Forum

# Carbon, forests and the REDD paradox

Chris Sandbrook, Fred Nelson, William M. Adams and Arun Agrawal

**Abstract** The institutional arrangements governing forests will be a critical factor in reducing emissions from deforestation and forest degradation (REDD) as part of the global effort to mitigate climate change. A growing body of empirical research demonstrates how local forest governance can be as, if not more, effective than centralized state-based regimes. Local forest governance can secure improvements in multiple forest outcomes such as biomass and carbon storage and livelihoods contributions for the poor, and it can do so at lower cost than is possible through centralized governance. Many national governments have implicitly recognized these findings in their pursuit of decentralized forest governance and in strengthening local rights and capacities to use and manage forests. However, such reforms are often politically resisted, particularly where the value of forest resources is high and central government bodies are able to capture the majority of benefits. Ongoing negotiations related to the design and delivery of REDD policy and practice must take into account both the importance of local forest governance arrangements and the political–economic barriers to devolving secure rights over forests to local communities. These political dimensions of forest tenure and policy create a paradox for REDD: increasing the value of forest resources through global carbon markets without attending to local governance and rights will create political incentives towards centralized governance, which could lead to greater forest loss and lower forest-related benefits for the poor.

**Keywords** Community, decentralization, global climate change, governance, payments for ecosystem services, REDD, tenure, tropical forest

## Introduction

Forest loss, primarily tropical deforestation and forest degradation, accounts for 12–17% of global greenhouse gas emissions (Rogner et al., 2007; van der Werf et al., 2009). Reducing emissions from deforestation and forest degradation (REDD) in developing countries has therefore become a priority for global climate change policy (IPCC, 2007; Stern, 2007). The most popular approach to REDD is a form of payments for ecosystem services that rewards reductions in forest loss and degradation (Bond et al., 2009). Payments for REDD will increase the economic value of forest resources in developing countries and the incentives for conserving forests. However, implementation of REDD projects faces a range of technical and institutional challenges (Angelsen, 2008). In particular, the design of any REDD mechanism must take account of existing knowledge about forest governance. This includes not only the effectiveness, efficiency and equity implications of different forest governance regimes but also the political processes that determine how forest governance institutions are shaped.

Here we review a growing body of empirical research that documents how local forest governance regimes can be as, if not more, effective than centralized state-based regimes in terms of achieving REDD and forest conservation outcomes under many different conditions. We review how political processes influence the shape of forest governance regimes in ways that are not related to technical forest management outcomes, particularly where the commercial value of forest resources is high. Finally, we introduce a resulting paradox for the delivery of REDD that increasing the value of forest resources through global carbon markets will create political incentives for governance arrangements that are unlikely to prevent forest loss and degradation.

## Governance, local communities and forest carbon

Although scholars of macro-level deforestation trends have tended to focus on human population levels and market pressures as causal factors, increasing attention is now being paid, especially in studies of deforestation at the local level, to how forest governance institutions moderate such forces (Agrawal, 2007). Forest governance refers to 'who gets to decide what about forests, and how' (Cotula & Mayers, 2009). The majority of the world's forests are owned by governments (86%), with the remainder under private (10%) or communal ownership (< 4%; FAO, 2005). However, formal forest statistics under-report communal forest tenure. Furthermore, formal forest tenure regimes in developing nations are frequently characterized by a lack of transparency, high levels of corruption and weak

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enforcement. As a result, large areas of forest are effectively under complex informal tenure arrangements, distinct from customary tenure regimes (Bond et al., 2009; Cotula & Mayers, 2009). In total, according to recently compiled figures, nearly 27% of all tropical forests are under various customary and communal tenure arrangements, and there has been an increasing trend towards decentralized forest governance in the tropics, where local communities and forest users now govern close to an additional 200 million ha of forests compared to the 1980s (Sunderlin et al., 2007; Agrawal et al., 2008).

A large body of theoretical and empirical research has examined the governance conditions conducive to sustainable management of communally held natural resources (Dietz et al., 2003; Ostrom & Nagendra, 2006; Ostrom, 2009). This body of work highlights the importance of clear definition of user rights and responsibilities, participation by those who use and depend on forest resources, downward and horizontal accountability of decision makers and monitoring of forest management outcomes, stronger enforcement of property rights and governance arrangements, and high investments in institutional capacities locally, regionally and nationally (Agrawal et al., 2008; Ostrom, 2009).

Numerous national case studies of forest management across a diverse range of socio-economic and ecological conditions provide evidence of forest recoveries or conservation linked to relatively secure local rights to use and manage forests. Mexico provides a large-scale example of sustainable local forest management regimes, with as much as 80% of the country's total forest area under communal local ownership (Bray et al., 2003, 2005). Significant amounts of reforestation in Nepal's middle hills and Terai plains are attributed to the role of the country's communal forestry programme, with local forest regimes (either leasehold or communal) associated with forest recoveries whereas centralized government forests have continued to deteriorate (Nagendra, 2007). In Tanzania, which possesses one of sub-Saharan Africa's most advanced participatory forest management programmes, Blomley et al. (2008) synthesize data from a series of comparative analyses of locally managed or co-managed forests and open access or government-managed forests. They conclude that

> All three of our case studies indicate that participatory forest management appears to be contributing to sustainable forest management ... This contrasts with measurements taken on land administered solely by government agencies with no community involvement, or on village land under open access arrangements, where forest condition is typically declining.

Additional important recent local or national case studies on the role of local collective forest governance regimes in preventing deforestation include studies from India, Brazil and Madagascar. Somanathan et al. (2009) analyse remotely sensed data to conclude that for forests in the Central Himalayas, management by village councils 'costs an order of magnitude less per unit area, and does no worse, and possibly better at conservation than state management'. Nepstad et al. (2006) use remote sensing data to evaluate the impact of Brazilian indigenous community lands in preventing deforestation and fires along frontiers of land-use change and colonization and find that 'indigenous lands ... are currently the most important barrier to Amazon deforestation'. In Madagascar's tropical dry forests, Elmqvist et al. (2007) analyse changes in forest cover during 1984–2000 in four different locales. They find that the 'largest forest reduction in our surveyed area occurred in an area with distinctly insecure property rights and an open access situation', whereas a locale with recovering forest cover (Androy) was associated with effective local rules regulating forest use.

These and other local and national case studies highlight the importance of local rules and property rights in sustaining and recovering forests and are being complemented by more sophisticated comparative analyses across large numbers of forests in diverse settings. The International Forestry Resources and Institutions (IFRI) programme was initiated in 1992 and now includes data from 250 forests in 14 countries, using a variety of measures for forest condition, forest uses and institutional arrangements governing forests (Wollenberg et al., 2007). This growing database, built on a common set of 10 data collection instruments used for all studied cases, allows statistical analysis of variables associated with forest condition, and wider generalizations about links between people, forests and institutions than localized case studies. For example, Chhatre & Agrawal (2008) analysed data collected from 152 forests in nine different countries and showed that forest degradation is inversely related to strong local collective action and enforcement of rules governing forest use. Hayes (2006) compared forest condition across 152 forests in 13 countries and found no significant difference in forest condition between formally protected areas and locally managed forests but highlighted the importance of locally devised rules in determining the condition of forests. Ostrom & Nagendra (2006) used both IFRI studies and laboratory and field data to suggest that 'community management, under direct ownership, government concessions, or other long-term co-management arrangements, has the capacity to be as effective or, under certain conditions, more effective than public, strictly protected areas'.

This growing body of knowledge on forest governance is important in relation to efforts under REDD to invest in actions that reverse deforestation, which is often driven by weak forest governance and property rights arrangements (Cotula & Mayers, 2009). Chhatre & Agrawal (2009) extended the IFRI analysis of links between forest condition

and governance regimes to explicit consideration of carbon sequestration, using data from 80 countries in Africa, Asia and Latin America. This analysis demonstrated that 'larger forest size and greater rule-making autonomy at the local level are associated with high carbon storage and livelihood benefits . . . We argue that local communities restrict their consumption of forest products when they own forest commons, thereby increasing carbon storage'.

## The politics of forest governance reform

Many of the case studies described above are drawn from countries where institutional reforms have taken place that grant local groups of people collective rights over forests. Such reforms have diverse origins, ranging from the communal land tenure reforms in Mexico, rooted in that country's early-20th-century agrarian revolution, to Tanzania's village governance framework, which is rooted in the socialist development policies of the 1970s. Although there are a growing number of cases where local rights to make and enforce rules governing forests are associated with forest recoveries or sustainable use, it is also increasingly apparent that governance reforms involving devolved property rights to natural resources such as forests are often undermined by political resistance (Ribot et al., 2006). Strengthening local rights to manage and benefit from economically valuable natural resources such as forests can change power relations between local citizens and the state. Central governments may resist such changes, particularly where existing political relationships are undemocratic and public authority is maintained through various forms of social coercion. As a result, central governments tend to resist actual devolution of control over forests, even while often rhetorically espousing local participation (Ribot, 2006; Ribot et al., 2006; Tacconi, 2007). Forest governance reforms that support local management rights and authority are therefore not simply an issue of technical policy design but are closely tied to the politics of citizenship and accountability.

Forest governance reforms consequently involve struggles over access to benefits from natural resources. The outcomes of these processes depend on power relations both within and between local communities, powerful bodies within government, government organizations themselves and the private sector. Outcomes are affected by the freedom of local people to claim and defend their rights and privileges within an enforceable legal framework. Where local forest governance regimes have been enabled by institutional reforms it is often because local groups and their allies have been able to force changes within the context of broader social struggles over democracy. Examples of such reforms include the recognition of indigenous land and resource rights in Brazil, which were linked to social movements during the 1970s and 1980s, and the more recent Indian Forest Rights Act of 2006 that was the product of campaigning by a diverse coalition of local tribal groups and civic activists for recognition of long-withheld indigenous rights (Springate-Baginski et al., 2008).

The economic value or 'rents' that can be derived from the exploitation of forest resources create strong incentives for central policymakers and governing elites to retain control over those resources and to subvert local rights and claims (Ribot, 2004; Roe et al., 2009). This may be particularly pronounced where the macro-political context is characterized by high levels of corruption, which means that public officials are able to capture and control resource rents privately (Oyono, 2004; Nelson & Agrawal, 2008). Forest governance reforms that devolve authority may be more likely and more effective where the macro-political context is characterized by relatively stronger rule of law and governance institutions and where the resource in question is of relatively low value (Ribot, 2004; Nelson & Agrawal, 2008).

## The REDD paradox

Considering the evidence presented above it is clear that REDD schemes face a basic paradox. Revenues from REDD are intended to increase the value of standing forest. However, this will tend to increase the political incentives for central government bureaucracies to retain or re-centralize control over forests and the trade in carbon offsets. REDD payments are thus likely to create incentives for forest managers to return to past centralized models of forest conservation (Griffiths, 2007; Campbell et al., 2008) and potentially partner with private sector bodies in search for international financial support for enhanced carbon storage. Such governance arrangements have often been ineffective at sustaining forests, particularly where central states are weak (Campbell et al., 2008). REDD may therefore create political–economic incentives that undermine its operational objectives and theoretical principles.

In governance contexts characterized by weak rule of law and low levels of public accountability, REDD payments are likely to increase corruption and elite capture around forest governance institutions and forest product harvests. These processes will be particularly salient in regions such as the Congo Basin that have low levels of government accountability and weak rule of law compared even to other developing regions. In such contexts, REDD payments, without intensive efforts to create robust governance institutions and empower local forest users and resident communities, will probably have negative implications for forest condition and carbon emissions (Brown et al., 2008; Campbell et al., 2008; Peskett et al., 2008; Bond et al., 2009; Cotula & Mayers, 2009) as well as for local livelihoods. Attempts to sustain forest cover through REDD may undermine decentralized governance associated with effective carbon storage (as well as provision of local livelihood benefits).

Resolving this paradox rooted in the politics of REDD payments is a central challenge to effective global forest governance mechanisms that seek to meet climate change mitigation objectives. One approach is to make payments conditional on proven delivery of REDD, forcing government and private sector bodies to work with those capable of delivering effective stewardship over forest resources (Brown et al., 2008). However, this 'payment on delivery' approach could exclude small-scale bodies who lack the start-up capital needed to achieve REDD and reduce incentives for more 'pro-poor' REDD interventions (Peskett et al., 2008). An alternative approach would be to introduce forest governance criteria such as locally secured tenure rights and enforcement arrangements over land and trees that must be met before REDD payments are made (Griffiths, 2007; Wunder, 2008; Bond et al., 2009). These steps may increase the likelihood of success where appropriate conditions exist or can be introduced but would exclude substantial tracts of forest in high-deforestation countries with very poor governance conditions, thereby reducing the scope of REDD payments to contribute to climate change mitigation. These approaches should be complemented by providing global financial and technical support for improvements in forest governance institutions and incentives for local monitoring and reporting of REDD outcomes. Such key elements of REDD project design will lay stronger institutional foundations for REDD, thereby securing better forest governance as an additional product of lower terrestrial emissions. Such investments should focus on building the capacity of local communities to demand accountability in forest governance processes, third party forest monitoring, and support to civil society networks.

Tackling the causes of anthropogenic climate change is of overwhelming importance and requires urgent action. Introducing an international mechanism for REDD payments that recognizes the need for improvements in forest governance and addresses existing governance deficits in tropical forests has the potential to help achieve mitigation objectives and at the same time enhance forest conservation and improve livelihood benefits for poor forest residents.

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## Biographical sketches

Chris Sandbrook has research interests in conservation, development and tourism and has carried out both field research and applied project work in Uganda. He is currently working as a consultant for the International Institute for Environment and Development on community-based natural resource management and linkages between great ape conservation and poverty reduction in Africa, and on an applied collaborative forest management project in Vietnam. Fred Nelson has worked on community-based natural resource management, ecotourism, and conservation policy in eastern Africa since 1998. During 2000–2005 he served as Tanzania programme director for the Sand County Foundation Community-Based Conservation Network, working with pastoralist communities in northern Tanzania and helping to establish the Tanzania Natural Resource Forum. Bill (William) Adams has a particular research interest in the history and development of conservation policy. Arun Agrawal's work emphasizes the politics of institutional change and environmental governance, including adaptation to climate change.

Forum

# Forest decentralization for REDD? A response to Sandbrook et al.

Sven Wunder

Sandbrook et al. (2010) discuss critical governance issues around implementation of programmes for reducing emissions from deforestation and forest degradation (REDD). They claim that decentralization has had positive impacts on forest conservation and that REDD will probably reverse that process, with recentralization eventually hurting both people and forests. Here I argue that both causal suppositions are too hasty.

Why should decentralization and devolution lead to improved forest conservation? Because the subsidiarity principle would seemingly also apply to forests: placing responsibility at the least centralized competent level will enable local people to make rational forest management decisions. Nevertheless, where forests are abundant, local people often have a rational self-interest in converting them to other uses. Getting more power eases that task. This is why, for example in the Andes, communities frequently seek permission to divide up their forest commons so they can invest in pasture creation or cropping at their lowest competent level: the private household. Widespread tenure insecurity and poor governance in tropical frontier forests may cause forest degradation through quasi open-access but insecurity will also often impede investments in deforestation. When hard conservation–development trade-offs prevail decentralization may backfire: it may improve livelihoods but conservation impacts are ambiguous at best (Tacconi, 2007).

What about the empirical evidence? As with several previous studies by decentralization advocates Sandbrook et al. draw much on data from the International Forestry Resources and Institutions network. For instance, Chhatre & Agrawal (2008) scrutinized the prospects for REDD in 80 forest commons in South Asia (56%), East Africa (28%) and Latin America (16%). But this sample does not match well with the location of carbon-dense high deforestation: the expanding agricultural frontiers of Indonesia, Brazil and Central Africa, focus of major REDD efforts, are not represented. Sampling criteria in Ostrom & Nagendra (2006) are less transparent but seemingly similar biases towards established agricultural areas apply.

Resource-use dynamics in agricultural frontiers with extensive forests, typically poorer infrastructure and governance, and weaker institutions and land tenure are bound to be very different from fragmented forests. Ostrom (1999) showed that communal self-governance is much more likely to succeed when forests are not too big to monitor, not too rich in resources to tempt rent-seekers, forest production is biophysically predictable, previous organizational experience is consolidated, and users share low time-discount rates and inherent forest values. In how many frontier forests with high deforestation rates are these conditions satisfied? I cannot think of many. Often the legitimate communities to whom power is to be devolved may be hard to identify because multiple land claims are overlapping in space and time. Predicating on REDD from samples dominated by forest fragments runs the risk of barking up the wrong trees: not the ones threatened by large-scale deforestation that could make a major contribution to climate mitigation.

Turning to national decentralization cases, my reading of experiences also differs from that of Sandbrook et al.. The notion that decentralization and devolution go along with more conservation is problematic in countries with high deforestation. Sandbrook et al. cite Mexico and Brazil. Mexico, a global showcase of community forestry and land rights, has high deforestation, and communities are prime receivers of payments for ecosystem services to slow down forest conversion (Muñoz-Piña et al., 2008). For Brazil, the quoted Nepstad et al. (2006) study refers to indigenous areas (which are not fully decentralized) and centrally state-administrated protected areas both doing well. A new study using matching techniques finds that 'implementing [protected areas] in zones under high level of current or future anthropogenic threat offers high pay-offs in reducing carbon emissions' (Soares-Filho et al., 2010). In Brazilian agricultural frontiers decentralization has not reduced deforestation. In a comparative study of eight decentralizing Amazon municipalities Toni & Kaimowitz (2003:374) conclude that 'there is a conflict between (often contradictory) environmental and developmental discourses, and the latter prevails over the former in the decisions of local government' (my translation from Portuguese). Municipal governments are often susceptible to local economic interests in deforestation and thus do not support forest protection efforts. In Indonesia, a prominent absentee on Sandbrook et al.'s list, similar negative decentralization impacts are even stronger, accelerating timber harvesting and oil-palm conversion, driven by local economic rent-seeking (Casson & Obidzinski, 2002).

The second key hypothesis in Sandbrook et al. is that REDD will lead to recentralization, which ultimately

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jeopardizes both local livelihoods and forests. But how likely is this? Insights from the debate on payments for ecosystem services (a relative of REDD) are illustrative. A global review of 287 schemes (Landell-Mills & Porras, 2002:217) conjectured that such payments may increase power imbalances so that people with weak land rights would increasingly be dispossessed. This widely replicated suspicion links to the so-called Dove hypothesis: high-value resources attract powerful rent-seekers, who will consequently take resource rights away from the poor (Dove, 2003). In practice, however, no Dove hypothesis has applied to payments for ecosystem services: crowding-out has not occurred, probably because per hectare rents are much less than for rich timbers, gold or oil. On the contrary, poor landowners typically consolidate their land-tenure rights by becoming officially recognized providers of payments for ecosystem services. This illustrates that, while precautionary thinking is laudable, fortunately not all the nightmares we can imagine will actually come true.

Correspondingly, one could imagine that REDD will reinforce decentralization and devolution of rights, as states recognize they cannot effectively reduce deforestation by centralization alone. For instance, Brazil will probably use REDD resources both to strengthen central command-and-control measures and Amazon land-tenure clarification (the Terra Legal programme), as well as programmes of payments for ecosystem services. Ecuadorian and Peruvian national programmes for such payments could benefit from REDD. Many policy tools are thus available and the political economies in REDD recipient countries are too diverse to predict singular outcomes. Conditionality is the key conceptual safeguard: if inefficient governments waste rents centrally without avoiding deforestation then international REDD transfers must be stopped. Sandbrook et al. believe these payments on proven delivery 'could exclude small-scale bodies who lack the start-up capital needed to achieve REDD'. Yet, many donors are ready to support decentralized REDD pilot projects and 'nested approaches' to REDD are among the most popular. Hence, Sandbrook et al. are correct in pointing to governance reforms as central to REDD's success but their generalized pessimism seems unwarranted.

In summary, decentralization and devolution may have been promising for conservation in some fragmented forest landscapes but in extensive forest–agricultural frontiers, where REDD really matters, they are not. When Sandbrook et al. admit to decentralization's failure to deliver conservation they believe it is because the process was incomplete or erratic. I would rather conclude with Tacconi (2007) that structural obstacles prevail:

> ... the ideal model of democratic decentralization described in the literature is unlikely to be implemented given the governance constraints in many tropical forest countries. Even if that model could be implemented ... decentralization cannot be expected to necessarily lead to forest conservation.

What does this mean for policy? We can generally view REDD as a principal–agent approach: global carbon-mitigation interests (the principal) pay national governments (an intermediary) to use mixes of incentives and disincentives to persuade a subset of local stakeholders (the agent) to deforest less. Nothing should make us expect that maximizing local agents' rights per se would generally be conducive to the principal's environmental objective. On the contrary, stand-alone devolution could be counterproductive. Conversely, and here I agree with Sandbrook et al.'s criticism of the fully centralized model, when the state centralizes decisions and minimizes local people's rights this is also seldom conducive to conservation. However, the middle ground, such as partial devolution (e.g. of land use but not sales rights) or granting environmentally conditional land rights may provide more fertile ground (such as in Brazilian indigenous and extractive reserves). Creative mixtures of incentives and disincentives are needed, and I agree with Sandbrook et al. that institutional and governance reforms constitute essential framework conditions. But while decentralization and devolution can be important complementary conservation tools, I believe making them the centrepiece of REDD would be doomed to fail.

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# Governance and REDD: a reply to Wunder

Arun Agrawal, Fred Nelson, William M. Adams and Chris Sandbrook

We welcome Wunder's (2010) response to our article (Sandbrook et al., 2010). Both contributions agree that too little attention has been devoted in international negotiations and discussions to the design and governance aspects of effective, efficient and equitable mechanisms for reducing emissions from deforestation and forest degradation (REDD). Such attention is urgently needed and some devolution, in the form of conditional rights to local communities and authorities, is better than centralized governance or complete devolution. Wunder also agrees with us that decentralization policies have been prompted by reactions against near-complete centralized control exercised by governments who have expropriated forests from people. But few governments, if any, have given up control over forests entirely. As Wunder recognizes, decentralization has typically been incomplete, even when its implementation is tested against the letter of adopted laws and policies (Ribot et al., 2006). We do not argue for complete decentralization (as Wunder believes we do) so much as urge caution against the risk that REDD interventions will reverse decentralization.

Wunder questions the extent to which existing studies of decentralization that point to the positive effects of securing local rights over forests, in particular studies produced by the International Forestry Resources and Institutions (IFRI) research programme, are relevant to the extensive agriculture/forest frontier. Here we disagree. The IFRI research programme provides perhaps the only systematically collected social, ecological and institutional data on local forest use and governance from across multiple country contexts. Its findings are essential to any understanding of forest governance. In showing that local institutions can be effective against deforestation even in contexts that are characterized by high population and market pressures for subsistence forest products, IFRI studies point to the potential benefits such institutions can create for improved forest outcomes on the extensive forest margin where both these pressures are often attenuated. The key point is that attempts to reverse deforestation on the extensive forest frontier need macro-policy reforms but that such reforms can be strengthened if policy makers also attend to micro-level forest governance by creating strong local forest management institutions.

Wunder's suggestion that 'REDD will reinforce decentralization and devolution of rights, as states recognize they cannot effectively reduce deforestation by centralization alone,' is mostly the expression of a hope, and concedes one of our major points. The idea that REDD will reinforce decentralization is contradicted by evidence from many countries. It is no accident that 85% of forests are under formal government ownership (White & Martin, 2002). Groups and individuals that comprise governing regimes have only conceded control over forest lands when pushed to do so by internal or external political or fiscal pressures. In eight of Africa's most-forested countries 98% of all forests are still formally owned by central governments, a situation that is hard to defend on grounds of technical efficiency, conservation or livelihoods (RRI, 2009).There is ample evidence that increasing natural resource values in African countries leads to politically-motivated recentralization over resources at the expense of those wider interests (Nelson & Agrawal, 2008). Greater efficiency, by itself, is seldom the raison d'etre of government policies: governments seldom go out of business because they are inefficient.

Past experience of payment for ecosystem services projects is inadequate for thinking about how governments will alter existing forest governance strategies and policies. The available evidence is limited and Wunder (2010) does not provide much additional support for the proposition that payment for ecosystem services contributes to decentralization, or at least does not create incentives for recentralization. Importantly, revenues through potential REDD payments are astronomically larger than for existing payment for ecosystem services projects. When anticipated REDD payments exceed the budget of a government forestry department (as is the case, for example, for Indonesia and Guyana), and subsequent tranches depend on delivering improvements, it is highly unlikely that forestry agencies will risk such payments by depending on a multitude of third parties.

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Wunder also challenges us in stating that 'political economies in REDD recipient countries are too diverse to predict singular outcomes'. This is surely correct: the purpose of our article is to highlight the reality that forest governance institutions, particularly in contexts where governance is weak and rights over land and resources are easily changed or manipulated, are themselves subject to influence by the emergence of new markets for forest products. In the case of REDD there is little doubt that making forest carbon a multi-billion-dollar industry will create new incentives for claims over forest lands, and that the potential for such a scramble for control over forests is likely to lead to higher conflicts and lower incentives for forest stewardship than REDD initiatives are depending upon.

Contests over the new value and benefits of forest carbon will certainly play out differently depending on political–economic contextual variations, in particular variations in the capacity of local bodies to demand compensation for conservation services provided, to enforce their rights and to negotiate with others. For example, there is a dramatic difference between the ability of local forest users and residents to demand formal recognition of rights and participation in negotiations over REDD in, for example, Brazil compared to the Democratic Republic of Congo. But our point is that without careful attention to governance, as is currently the case, proposed REDD interventions will create incentives that undermine local interests and thereby REDD objectives. Instead of hoping that the context will help deliver positive outcomes, advocates of REDD can tilt the balance towards more positive outcomes by focusing more carefully, systematically and effectively on the governance of REDD. It is critical that the policy makers designing REDD attend to the political–economic implications of introducing new carbon markets, the importance of institutional factors to REDD outcomes, and the safeguards needed to ensure that payments under REDD translate into long-term incentives for improved forest management at different scales.

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