

# **The potential of Tradable Development Rights (TDR) to improve effectiveness and reduce the costs of biodiversity conservation: study case in Sao Paulo, Brazil**

Paula Bernasconi<sup>1</sup>, Stefan Blumentrath<sup>2</sup>, David N. Barton<sup>2</sup>; Graciela M. Rusch<sup>2</sup>, Ademair R. Romeiro<sup>1</sup>

<sup>1</sup>Institute of Economics at the University of Campinas (UNICAMP), Brazil. <sup>2</sup>Norwegian Institute for Nature Research (NINA), Norway.

Until today, direct regulation has been the most important type of policy for biodiversity conservation in Brazil. This has resulted in conflicts with rural sector about compliance costs and has led to limited effect on nature conservation. The main command-and-control (C&C) instrument for forest conservation is the Forest Code, which was newly amended in 2012. It requires that all private properties set aside parts of their properties for conservation, called Forest Reserve. This law has passed through many alterations and has been poorly enforced, resulting in a current very low compliance.

However, the recent change in the law has made it less strict, and a higher level of enforcement and compliance is expected. In order to reduce the economic impact of the Forest Reserve on landowners some flexible mechanisms are being discussed and proposed. One of them is the compensation of Forest Reserve requirements in another farm, as a form of tradable development rights (TDR). The landowners who have deforested more than allowed by law can compensate their deficit in another farm which has more natural vegetation than required.

The aim of implementing TDRs is to reduce the opportunity costs of conservation but it also opens to the possibility of improving gains in conservation if the instrument targets priority areas for conservation. In this paper we evaluated the possible effects of the TDR on the conservation outcomes considering both the opportunity costs and ecological effectiveness and compared this to a pure command-and-control (C&C) approach, i.e. compliance to the Forest Code on own property.

Using the conservation planning software Marxan with Zones we conducted an ex-ante policy evaluation by simulating different scenarios that combine policies and market constraints for the forest reserve market, and evaluating their cost-effectiveness. We focused our study in the state of Sao Paulo, the most industrialized and most populated in Brazil, which faces many ecological challenges.

Our results showed a clear potential of the TDR to both reduce compliance costs and improve ecological effectiveness depending on different market restrictions on allocation of forest reserves.