



## **The Impact of Climate Change on Tropical Forest Ecosystems**

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The study found that climate change could result in a decline in climate regulation and habitat availability in 24-62% of the study area, depending on the scenario. This could result in annual economic costs ranging from 51 to 314 billion dollars by the end of the 21<sup>st</sup> century. The research was reported in [Nature Communications](#).

The research underlines the global relevance of tropical forests, which provide essential ecosystem services like climate regulation and habitat provision for biodiversity. On the other hand, climate change has the potential to damage these functions with substantial economic consequences.

The study emphasizes the importance of considering the economic implications of climate change-induced impacts on tropical forests in Central America, as well as the urgency of addressing climate change in order to reduce potential losses in ecosystem services and associated economic costs. More research and conservation efforts are needed to better understand and mitigate the effects of climate change on tropical forests and the ecological services they offer.

### **Global Biodiversity Hotspots**

One of the study's researchers, Lukas Baumbach, emphasized the significance of tropical forests in Central America as carbon sinks and biodiversity habitats. Due to their great species richness, these forests play an important role in climate regulation by sequestering carbon dioxide from the atmosphere.

They are also known as global biodiversity hotspots. However, there has been little research into how climate change can alter these ecosystem services, as well as the economic consequences on Central America's forest ecosystems.

This research helps fill this knowledge gap by providing insights into the potential impacts of climate change on the services provided by tropical forests in Central America.

The findings highlight the need to consider the economic costs associated with the potential reduction in climate regulation and habitat provision due to climate change.

This information can be used to support policy and conservation activities to minimize climate change's effects on tropical forests, safeguard their vital ecosystem services, and conserve their biodiversity.

According to the researchers' study, the reduction of ecosystem services in Central America's tropical forests, primarily tropical dry forests and montane rainforests, is more dramatic due to climate effects.

Economic losses connected with these shifts can be significant, especially in countries with low GDP, reaching up to 335% of GDP. Notably, the costs of reduced habitat provision were found to outweigh the costs of decreased carbon storage or climate regulation in most scenarios.

This suggests that the economic costs of climate change on biodiversity and habitat provision may be greater than the costs of carbon storage or climate regulation services.

This conclusion emphasizes the need to take into account the various characteristics of ecosystem services, such as habitat provision, when assessing the economic implications of climate change on tropical forests.

It emphasizes the importance of using integrated techniques to account for tropical forests' multiple values and functions in economic analyses, policymaking, and conservation activities. Conservation techniques that prioritize biodiversity protection and habitat provision, particularly in disadvantaged countries with limited economic resources, may be important for offsetting the economic losses linked to changes in ecosystem services in Central America's tropical forests.

#### **First Assessment of Economic Impact**

The research highlights the need for a more comprehensive approach when assessing the economic impacts of climate change on tropical forests in Central America. While carbon regulation has frequently been the primary focus due to the economic value associated with carbon markets, the study underlines the economic significance of additional ecosystem services supplied by tropical forests in addition to carbon storage and climate regulation.

The findings show that tropical forests should be recognized and considered for their numerous services, such as habitat providing biodiversity conservation, and other ecosystem functions.

By providing insight into the economic significance of other ecosystem services, the research highlights the need to take a holistic approach to assess the impacts of climate change on tropical forests.

This includes examining the varied values and functions of tropical forests beyond their role as carbon sinks and the economic consequences associated with changes in habitat availability and biodiversity conservation.

Integrating this larger understanding of ecosystem services into economic analyses, policymaking, and conservation activities can help ensure that tropical forests' full range of benefits is considered and appropriately accounted for in decision-making processes.

The results of the study emphasize the importance of taking a more comprehensive approach that recognizes and values the multiple ecosystem services provided by tropical forests, in addition to climate regulation, to truly comprehend and identify the economic impacts of climate change on these valuable ecosystems.

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