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## Group of researchers points out the problems caused by disorderly reforestation

### Planting trees may not be the solution to curb global warming

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Every year we see climate change getting worse and farther, caused by global warming and amplified by human activity. High temperatures, prolonged droughts, and melting glaciers are only part of the signs that something needs to be done to reverse the situation. The solution encountered by researchers at the [Swiss Federal Institute of Technology in Zurich](#), Switzerland, published in the article *The global tree restoration potential*, is to use the 0.9 billion hectares – equivalent to the territories of Brazil and almost all of Colombia – located outside urban and agricultural areas, to plant trees that would be able to capture 205 gigatons of carbon – corresponding to about a third of the amount of carbon released to date.

The proposed solution, however, was not broadly accepted by the scientific community. Thus, a group of researchers from different institutions around the world decided to publish a technical commentary, correcting some of the statements made in the article and recalculating the potential for carbon sequestration to 42 gigatons. Additionally, the mapped hectares include protected areas that could not be considered for reforestation, according to [Gerhard Overbeck](#), professor at the Department of Botany at UFRGS and co-author of the technical commentary. These regions are home to open biomes, such as fields and savannas, and planting trees there could turn them into a (closed) forest environment, destroying the current ecosystem and aggravating climate change.

In the Swiss work, it was not taken into account that fields and savannas are as capable of absorbing and storing carbon as forest environments. For example, in the humid tropical savannas found in Africa and Brazil – called *cerrado* in the latter – 86% of all carbon is in the soil. The authors of the commentary also warn that the carbon sequestered by trees in such closed forest environments can be dangerously released into the atmosphere in case of wildfires.

Moreover, the research work did not consider the influence of albedo on the local climate – dark surfaces reflect more heat. Thus, regions with large areas of vegetation cover produce more heat than open environments.

Finally, the professor reminds us that the necessity for disturbances in field and savanna environments was put aside, for controlled fire and grazing promote greater biodiversity and ensure environments will keep providing ecosystem services, such as serving as habitat for pollinating species and ensuring infiltration of water in the soil.

The authors of the technical commentary also argue that to prevent the advance of global warming it is necessary to restore the original state of ecosystems and stop carbon emissions. According to Overbeck, this would only be achieved with the establishment of policies that support scientific research and the creation of an infrastructure to restore open biomes, in which few seeds of native species still remain.

#### The importance of native vegetation

Professor Gerhard Overbeck was also part of a research study about the economic and environmental services provided by areas of native vegetation in Brazil. The study was carried out in partnership with Brazilian researchers from the [Coalizão Ciência e Sociedade](#) (Science and Society Coalition) group after the presentation of Bill no. 2.362 /2019, which would remove from Law 12.651 the requirement to preserve these areas. The project was not approved by the Federal Senate, but the group still considered the publication relevant for popular awareness.

The work addresses problems to biodiversity – but mainly to human beings – that would come with the authorization of deforestation of the “Legal Reserve” – constituted of strips of land inside private properties for sustainable economic use. The consequences would range from the loss of the recharging capacity of rivers and aquifers to the reduction of water quality, up to the erosion and loss of soil. To achieve the effective conservation of these places, not only maintenance would be necessary, but also the adoption of production mechanisms with less environmental impact, such as reducing the use of pesticides and better dividing the purposes of each space.

Native vegetation covers between 65% and 69% of Brazilian territory, but only 6% is used for biodiversity conservation, and most of these areas are located in the Amazon region, recently affected by wildfires. According to the study, these areas generate approximately R\$ 6 trillion for the Brazilian economy through the provision of ecosystem services, such as: climate regulation, the storage of about 21% of the country's carbon, and the harvesting of drinking water and water for hydropower and agriculture. These data are estimates because, according to the researcher, the works used utilize different values for each service.



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