results, they reran the model after varying several factors, including transport costs and market price sensitivity following decreases in wood supply. These sensitivity tests confirmed that their overall conclusions were reliable, even with substantial variation in these factors.



Timber sale on the Manti-La Sal National Forest in Utah. Forest Service photo.

FOREST SERVICE CONTACTS

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Global Net Gains

Despite all forest protection scenarios leading to a reduction in harvestable area by 6 to 16 percent and a reduction in roundwood production by 0.7 to 1.8 percent, all scenarios led to an increase in global prices for the wood products modeled (0.3 percent to 3.0 percent depending on the scenario and the wood product). Together, all scenarios resulted in an increase in global net output value ranging from 1.5 to 5.4 percent by 2060. Instead of coming at a large cost, therefore, ambitious forest conservation efforts could result in an overall benefit to producers.

Specifically, under all three scenarios, more than 70 percent of countries were projected to increase their net output value. Up to 87 percent of countries experienced an increase in net output value in the agroeconomic focus scenario. Several of the countries with projected net output value losses are ones that have historically faced high levels of deforestation and may consequently already be prioritizing forest conservation to protect what remains.

Limitations and Insights

While this modeling study was global in scale, it could not address all factors. The Global Forest Products Model only considers effects on the forestry sector and does not consider possible interactions with other sectors. For example, this model cannot consider a scenario in which higher prices on wood products might lead to an increase in use of non-timber materials, such as concrete and steel.

Overall, this work introduces the idea that conserving more forests does not have to come at a large cost to many countries and that, globally, it is possible to protect ecosystem services and habitats for many species while still creating wood products and supporting forest-based economies.

FURTHER READING

Nepal, P; Waldron, A.; Prestemon, J.P.; Gopalakrishna, T.; Jung, M. 2026. **Economic costs of global forest protection may be overstated.** Nature Communications. 17: 6649. <https://doi.org/10.1038/s41467-026-73569-0>.

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For questions on Rooted in Research, please contact [Jenna Zukswert](#). Technical editing by [Susan Barro](#). Design and layout by [Jeremy Siegrist](#).



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