Jurisdictional Reward Funds for Tropical Forest Conservation and Restoration

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Abstract

Tropical forests are disappearing at an alarming rate, yet large efficiency gains remain untapped in international climate finance. A promising solution is to pay countries directly for forest conservation based on measured deforestation rates. However, existing payment schemes have a critical flaw: they set individual baselines for each country, often adjusted based on past performance. This creates a "ratchet effect"- countries deliberately underperform today to avoid tougher targets tomorrow, undermining effectiveness. We propose an optimized jurisdictional reward fund (JRF) with a universal, formula-based design that avoids this perverse incentive. We explore the optimal design of the Reversing Deforestation Mechanism (RDM) proposed by Assuncao et al. (2025), a jurisdictional reward fund that would pay jurisdictions on the basis of the net deforestation rate, defined as the emissions from deforestation and degradation minus the carbon captured through forest restoration. In this paper, we develop a dynamic model in which countries choose net deforestation rates in response to reward payments linked to a universal reference level. We show that static, contemporaneous incentives dominate dynamic, stock-based incentives, implying that optimal design can be well approximated using a static framework. We derive closed-form formulas for the optimal reference level, reward rate, and emission reductions as functions of budget, calibrated to empirical deforestation data from 76 tropical forest countries (2002–2024). Using a uniform distribution approximation, we show remarkable tractability with less than 10% error compared to discrete-country models. In the funding game, China, EU emerge as a stable coalition that would each year donate USD 9.6 billion out of collective self-interest, avoiding an annual flow of 213 MtCO2 emissions by saving an annual flow of 0.52 million hectares of tropical forests.

Keywords Reward Funds · Tropical Forests · Deforestation · Tropical Forest Forever Facility · Incentives

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