



Tropentag, September 17-19, 2013, Stuttgart-Hohenheim
“Agricultural development within the rural-urban continuum”

Evaluating the Effectiveness of Protected Areas in Preventing Deforestation: Case Study of Evergreen Forest Colombia

MIKE HARVEY SALAZAR VILLEGAS, ALEJANDRO COCA CASTRO, LOUIS REYMONDIN, ANDY JARVIS

International Center for Tropical Agriculture (CIAT), Decision and Policy Analysis (DAPA), Colombia

Abstract

Evaluate effectiveness of protected areas PA(s) and indigenous reserves IR(s) in preventing deforestation is becoming more important given the crucial role of forest conservation in climate change mitigation. Monitoring deforestation using near real-time remote sensing is practical for detecting forest cover change trends and identifying protection levels. Information on how effective PA network in Colombia represent global and national conservation priorities is essential for developing and implementing policies for conserving forest habitats and development benefits.

Here, we evaluate the effectiveness of 80 Colombia PA(s) preventing forest loss under three forest conservation management strategies: 22/II–IV, 10/VI IUCN categories and 48/IR(s). We mapped annual forest cover change from 2005 to 2011 using Terra-i (250 m) joined to GlobCover 2005 (300 m) inside and in the 10-km buffers outside the PA(s). We used GlobCover re-classified to identify the extent of evergreen forest cover as base map. Based on these data we develop an effectiveness index including percentage of loss inside PA(s), the comparison of loss inside and outside PA(s), annual rate of loss inside PA(s) and the comparison of annual rate of loss inside and outside PA(s). The total forest cover area lost between 2005 and 2011 comprised 1.1 % nationwide and 0.3 % of the PA network, equivalent to 57.000 ha. Inside PA(s), loss of forest occurred in 20 % of those located in the category II–IV, 9 % in the VI and 55 % in the IR(s), while 23 %, 11 % and 60 %, experienced lost outside, respectively. Moreover, we identify four effectiveness categories: very-satisfactory, satisfactory, dissatisfactory and very-dissatisfactory. Nearly 51 % of PAs were effective, described as satisfactory and very-satisfactory protection level. Moreover, 60 % VI/IUCN, 54 % II-IV/IUCN categories and 45 % IR(s) were identified as effective.

These results suggest that loss of evergreen forest cover in Colombia PA network is substantially low in comparison with countries in Central Africa, South and Southeast Asia. The IUCN categories hardly explain the differences between effectiveness levels of protection. Hence, the application of another empirical method is recommended to control for landscape characteristics that can influence deforestation. Finally, forest protection strategies can contribute both to biodiversity conservation and climate change mitigation goals.

Keywords: Effectiveness protection, forest cover loss, indigenous reserves