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# Linking Forest Tenure Reform, Environmental Compliance, and Incentives: Lessons from REDD+ Initiatives in the Brazilian Amazon

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**Summary.** — Pervasive tenure insecurity in developing countries is a key challenge for REDD+. Brazil, a leader in REDD+, has advanced efforts to link forest tenure reform and environmental compliance. We describe how these policies have shaped sub-national interventions with detailed data on land tenure and livelihoods in four REDD+ pilot sites in the Brazilian Amazon. Despite different local contexts, REDD+ proponents have converged on a similar strategy of collaborating with government agencies to clarify tenure

and pave the way for a mix of regulatory enforcement and incentive-based REDD+ mechanisms. This polycentric governance model holds promise for effective and equitable REDD+ implementation.  
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*Key words* — Latin America, Brazil, climate change, deforestation, forest degradation, property rights

## 1. INTRODUCTION

Strategies to reduce carbon emissions through avoided deforestation and forest degradation and enhancement of carbon stocks (REDD+) have been proposed as a cost-effective way to mitigate global climate change through interventions in developing countries. REDD+ is also seen by many as a way to bolster livelihoods of local communities and promote other social and environmental co-benefits (Brown, Seymour, & Peskett, 2008; Stickler *et al.*, 2009). Since the Bali Road Map of 2007, where the idea began to take shape, hundreds of first-generation REDD+ initiatives have emerged at the sub-national scale throughout the tropics, including many in the Brazilian Amazon (Cenamo, Paván, Campos, Barros, & Carvalho, 2009; GCP, 2011; Sills, Madeira, Sunderlin, & Wertz-Kanounnikoff, 2009). These initiatives range from localized projects to jurisdictional REDD+ approaches. While these REDD+ projects are pursuing initiatives include diverse strategies to reduce emissions and enhance stocks of forest carbon, they almost universally face the challenge of poorly defined and/or enforced tenure rights to both forests and carbon (Sunderlin *et al.*, 2014). The success of REDD+ hinges in part on finding ways to clarify these tenure rights, either as a pre-condition or as an initial step in REDD+ interventions (Larson *et al.*, 2010; Streck, 2009; Sunderlin, Larson, & Cronkleton, 2009). Incipient sub-national REDD+ initiatives in the Brazilian Amazon offer insights on tenure issues, providing an important test of whether or not national advances in linking forest tenure reform and environmental compliance have made a difference for early REDD+ implementation on the ground.

Tenure rights have important implications for all common REDD+ interventions, including both regulatory enforcement measures and incentive-based conservation tools, such as payments for environmental services (PES) and promotion of alternative livelihoods based on the sustainable use of natural resources. For instance, under Brazil's Forest Code,<sup>1</sup> which establishes a minimum level of 80% forest cover on private lands in the Amazon, the legality of clearing can only be determined with knowledge of land ownership or use rights. Likewise, if land is claimed by more than one individual, liability for environmental offenses may not be clearly established. REDD+ that is based on direct conditional payments, in principle, faces even greater challenges than regulatory measures when it comes to contract enforcement; PES requires not only *de jure* rights to land but also the ability to *de facto* prevent third parties from changing land cover without consent (Börner *et al.*, 2010). Such rights must be defined to minimize the risk of deforestation under PES contracts and allow for effective measurement, reporting, and verification. Similar challenges would apply to REDD+ support for promotion of sustainable livelihood alternatives (Sunderlin & Sills, 2012): to use this as a performance-based REDD+ strategy, it must be clear who gets the credit for forest conservation, and who bears the responsibility for deforestation. Clarifying and securing tenure rights—before REDD+ begins—is thus needed for the application of both regulatory and incentive-based REDD+ mechanisms.

Brazil is distinctive among tropical countries for its record of providing ownership and access rights to forest-dwelling people, especially in the Amazon (Sunderlin, Hatcher, & Liddle, 2008). More recently, Brazil stands out for its policies linking forest tenure reform efforts with environmental compliance. Despite these initiatives, poor land rights delimitation and pervasive tenure insecurity in the Amazon, even in some areas with allegedly well-defined tenure, are considered major barriers to national REDD+ implementation (May, Millikan, & Gebara, 2011). Thus, the proponents of sub-national REDD+ initiatives in the Brazilian Amazon face tenure difficulties typical of tropical forest regions, but with perhaps a unique opportunity to leverage national policies to address these challenges.

The Brazilian Legal Amazon<sup>2</sup> encompasses about 60% of the Amazon biome, which is the largest contiguous tropical forest in the world, alone containing half of global terrestrial biological diversity and one-fourth of its primary productivity (Soares-Filho *et al.*, 2004). From 1996 to 2005, an average 19,500 km<sup>2</sup>/year of Amazonian forest in Brazil was cleared for pastures and croplands (Nepstad *et al.*, 2009) and even larger areas degraded through conventional logging and forest fires (Asner *et al.*, 2005; Cochrane *et al.*, 1999), making it a key region for REDD+ action. In a demonstration of leadership in the ongoing international climate change discussions, Brazil committed to reducing its Amazonian deforestation to 80% of 1996–2005 levels by 2020, including this target in its 2010 national climate change mitigation plan. In fact, Brazil has achieved substantial reduction in Amazonian deforestation since 2005, largely due to the implementation of several national conservation policies (Assunção, Gandour, & Rocha, 2012). These advances, however, are threatened by recent changes to the Forest Code,<sup>3</sup> which lessen environmental compliance requirements and could lead to a new wave of deforestation.

Brazilian sub-national REDD+ initiatives provide a concrete testing ground for design and implementation of REDD+ interventions in a setting where there is government commitment to and progress in clarifying forest land tenure. We examine four incipient REDD+ initiatives in the Brazilian Amazon and ask the following questions to better understand

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