



INTER-AMERICAN INSTITUTE FOR GLOBAL CHANGE RESEARCH

Conservation policy impacts in tropical dry forest: regional & spatially focused analysis given other social and natural drivers of land use (SGP-HD008)

Effective conservation of tropical dry forest requires innovative approaches that are well rooted in scientific excellence. This project is evaluating the impacts of payments and of establishment of reserves in tropical dry forest areas in Costa Rica and Brazil. Payments for ecosystem services and the establishment of forest reserves are important conservation tools. The project addresses the following questions: what factors affect deforestation in tropical dry forests, and does the driving dynamic differ from the dominant forces for other forest types? How effective are the conservation policies, such as payments for ecological services (in Costa Rica, PSAs, Pagos por Servicios Ambientales) and the establishment of forest reserves (parks), in reducing deforestation in tropical dry forest locations?

Goals

- Compare the impacts of protected areas and payments for environmental services on tropical dry forest with those on other forest areas in Costa Rica and Brazil. Costa Rica is a global leader in eco-payments and parks.

Results

- When assessing impacts of policies, studies have to control for non-policy factors.
- Assimilating the impacts of non-policy drivers of land use and especially, deforestation, helps us to understand whether non-policy factors are confounding the analysis of eco-payment policies that pay land users for protection services they provide to society. In fact, impacts of biophysical (e.g.; slopes, soil quality, rainfall) and socioeconomic drivers (e.g.; distance to markets and roads) could be confirmed, so that it may not have been eco-payments but other factors that prevented clearing. Thus, the design of eco-payment policies matters a lot for their success.
- Conservation areas: protected areas have prevented significant amounts of clearing in Costa Rica, which is a pioneer country in the establishment of parks. Yet, conventional approaches to evaluating conservation impact, which did not control for observable covariates correlated with both protection and deforestation, substantially overestimated avoided deforestation (by over 65%, based on our estimates). More careful analysis shows that parks have prevented much less clearing than is commonly believed, as they were often established in places (distant and inaccessible, or on slopes) which were less under threat than other forest land. Thus, conservation policy designs, as well as the location of the protected areas, are both critical factors to prevent deforestation. If protected areas are targeted on locations where clearing is most likely, the impact can be raised.
- A study found that protected areas within 85 km of Costa Rica's capitol city, San Jose, prevented over 4% of their forest area from being cleared during 1986-1997. Those further away prevented under 1%. Protection within 7.5 km of national roads blocked the clearing of about 5% of the forest, and protection on land with slopes under 7.12 degrees avoided 14% deforestation, while essentially no protection (i.e., not statistically different from zero) resulted from the protected areas far from national roads or those that were located on high slopes.

Principal investigator and lead agency

Alexander Pfaff - alex.pfaff@columbia.edu
Duke University (USA)

Co-investigators

Juan Robalino (LACEEP & Environment for Development center, Turrialba, Costa Rica), Mario Marcos do Espirito Santo (Universidade Estadual de Montes Claros, Brazil), Sebastian Salazar (Fundacion Neotropica, Costa Rica), Laura Villalobos (CATIE, Costa Rica), Lorena Coronel (Tropical Forest and Biodiversity Conservation Management, CATIE), Luis Diego Herrera (Economics, University of Costa Rica, Costa Rica)

Links to ther IAI projects

This project integrates with and extends the Collaborative Network project **CRN2021 on Human, Ecological and Biophysical Dimensions of Tropical Dry Forests**

List of publications: <http://iaibr.l.jai.int/bs?publications/SGPHD008.pdf>



Dry forests in Brazil

