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Quantifying the risk of deforestation in Latin America and the Caribbean.

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Latin American and Caribbean countries have seen considerable deforestation due to a complex web of interconnected and interdependent causes, which include agricultural expansion, infrastructure development, social demographics and governmental policies and activity. It is necessary for successful and efficient policy development to understand how variability in these causes can potentially result in increased or decreased deforestation. The purpose of this study is to develop a tool that can quantify the risk, as in the threat or pressure, of potential deforestation, whilst identifying the key indicators that contribute to this risk. This tool will take the form of a composite index that will provide spatial and temporal trends of deforestation risk across Latin America and the Caribbean. The development of the Deforestation Risk Index (DRI) was based upon work performed in the EU project ROBIN¹. Indicators of deforestation included in the index were identified based upon the multi-scalar approach adopted in ROBIN- nationally from principal component analysis and econometric modelling, provincially from extensive interviews with experts and farmers (subsistence and commercial) in Amazonian regions of Bolivia and Brazil, and locally from stakeholder workshops in Bolivia, Brazil and Mexico. The identification process was supported by an extensive literature review. In total, 11 indicators were identified and grouped into four components (biophysical, economic, governance and social) capable of explaining the risk of deforestation in Latin America and Caribbean countries.

The DRI was calculated for 24 Latin American and Caribbean countries in the years 2000, 2005 and 2010 using national-level data collected from open access databases (FAOStat, WorldBank and UNDP). The DRI was subjected to two weighting schemes; the first based upon the opinions of experts from ROBIN (weighted biophysical and governance components heavily), and the second developed from the results of the ROBIN stakeholder workshops (heavily weighted the governance component). The results from the DRI were categorised as; low risk, moderate risk, at risk, elevated risk, high risk and extreme risk.

The DRI demonstrated that in over 60% of countries, the risk of deforestation reduced between 2000-2010 with Belize, Costa Rica, Guyana and Venezuela being notable exceptions. Countries that saw reductions in their risk did so through economic growth (per capita GDP), institutional development (governmental effectiveness and regulatory quality), as well reductions in the scale of agricultural expansion. Despite the general trend towards lower risk, Amazonian countries were still found to be subject to potential deforestation. Bolivia, Ecuador, Guyana and Suriname were estimated to have an elevated risk of deforestation, with Brazil, Colombia and Peru considered to be at risk in 2010.

The DRI provides an innovative, potentially multi-scalar tool, that can be used by national policy makers to identify where policies should be developed and directed, where specific measures in international programs such as REDD/+ could be most effectively pursued, and for international policy makers to identify and to tailor development or aid packages that reduce rather than contribute to deforestation.

¹ROBIN (The Role of Biodiversity in Climate Change Mitigation in Latin America, from the EC FP7, n° 283093)