

A young boy with dark skin and hair, wearing a yellow sleeveless shirt and blue pants, is sitting on a tree trunk in a forest. He is looking towards the camera. The forest has many tall, thin trees with green foliage in the background. The lighting is natural, suggesting daytime.

## COMMUNITY FOREST MANAGEMENT AND REDD+



**PROFOR**  
PROGRAM ON FORESTS



## COMMUNITY FOREST MANAGEMENT AND REDD+



Prepared by the **International Forestry  
Resources and Institutions  
Research Network**  
for the **Social Development Department  
of the World Bank**



**PROFOR**  
PROGRAM ON FORESTS

## *Disclaimer*

All omissions and inaccuracies in this document are the responsibility of the authors. The views expressed do not necessarily represent those of the institutions involved, nor do they necessarily represent official policies of PROFOR or the World Bank.

*Suggested citation:* Peter Newton, Michelle Fournier, Meghan Cornwall, Joel DeBoer, Derrick Rosenbach, Brian Schaap, Ryan Stock, Jessica Whittemore, Mark Yoders, Gernot Brodnig, and Arun Agrawal. 2014. *Community Forest Management and REDD+*. Washington, DC: Program on Forests (PROFOR).

Published in March, 2014

Printed on recycled paper

ISBN 978-0-9910407-0-4

Material in this book can be copied and quoted freely provided acknowledgment is given.

For a full list of publications please contact:

Program on Forests (PROFOR)

1818 H Street, NW

Washington, DC 20433, USA

[profor@worldbank.org](mailto:profor@worldbank.org)

[www.profor.info/knowledge](http://www.profor.info/knowledge)

Cover photo: A young boy climbing a tree. Nepal Damak, Jhapa. Chris de Bode / Panos.

# CONTENTS

ACKNOWLEDGMENTS	iv
ABOUT THE AUTHORS	iv
FOREWORD	1
EXECUTIVE SUMMARY	2
1. INTRODUCTION	5
2. METHODS	8
3. CONCEPTUAL FRAMEWORK	11
COUNTRY CASE STUDIES	
4. NEPAL	19
5. TANZANIA	31
6. BOLIVIA	47
7. DISCUSSION	56
8. CONCLUSIONS	67
9. RECOMMENDATIONS	69
REFERENCES	72

## ACKNOWLEDGMENTS

This research was led by Gernot Brodnig (World Bank) and Pete Newton (IFRI), and funded by The Program on Forests (PROFOR) and the Social Development Department (SDV) at the World Bank. Ashwini Chhatre and Wen Liang assisted with the compilation of datasets from the IFRI database. We are grateful to Krister Andersson, Natalia Calderón, Birendra Karna, William Magrath, Baruani Mshale, Diego Pacheco, Simon Rietbergen, Klas Sander, and Julius Thaler for their comments on an earlier draft.

## ABOUT THE AUTHORS

Peter Newton,<sup>1\*</sup> Michelle Fournier,<sup>1</sup> Meghan Cornwall,<sup>1</sup> Joel DeBoer,<sup>1</sup> Derrick Rosenbach,<sup>1</sup> Brian Schaap,<sup>1</sup> Ryan Stock,<sup>1</sup> Jessica Whittemore,<sup>1</sup> Mark Yoders,<sup>1</sup> Gernot Brodnig,<sup>2</sup> and Arun Agrawal.<sup>1</sup>

<sup>1</sup> International Forestry Resources and Institutions (IFRI) Research Network, School of Natural Resources and Environment, University of Michigan, 440 Church Street, Ann Arbor, MI 48109, USA.

<sup>2</sup> Social Development Unit, World Bank, 1818 H Street Northwest, Washington, DC 20433, USA.

\* Corresponding author email: newton.pete@gmail.com; tel: +1 734 709 3734

## FOREWORD

It is widely recognized that actions to reduce carbon emissions from deforestation and degradation must be undertaken with the full and effective participation of Indigenous Peoples and local communities. Indigenous peoples and local communities around the world have long-standing customary rights to large areas of forest land, and have been key actors in maintaining forests that have more recently become targets for REDD+ programs. These rights and roles have received increasing formal recognition; as of 2013, Rights and Resources Initiative data show that Indigenous Peoples and local communities possess statutory rights to own or control approximately 30 percent of forests in lower and middle income countries.

In this context, investment in Community Forest Management (CFM) must be a central strategy for REDD+. As research by IFRI and others has demonstrated, local governance of forest resources often leads to more *effective* forest management and socio-economic outcomes. Investment in CFM contributes to the *equity* of REDD+ initiatives, by ensuring that benefits reach the forest communities playing major current and historical roles in forest management and conservation. The widespread presence of CFM institutions and capacities that REDD+ initiatives could support and work through also enhances the *efficiency* of REDD+.

This report by the International Forestry Resources and Institutions research network provides an important and timely contribution to discussions regarding the role of CFM in REDD+ implementation. Drawing on lessons from CFM experience, the report offers recommendations for how REDD+ can build in factors that contribute to successful forest and socio-economic outcomes, such as designating larger forest patches as community forests. It also documents current interactions between CFM and REDD+ in Nepal, Tanzania and Bolivia, particularly how implementation of many REDD+ pilots is focusing in areas where CFM systems are already in place. The report highlights important cautionary notes for consideration by Indigenous Peoples and local communities regarding potential negative effects of REDD+ on community forestry, such as restricted access to forest resources, recentralization or increased local inequality.

Despite significant attention to tenure in REDD+ discussions, recent analysis by the Rights and Resources Initiative (RRI) has concluded that REDD+ activities are not yet translating into increased recognition of community rights to own or control forests on the ground. While it may be early to judge, as many REDD+ initiatives are still in early stages of readiness preparation, this finding points to the critical importance of providing concrete support for recognition of rights of Indigenous Peoples and local communities to forests as part of REDD+ implementation. Safeguards to ensure carbon rights do not conflict with customary rights to forests will also contribute to building synergies between CFM and REDD+ for improved forest and livelihoods outcomes.

Jenny Springer  
Director, Global Programs  
Rights and Resources Initiative

## EXECUTIVE SUMMARY

The urgent need to limit anthropogenic carbon emissions has led to a global initiative to Reduce Emissions from Deforestation and forest Degradation (REDD+). But designing national architectures for REDD+ that integrate local actions on forests with national-level outcomes and do so effectively, efficiently, and equitably continues to be challenging. One option to facilitate the design and implementation of REDD+ is to learn from the experience of other programs that have historically been successful in achieving sustainable tropical forest management, such as community forest management (CFM). Lessons about the factors that contribute to CFM success will be useful in designing REDD+ programs. REDD+ may also benefit from harnessing the capital developed by CFM. Of course, REDD+ and CFM represent both opportunities and challenges for each other. Identifying how CFM can contribute to REDD+ goals, and the potential benefits and risks in using CFM to achieve REDD+ implementation requires careful analysis of available evidence because the two sets of interventions do not have a complete overlap in terms of their objectives and mechanisms.

In this study report, we use a thorough literature review and analysis of primary data collected by the International Forestry Resources and Institutions (IFRI) research network from 57 CFM sites to achieve three objectives. First, we establish a framework for examining interactions and relationships between CFM and REDD+. Second, we empirically investigate these relationships in three countries: Nepal, Tanzania, and Bolivia. All three countries have a strong history of CFM and each is engaged in the development of REDD+ or related institutional architectures. Finally, based on the analysis of our data, we provide key recommendations for communities, project developers, policy makers, and researchers.

In Nepal and Tanzania, most REDD+ readiness activities and pilot projects are being implemented in CFM landscapes. These on-the-ground actions demonstrate that it is possible to leverage CFM interventions and experiences to support the achievement of REDD+ objectives, and that such an approach can be central to national REDD+ strategies in countries where CFM sites constitute a substantial proportion of the forest estate. These NGO-led REDD+ pilot projects harness and build on the substantial human, institutional, natural, and physical capital in CFM sites. In particular, the institutional capacity of community groups and their experience of working with NGOs and government agencies to bridge the local and national levels to achieve sustainable forestry have been catalytic in the implementation of REDD+ pilot projects.



REDD+ pilot projects in CFM landscapes have also made progress in building institutional capacity for monitoring, reporting, and verifying carbon outcomes, explaining REDD+ to relevant stakeholders, and developing new arrangements related to payments to communities and households. In at least one case in Tanzania, REDD+ funding is being used to create additional Joint Forest Management sites. However, it is not possible to attribute improvements in forestry outcomes to the design of REDD+ pilot interventions in the three studied countries. Nor is there much evidence that REDD+ pilot interventions have incorporated design lessons from past experiences and analyses of CFM interventions regarding the factors that contribute to higher levels of carbon storage in community forestry sites.

It is also important to note that REDD+ pilot projects are in the early stages of implementation and have had little opportunity to demonstrate additionality, with respect to avoided deforestation and degradation. Second, payments under REDD+ pilot initiatives to date have not been performance-based. Rather, distribution of funds by pilot projects has been linked to participation in the intervention. This approach is simpler logistically, but risks creating false expectations in that communities may fail to understand that future payments under a full REDD+ program will likely be contingent on changes in behaviors and outcomes related to forest use and protection. Finally, the overall cash benefits through REDD+ payments in CFM sites have been small compared with the livelihood benefits that community forests provide to users. We can conclude that if there is no clarity during implementation about the operational aspects of REDD+ among participating households and communities, it is likely that users will view REDD+ interventions as being no different from other aid projects for resource transfers, threatening the very logic and also the outcomes of REDD+. Additionally, without substantial increases in REDD+-based payments, the likelihood of altered forest user behavior at a scale that matters for emissions is nearly non-existent.

In Bolivia, few formal REDD+ activities took place before the government rejected REDD+ as a market-based mechanism for achieving climate change mitigation. Bolivia has instead developed a Joint Mitigation and Adaptation Mechanism (JMAM), which focuses on communities, indigenous peoples, and equitable forest resource management.

Given our sample size, statistical analysis of the CFM and REDD+ pilot data is not possible for the most part, but we did assess how the two key goals of REDD+ and CFM—livelihoods and forest conditions—are associated with some of the key causal variables identified in the literature on CFM. We find a strong and statistically significant association between livelihood benefits from CFM and forest dependence among households in Nepal and Bolivia. We also find a strong and statistically significant association between community forest size and forest condition/carbon outcomes in Tanzania.

REDD+ brings financial support to improve community forestry activities that have historically been constrained by limited resources. Nonfinancial benefits include improvements in institutional capacity and human capital. Better monitoring of resource extraction and greater enforcement of rules may result in improved forest carbon and livelihood outcomes. At the same time, REDD+ poses challenges to CFM if it reduces access to forest resources by local communities, or if it creates financial incentives for management recentralization or for benefit capture by elites.

Future interactions between CFM and REDD+, and indeed the very future of REDD+, depend on the level of available financing. REDD+ currently provides only limited incentives to influence households' forest use behavior, and the main incentive for continuing REDD+ readiness and pilot activities is the expectation of a much higher funding stream within a few years. The key contributions of current REDD+ activities are therefore to strengthen CFM through capacity-building and institutional development regarding terrestrial emissions reductions. These activities enable experimentation and the development of best practices around the design of small-scale, community-based REDD+ programs, and facilitate discussions and awareness-building among key stakeholders.

In our case study countries, REDD+ has sought to take advantage of the prior experiences and capital developed by CFM. CFM can contribute toward achieving REDD+ objectives, but there are also other forest management programs from which REDD+ might benefit. These include government regulation (for example logging moratoria or bans), voluntary certification (for example, Forest Stewardship Council), and protected area management and integrated conservation and development programs. Ultimately, the success of REDD+ as a forest-based climate change mitigation strategy will depend on improved funding, but readiness activities and pilot projects that engage with and learn from community forest management are a critical element of long-term, effective, efficient, and equitable REDD+.

Reducing the rate and extent of tropical forest loss is a critical component of climate change mitigation policies. The need to reduce anthropogenic emissions has led to a global initiative to Reduce Emissions from Deforestation and forest Degradation (REDD+). This agreement envisages transfers of funds from developed countries to developing tropical forest countries in exchange for verifiable emissions reductions. A number of recipient tropical forest countries are engaged in the challenging task of designing and implementing REDD+ strategies that are effective, efficient, and equitable.

REDD+ is an objective and also a mechanism by which the global community is able to reward individuals, communities, projects, and countries that demonstrate achievement of that objective (Angelsen 2008). It is not a specific action or program; rather, it is a broad set of approaches for forest conservation. It can be viewed as a form of Payments for Environmental Services (PES) program, implemented within either a national or a subnational REDD+ framework. There are two transactions within a national REDD+ model: (1) conditional payments from international donors to national governments that pledge to reduce emissions; and (2) funding from national governments to subnational organizations (for example, forest users, communities, or local governments) that either make the land-use changes required for emissions reductions or demonstrate a history of sustainable forest management (Campbell 2009). In the subnational model, national governments are bypassed and payments are made directly by donors to specific projects and programs. In either model, the distribution of funding may take the form of direct cash transfers and also entail a variety of other interventions including tenure reform and resources for improved forest management practices.

REDD+ has been widely discussed and broadly embraced, but the reality of designing and implementing it has been challenging. A number of “REDD-readiness” and pilot programs have been established, but no country yet has a fully operational national REDD+ strategy. Designing architectures for REDD+ that are *effective* (at reducing emissions), *efficient* (in doing so at an economically viable cost), and *equitable* (in distributing costs and benefits) has proven difficult, in part because of the strict criteria that must be met. Metrics of effectiveness (creating additionality, ensuring permanence, avoiding leakage, scaling, allowing flexibility, and developing mechanisms for monitoring, reporting, and verification), of efficiency (minimizing transaction, opportunity, and

operating costs), and of equity (distributing benefits fairly, developing institutional capacity, reducing poverty, securing land and carbon rights, building community capacity, and implementing complaint mechanisms) are all required in order to satisfy different actors in donor and recipient countries (Angelsen 2008; table 1.1). At the same time, programs must retain enough flexibility to adapt to dynamic political, economic, and environmental conditions.

The urgency with which REDD+ strategies must be developed means that there is limited scope for long-lasting pilot initiatives or lengthy trials of alternative architectures to identify best practices. One option to facilitate the design and implementation of REDD+ is to harness the experience of other programs that have historically been successful in achieving sustainable tropical forest management.

One set of programs that has been the focus of much attention in the context of REDD+ is that of community forest management (CFM) (Agrawal and Angelsen 2009; Corbera and Schroeder 2011; Hayes and Persha 2010). CFM programs have a strong history of sustainable positive outcomes for both forests and people. Lessons about the factors that contribute to CFM success can therefore be useful in the design of REDD+ programs, and REDD+ may also benefit from harnessing the capital developed by CFM. At the same time, REDD+ may bring both opportunities and challenges to CFM landscapes, and the impact that carbon finance will have on the future of decentralized forest management is unknown. But identifying how CFM can contribute to REDD+ goals, and potential risks in using CFM to achieve effective, efficient, and equitable REDD+ implementation, requires careful analysis of available evidence because the two sets of interventions do not have a complete overlap in terms of their objectives and mechanisms.

Studies of CFM clearly show that it can achieve a number of REDD+ objectives. On the other hand, REDD+ potentially offers opportunities to further improve forest outcomes in concert with CFM arrangements. However, the extent to which the two programs are compatible and may benefit from, or negatively affect, each other has not been well documented.

The objectives of this study report are:

1. To establish a conceptual framework for exploring the interactions between CFM and REDD+. This framework will consider the potential for CFM to contribute to achieving REDD+ objectives, and also the range of possible effects that REDD+ architectures may have on CFM in its existing form.
2. To characterize these relationships between CFM and REDD+ in three countries that have a strong history of CFM and where REDD+ architectures are being developed: Bolivia, Nepal, and Tanzania.
3. To analyze these countries' experiences with CFM and REDD+ within the framework developed in (1), to draw some conclusions about the extent to which the two programs are compatible, and to identify those areas in which policy or capacity may need to be developed to fill the gaps.

**TABLE 1.1. CRITERIA OF EFFECTIVENESS, EFFICIENCY, EQUITY, AND CO-BENEFITS FOR REDD+**

<b>EFFECTIVENESS CRITERIA</b>	
Depth and additionality	Reduction in absolute or relative emission compared with a business-as-usual (BAU) scenario. Additionality is a more specific criterion that requires reductions to be additional to what would occur in the absence of REDD+ (BAU).
Breadth/scope	Coverage of different sectors and type of forest users, type of forest and type of mitigation measures included.
Flexibility and robustness	Ability to adapt to meet both diverse local conditions and unknown future changes at all scales. Potential trade-offs between flexibility and robustness need to be considered.
Verifiability	Verifiability depends on (i) the technology used to make accurate and complete measurements; and (ii) the capacity to carry out such measurements.
Displacement of emissions (leakage)	Leakage can occur within or across countries, and also among land use activities (e.g. between deforestation and degradation activities if only one D is included). Generally, the larger the scale and the broader the scope of REDD+, the lower the risk of leakage.
Permanence and liability	Permanence relates to ensuring long-term reductions, i.e., avoiding emissions reductions that are simply postponed for a short period of time. Liability measures can take effect if permanence has not been maintained.
Effect on other mitigation measures	A real risk is that REDD+ efforts will come at the expense of other climate mitigation measures. Such crowding out effects are hard to measure.
<b>EFFICIENCY CRITERIA</b>	
Start-up costs (upfront capacity-building)	Costs of setting up a REDD+ scheme, including establishing technical infrastructure and governance structures, and, most importantly, training and capacity building.
Running costs (forest protection costs)	Operational costs of a REDD+ regime that, in addition to periodic monitoring, include a variety of policies and measures, such as forest law enforcement and tenure reforms.
Landowners' opportunity costs	Opportunity costs are the forgone economic benefits from the best alternative (non-forest) land uses, e.g., the minimum amount a landowner must be paid to be willing to stop deforestation and forest degradation/ DD (compensation payment). This will be a key cost component of a national PES system.
Landowners' transaction costs	To participate in the REDD+ scheme, the landowner is likely to incur additional costs (e.g. put up fences, get certified), which need to be factored into the compensation payments.
<b>EQUITY CRITERIA</b>	
Fair distribution among countries	One dimension relates to the poverty profile, i.e., (i) poor countries' abilities to participate in an REDD+ scheme (e.g. monitoring, reporting and verifying - MRV) and governance requirements); and (ii) preferential treatment of the poorest countries (e.g. in setting reference levels). Another dimension of fairness relates to not penalizing early action and not rewarding bad policies. And, if basing reference levels on past deforestation, one should not penalize lack of development.
Fair distribution within countries	This refers to intra-national fairness, i.e., the distribution of costs and benefits across administrative levels (local vs. national government) and across land use actors.
Effects on local and indigenous communities	The Bali Action Plan acknowledges the role of local and indigenous communities in REDD+ activities. The practical implications are that traditional rights will be recognized and that indigenous communities will be included in the REDD+ decision-making process.
<b>CO-BENEFITS CRITERIA</b>	
Economic development and poverty reduction	REDD+ may enable or constrain economic development at the national and subnational levels, and affect those economically dependent on forests as well as national economies as a whole.
Biodiversity	Carbon and biodiversity aims are largely compatible, but there could be trade-offs, for example, in the geographical targeting of funds (biodiversity and carbon hotspots may not overlap).
Rights and forest governance	REDD+ has the potential to improve forest governance and rights, e.g. through more transparent forest information systems. But, it also entails risks if the potentially large sums of money generated by REDD+ trigger corruption, mismanagement, and elite capture.

Source: Angelsen 2008.

## LITERATURE REVIEW

We conducted a thorough review of the literature to develop case studies for three countries—Bolivia, Nepal, and Tanzania—and to situate the fieldwork we conducted in these countries. Each of these countries (1) has an extensive history of community forest management and diverse forms of decentralized management systems, and (2) has played a leading role in developing and establishing REDD+ or similar national strategies. In addition, the three countries together represent geographically and institutionally distinct community managed forests in South America, Asia, and Africa, respectively. We synthesized information from a combination of peer-reviewed journals, grey literature (including government documents and nongovernment organization [NGO] reports), and websites (of government agencies, NGOs, and projects). Leading experts in CFM and REDD+ in each country provided additional information through interviews about recent developments around REDD+ in their country.

The case studies aimed to characterize the status of REDD+ in relation to CFM in each country, in terms of geographic distribution, legal framework, institutional capacity, and the stage of design and implementation. We analyzed the relationships between CFM and REDD+, and assessed the prospects for compatibility.

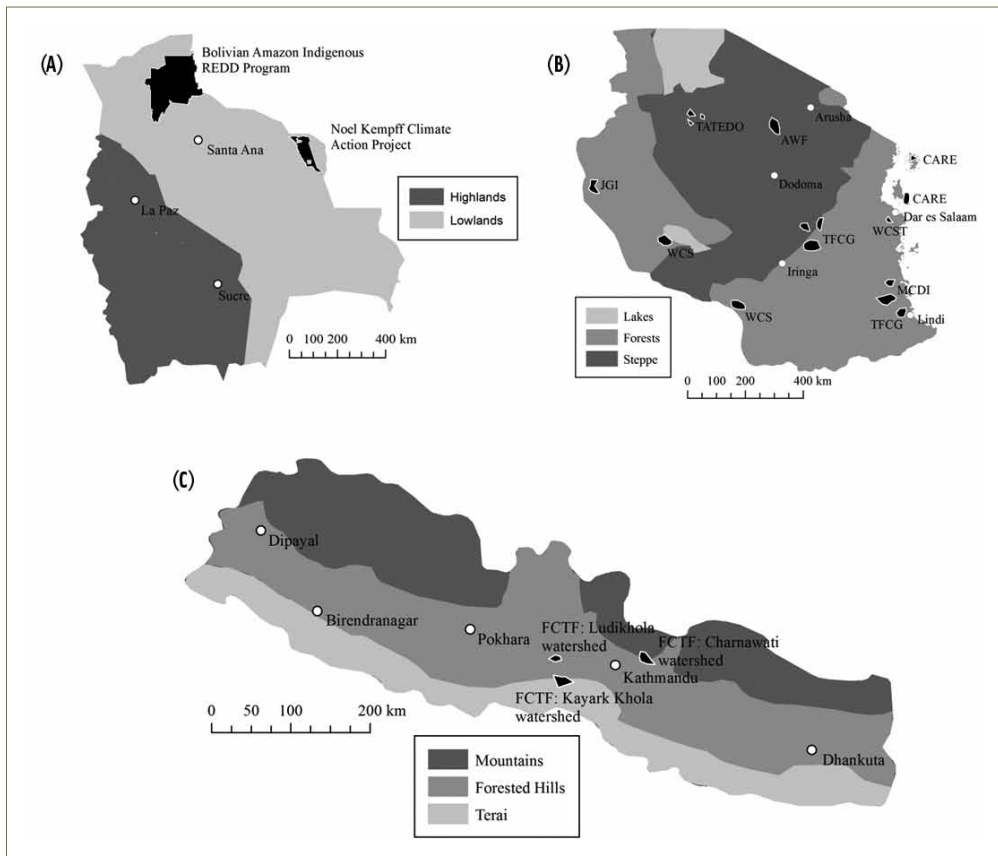
## FOREST GOVERNANCE AND RESOURCE OUTCOME DATA

The International Forestry Resources and Institutions (IFRI) research network has developed a series of instruments for collecting data on local forest governance and forest resource outcomes in diverse ecological, social, and institutional contexts (Wollenberg et al. 2007). The analysis is based on primary data from 57 community forest sites across the three focus countries: Nepal (34), Tanzania (7), and Bolivia (16), collected from March 1994 onward using the IFRI methodology (IFRI 2012). Data on ecological variables were collected using forest plots, with the number of plots ranging between 20 and 40 for each forest. Socioeconomic and institutional data were collected using semistructured interviews and focus group discussions with forest users and village, district, and state authorities involved in forest management. The 57 forest commons in our analysis do not represent all forest habitats, nor are they a random sample of all community forestry sites

from across the three countries. However, there was no known site selection bias with respect to the outcomes or independent variables of interest to this analysis.

We used the data collected by IFRI surveys in community managed forests to assess the extent to which these forests were likely to produce sustainable REDD+ outcomes, based on a subset of the criteria identified by Agrawal and Angelsen (2009) as being associated with effective CFM (table 3.1). The REDD+ outcomes were *carbon* (measured as above-ground tree biomass per hectare) and *livelihoods* (measured as an index of contributions from the forest commons to basic subsistence needs of local users—a composite of proportions of firewood, fodder, green biomass used as fertilizer, and timber for domestic use). The criteria for successful CFM (and the IFRI data used as proxy independent variables for these) included: *Forest size* (ha), *commercial and subsistence value of the resource* (higher than normal or not), *user group size* (number of people), *resource dependence* (number of types of benefit gained from the forest [max. nine]), *past experience with forest management* (age of settlement), *effective local enforcement and sanctions* (whether or not users always comply with imposed penalties), and *tenure security* (whether or not forest is owned by the state). For each independent variable we calculate the mean value ( $\pm$  SD) for continuous variables, or the mode (and *N* of the mode) for categorical variables. We also calculated the level of association with each of the two outcome variables, using Pearson correlations (continuous variables) or Mann-Whitney U tests (categorical variables).

**FIGURE 2.1. THE SPATIAL CONFIGURATION OF KEY BIOMES AND REDD+ PILOT PROJECTS WITHIN THREE CASE STUDY COUNTRIES: (A) BOLIVIA, (B) TANZANIA, AND (C) NEPAL**





### COMMUNITY FOREST MANAGEMENT

Community forest management refers broadly to land tenure as well as forest use and governance arrangements under which the rights, responsibilities, and authority for forest management rest partially or fully with local communities of forest users (Agrawal, Chhatre, and Hardin 2008). CFM is thus a subnational approach to forest management that empowers communities to control and manage their resources. Such forests account for more than 10 percent of the world's forest cover, covering 378 million hectares globally, and are therefore a key component of the contemporary forest governance landscape (Agrawal, Chhatre, and Hardin 2008; Charnley and Poe 2007; White and Martin 2002). This area is even greater if informal use and control are included (Agrawal, Chhatre, and Hardin 2008). The growth of CFM has been rapid: Local communities currently govern 200 million more hectares of forest than they did in 1980 (Sunderlin, Larson, and Cronkelton 2009).

Community forest management arrangements vary widely within and between countries, with different categories of management arrangement involving varying degrees of rule-making and management autonomy. For example, Tanzania's Community Based Forest Management and Joint Forest Management are two alternative arrangements that fall under the broader banner of Participatory Forest Management—itsself a form a community forest management. In many countries, community members have customarily had the right to use and manage patches of forests near their settlements and over time these arrangements have been formally recognized by governments through legislative actions. Countries such as Nepal have an extended history with CFM, with the first community forests established in the 1970s, a network of more than 18,000 community forest user groups (CFUGs), and institutions specifically created to govern these. In other countries, such as Tanzania, national strategies to decentralize forest management and formally recognize community rights to forests are more recent, and alternative models of forest management delineate roles for the state and communities.

## **COMMUNITY FOREST MANAGEMENT CAN LEAD TO SUSTAINABLE FORESTRY OUTCOMES**

The local governance of forest resources under CFM systems has in many cases been effective at producing improved environmental, economic, and social outcomes. In contradiction to the “tragedy of the commons” (Hardin 1968), CFM often leads to more sustainable socio-ecological and forest management outcomes (Charnley and Poe 2007). Demonstrated positive outcomes associated with CFM include greater carbon sequestration, biodiversity conservation, reduced rates of deforestation, and livelihood development (Dietz, Ostrom, and Stern 2003; Ostrom 2009; Pagdee, Kim, and Daugherty 2006). CFM has additionally been associated with greater implementation of forest rights; more equitable access to, and benefits from, forest resources; increased investment in future forest productivity; greater fulfillment of local needs; improvements in living standards; alleviation of poverty; reduction of conflict between communities and government; control of corruption; resolution of forest management problems; and reduced instances of forest misuse by individuals (Charnley and Poe 2007). Most of these outcomes result in greater satisfaction among forest users and an increased incentive to pursue sustainable management strategies in the long term.

Researchers analyzing CFM have also identified a suite of variables that are generally associated with improved forest outcomes, and which characterize successful community managed forests. These conditions include environmental (for example, larger forest size), socioeconomic (for example, greater dependence on community forests for subsistence livelihoods), and institutional (for example, greater community autonomy in decision making)—variables that, in concert, can lead to positive outcomes for forests and communities within a formal tenure system of community forest management (Chhatre and Agrawal 2009; Persha, Agrawal, and Chhatre 2011).

### **CFM AND REDD+**

There is considerable overlap between the goals of REDD+ and community forest management for long-term protection of forests. The key common objective for both CFM and REDD+ is to maintain forest cover by reducing forest conversion to other land uses and to maintain forest integrity by reducing unsustainable resource extraction. The two programs have a shared approach to achieving this objective: by creating local incentives for avoiding deforestation and forest degradation.

These synergies exist despite some fundamental differences in the underlying objectives of the two programs. CFM was developed principally to protect forests in order to support the subsistence and income-generating extractive activities of forest-dependent communities. In contrast, REDD+ was developed principally to mitigate climate change by reducing emissions from deforestation and forest degradation. In much of the earlier literature and developmental stages of REDD+, compensation for opportunity costs and the generation of livelihood benefits were considered secondary “co-benefits.” Funding and momentum for

REDD+ would not exist outside of climate change mitigation policy, and—at least in theory—REDD+ programs could be developed and implemented independently of any social development policy, if carbon gains could be made in forest sites that did not affect local livelihoods.

In practice, the development of REDD+ programs is principally within developing countries where the livelihoods of forest-dependent people are a central component of all forest management policies. The main REDD+ programs, including the Forest Carbon Partnership Facility and UN-REDD, therefore view carbon, biodiversity, and livelihood goals as being inseparable, and these multiple conservation and development objectives are intertwined within the REDD+ discourse.

We ask two related questions about the design and implementation of REDD+ strategies in the context of CFM: (1) How can REDD+ benefit from community forest management? and (2) How might REDD+ affect community forest management?

## **HOW CAN REDD+ BENEFIT FROM COMMUNITY FOREST MANAGEMENT?**

The fundamental synergies between CFM and REDD+ suggest that the former could be a useful mechanism by which to achieve effective, efficient, and equitable REDD+ design and implementation.

We distinguish two principal mechanisms by which REDD+ could benefit from CFM:

1. By applying the lessons learned from the accumulated extensive experience of community forest management to REDD+ project design.
2. By enabling REDD+ programs to harness, or be appended to, the capital, assets, and institutions associated with existing community forest management arrangements.

Here, we discuss these two mechanisms and how each might help to advance the design and implementation of REDD+ programs at a national or subnational level.

### **Applying the Lessons of CFM to REDD+ [adapted from Agrawal and Angelsen 2009]**

The scholarly literature and documented case studies on CFM go back as far as the 1970s, so the experience of CFM and the evidence base for its outcomes is strong (Agrawal and Angelsen 2009). Many of these outcomes are to some degree congruous with the objectives of REDD+, and some of the core elements that have enabled CFM success may help to inform the development of strong REDD+ strategies. Extracting lessons from CFM could therefore be a valuable contribution to the process of designing REDD+ strategies, but there have been few systematic efforts to apply the lessons and experiences of CFM to REDD+ to date (although, see Agrawal and Angelsen 2009; Hayes and Persha 2010).

The variables and conditions under which CFM has been most successful may contribute to the design of REDD+ programs, either within or outside of formal CFM sites (table 3.1). All CFM governance structures confer a greater recognition of rights and more power over forests for communities. However, differences in the characteristics of the forests, user groups, local institutional arrangements, and other contextual factors that vary between CFM sites determine which community forests are more successful than others. By identifying the attributes that contribute to successful CFM, it is possible to extract generalizable lessons that may be useful to the design and implementation both of future CFM sites and of REDD+ projects that could be established in either CFM or non-CFM contexts.

**TABLE 3.1. LESSONS FROM COMMUNITY FOREST MANAGEMENT THAT MAY AID THE DESIGN OF REDD+ PROGRAMS**

CATEGORY	VARIABLE
<b>Environmental</b>	Medium to large forests
	Well-defined, easy-to-monitor boundaries
	Predictable benefit flows
<b>Socioeconomic</b>	<i>Value of the resource</i>
	Small to medium-sized user groups
	<i>Interdependent</i>
	<i>Homogenous</i>
	Relatively well-off
	<i>Moderate dependence on resources</i>
	No sudden shocks in resource demands
<i>Cultural valuation of forests</i>	
<b>Institutional</b>	Past experience with forest management
	Rules easy to understand and enforce
	Rules locally devised
	Rules take into account differences in violations
	Rules help to deal with conflicts
	Rules hold users and officials accountable
	Effective local enforcement and sanctions
	Tenure security
	Capacity to exclude outsiders
	<b>Contextual</b>
<i>Stability of market conditions</i>	
Stability of policy conditions	
<i>Stability of technological conditions</i>	
Government support to reduce collective action costs	

Source: Agrawal and Angelsen 2009.

Variables in italics are those less easily influenced by program design.

Many of these attributes have been identified by researchers comparing socio-ecological outcomes from different CFM sites. For example, the International Forestry Resources and Institutions (IFRI) research network has collected comparable data from more than 300 CFM forest sites across 16 different countries since 1992. Analysis of these and similar data has led to the identification of four categories of variables that contribute to CFM success. Here, we discuss these variables and how they may be incorporated into emerging REDD+ frameworks (table 3.1).

### *Environmental factors*

The environmental variables that characterize a community forest include descriptors of its physical size and the abundance and nature of the resources it contains. Various analyses of community forest outcomes have concluded that larger forests with clear and easy-to-monitor boundaries, predictable benefit flows, and higher resource value are more likely to be better managed for more sustainable socioeconomic and environmental outcomes.

### *User group factors*

Community forest user groups can be characterized by their size, the strength of social and human capital (including strength of local knowledge of, and experience with, forest management), and

the strength and extent of interactions between forest users and forest resources. Studies of CFM systems suggest that small to medium-sized communities that are interdependent, are relatively well-off, have adequate technical and institutional capacity, and depend on their forests are more likely to create and sustain institutions to regulate forest commons more effectively (Agrawal 2001).

### *Institutional factors*

Common property studies of CFM have shown how resource management is enhanced by three institutional characteristics. First, tenure security for communities is essential for two reasons. It enables them to create rules and management plans for the medium to long term, with sustainability and future payoffs in mind. It also provides a legal basis on which to exclude nonlocal actors who may be more invested in short-term gain than long-term sustainability. Second, communities need to be able to create rules that are locally relevant, easily understood, and locally enforceable, rather than having these rules devised and imposed by external agencies. Finally, there need to be mechanisms for sanctions, conflict resolution, and accountability of both users and officials (Dietz, Ostrom, and Stern 2003; McKean 1992; Ostrom 1990).

### *Contextual factors*

Community forest user groups and community institutions occur within a context, broadly defined by demographic, cultural, technological, and market-related factors; the nature of state agencies; the involvement of NGOs; and international aid. Summarizing the variables that are most likely to determine whether communities can manage their forest resources successfully is difficult: market pressures, demographic shifts, technological changes, and state policies may all interact in different ways. But to simplify greatly, a stable context coupled with government efforts to reduce the cost of community collective action are positively associated with successful CFM (Agrawal 2007).

These lessons from CFM have been well documented, and have undoubtedly informed the development of forest policy with respect to communities in many countries. The question of how CFM and REDD+ may physically and directly interrelate is less well addressed, and for this we discuss our second proposed mechanism:

## **Harnessing CFM Arrangements**

Approximately 25 percent of forests in developing countries are managed by communities, and CFM systems have developed substantial natural capital (healthy forests with relatively intact biodiversity and carbon stocks), institutional capital (specifically designed local and national forest user groups), human capital (forest management, monitoring, and enforcement capacity), and social capital (experienced forest user communities with high buy-in to CFM). There is significant potential for REDD+ interventions to harness this capital, either by establishing REDD+ programs within existing CFM sites, or by using REDD+ funding to expand the existing CFM network.

1. *Use REDD+ funding to achieve mitigation objectives in current CFM sites.*

CFM governance arrangements aim to maintain forest conditions for sustainable resource use, but were not designed with the objective of achieving verifiable emissions reductions or carbon stock values. Therefore, existing CFM institutions may not address all of the specific demands of REDD+ programs. However, existing CFM institutions and practices can be strengthened or modified to align better with climate change mitigation goals and to achieve REDD+ objectives in CFM sites.

2. *Use REDD+ funding to expand the existing CFM network.*

CFM may be one of the more effective, efficient, and equitable routes to sustainable forest management. Increasing the national and global extent of forests managed by communities could be an alternative mechanism to subnational payments for environmental services (PES) programs as a means to invest REDD+ funds toward achieving reduced deforestation and degradation goals, while satisfying REDD+ requirements such as additionality and permanence.

Both mechanisms could be an effective and efficient means to achieve climate change mitigation objectives in forests. Identifying the congruence between CFM and REDD+ would effectively facilitate the direct use of CFM as a tool to achieve REDD+ goals, as an alternative to in-country PES programs.

## **HOW MIGHT REDD+ AFFECT COMMUNITY FOREST MANAGEMENT?**

The development and implementation of REDD+ could bring both opportunities and challenges to CFM, by reshaping many forest management practices and also the conservation landscapes in which CFM is located. On the one hand, REDD+ may increase the financial, administrative, and technical resources available to CFM institutions and forest users, making forest conservation more financially viable and further improving the chances of CFM success. But the emergence of REDD+ objectives and programs may also alter the existing ecological, socioeconomic, and institutional dynamics in the forest landscapes in which it is developed and implemented. CFM is a dynamic set of institutional arrangements, and changes initiated or catalyzed by REDD+ could result in either positive or negative ecological and socioeconomic outcomes. Identifying these potential impacts early, through the experience of REDD+ readiness activities and pilot projects, could be an important way to maximize the positive effects and to reduce the negative ones.

Additionally, if the anticipated expansion of REDD+ does occur, from its current status of relatively isolated pilot projects and readiness activities to a full set of national programs, then it could be that implementation within CFM landscapes has advantages relative to implementation in forest landscapes where community rights are less well established. That is, if REDD+ is an inevitable set of changes in the forest management arena, then implementation in CFM or non-CFM landscapes could result in different ecological and socioeconomic outcomes.

*A man with paralyzed right arm carrying a bundle of leaves that he has collected to sell at the local market. Mikkel Ostergaard / Panos.*





## DISTRIBUTION OF FORESTS AND TENURE

### Forested Land

Nepal has a land area of just 14.8 million hectares (ha), of which approximately 39 percent (5.8 million ha) is forested (Ministry of Forests and Soil Conservation 2009). These forests can be divided into five bioclimatic zones (alpine, sub-alpine, temperate, subtropical, and tropical) and three topographical regions (Mountains, Middle Hills, and Terai Plains). Six forest tenure classifications exist, determined by the allocation of forest management rights: government forests (including protected forests), community forests, collaborative forests, leasehold forests, religious forests, and private forests. Of these six, the government formally *owns* all but the private forest lands. However, the government *manages* approximately 4.6 million ha, while communities manage approximately 1.2 million ha. The distribution of forest carbon is roughly proportional to land area: the government owns almost 890 million metric tons (79.1 percent) of the total carbon stored in Nepal's forests, while communities own 20.6 percent (Oli and Shrestha 2009). The scope for forest-based climate change mitigation in Nepal therefore depends in part on how well the government encourages and implements forest management policies in consultation with communities.

### Community Involvement in Forest Management

Nepal has dramatically altered its mode of forest governance on at least three occasions over the past 60 years. First, it moved from privately owned forested estates to a state-oriented model, driven by the 1957 Private Forest Nationalization Act, which aimed to "prevent the destruction of national wealth" by nationalizing private forests while nonforest land would remain privately owned. The policy backfired when many landowners chose to retain their rights by collectively converting almost 500,000 hectares of forests to agricultural land between 1957 and 1976 (Bushley and Khatri 2011; Ojha 2003; Pokharel 2005; Sherpa et al. 2010). Second, in response, the central government reversed its forest management strategy and, through the 1976 National Forestry Plan, began a program of decentralization and community involvement (Chhetri 2006; Gilmour, King, and Hobley 1989; Ojha, Persha, and Chhatre 2009; Pokharel, Stadtmuller, and Pfund 2005). Finally, Nepal more strongly embraced community forestry management in the 1990s, beginning

with the 1993 Forest Act, which included local forest users in forest management decision making and provided mechanisms for these users to benefit from the forests that they managed (Acharya 2002). This led to the creation of community forest user groups (CFUGs) and, in 1995, to the Federation of Community Forestry Users Nepal (FECOFUN), whose role is to advocate for the rights of CFUGs and to strengthen their role in the policy-making process. Since 1993, Nepal has formally devolved management rights over 1.2 million ha of forest to more than 18,000 CFUGs (ANSAB 2011). Most of these community forests and associated CFUGs are in the Middle Hills of Nepal, with relatively little development of CFM in the Terai. In part, this heterogeneity is a consequence of the Nepali government's unwillingness to implement CFM in these commercially high-value forests (Ribot, Agrawal, and Larson 2006).

While the government retains forest ownership in Nepal's community managed forests, all management decisions are made by individual CFUGs, and each member in a user group has equal rights and access to the forest's resources. The government of Nepal provides technical assistance to CFUGs when needed, in return for improved forest management (Acharya 2002). Decentralized forest governance in Nepal has thus enabled forest users to develop autonomous organizations and to reclaim traditional forestry practices.

## **CHARACTERIZING CFM IN NEPAL: IFRI DATA**

The analysis of IFRI cases reported in this section is based on data from 34 forests and 36 forest user groups. The national government owns all forestland in the surveyed sites ( $N = 57$ ). We characterized Nepal's forests in relation to a subset of the factors associated with successful CFM (table 4.1).

### **Factors Associated with Effective CFM**

#### *Environmental*

Community forests in Nepal were small: the average size of community forests surveyed by IFRI was  $174.5 \pm 158.6$  ha ( $N = 33$ ). Only one forest site was larger than 400 ha. Forest size was not correlated with per hectare biomass (Pearson = 0.182,  $P = 0.311$ ). Neither the subsistence value nor the commercial value of forests was considered by foresters to be higher than normal (table 4.1).

**TABLE 4.1. CHARACTERIZATION OF COMMUNITY FOREST SITES IN NEPAL**

VARIABLE	INDICATOR (AND UNIT)	MEAN (OR MODE)	SD (OR N OF MODE)	N	BIOMASS		LIVELIHOODS	
					LEVEL OF ASSOCIATION <sup>a</sup>	P	LEVEL OF ASSOCIATION <sup>a</sup>	P
<b>Environmental</b>								
Medium to large forests	Forest size (ha)	174.5	158.6	33	0.182	0.311	0.222	0.214
<i>Value of the resource (I)</i>	The subsistence value of the forest is higher than normal (1) or not (0)	(0)	(21)	30	(31)	(0.394)	(30)	(0.429)
<i>Value of the resource (II)</i>	The commercial value of the forest is higher than normal (1) or not (0)	(0)	(21)	30	(32)	(0.301)	(27)	(0.652)
<b>Socioeconomic</b>								
Small to medium-sized user groups	User group (no. of people)	2484.6	2389.5	34	0.124	0.485	-0.166	0.348
<i>Moderate dependence on resources</i>	No. of types of benefit gained from the forest (max. 9)	4.6	2.0	34	-0.075	0.673	<b>0.369</b>	<b>0.032</b>
<i>Past experience with forest management</i>	Age of settlement (years)	78.6	92.6	27	-0.243	0.222	0.128	0.525
<b>Institutional</b>								
Effective local enforcement and sanctions	Users do (1) or don't (0) always comply with imposed penalties	(1)	(20)	23	<i>N</i> < 5 in at least one group			
Tenure security	Forest is owned by the state (1) or not (0)	(1)	(31)	31	<i>N</i> < 5 in at least one group			

<sup>a</sup> Levels of association were calculated using Pearson correlations or Mann-Whitney U tests (in parentheses). Statistically significant (at 0.05) associations are indicated in **bold**.

### *Socioeconomic*

Forest user groups were large: The average size was 2484.6 ± 2389.5 individuals (*N* = 34). Forest users gained multiple benefits from the forests: The mean number of types of benefit was 4.6 ± 2.0 (*N* = 34). Forests that offered more benefits were significantly associated with improved livelihood outcomes (Pearson = 0.369, *P* = 0.032). Forest users had extensive experience with forest management: The average age of settlements in Nepal was 78.6 ± 92.6 years (*N* = 27).

### *Institutional*

The majority of users did comply with imposed penalties when in violation of forest rules (20/23). All 31 of the surveyed forests were owned by the state government, rather than by communities or by private individuals.

## Features of Forest Management Specifically Relevant to Effective REDD+

### *Carbon storage*

The carbon gain from reduced deforestation depends in part on the volume of carbon stored within a forest. Forest carbon is closely related to tree size, as measured by tree diameter at breast height (DBH). The average DBH of trees >10 cm DBH was  $22.4 \pm 9.5$  cm ( $N = 58$  forests).

### *Forest dependence*

Local communities used the forests for subsistence and commercial livelihoods:  $69.7 \pm 37.2$  percent of households within forest user groups depended on forests for their subsistence livelihoods ( $N = 90$  forest user groups), and  $4.2 \pm 12.1$  percent for commercial livelihoods ( $N = 107$  forest user groups). In particular, community managed forests were an important source of fuelwood. Forest user groups depended on community forests for  $34.9 \pm 34.8$  percent of their fuelwood ( $N = 95$  user groups).

### *Capacity for monitoring, reporting, and verification*

Many user groups had prior experience of conducting (defined as coordinating, passing rules for, or modifying rules for) a variety of activities associated with monitoring, reporting, and verification (MRV). In Nepal, 59 of 60 user groups had experience monitoring forest conditions, 58 of 60 had experience monitoring conformance with forest rules, 55 of 60 had experience sanctioning rule breakers, and 55 of 60 had experience interacting with higher authorities. User groups had less experience maintaining records of forest conditions: 33 of 60 user groups in Nepal had done so.

## **REDD+ IN NEPAL**

The government of Nepal's REDD+ strategy is led by the Ministry of Forests and Soil Conservation. As of 2010, different donors have provided a total of about US\$7.8 million to finance REDD+ readiness and pilot projects in Nepal (Government of Nepal 2010). The primary donor has been the World Bank's Forest Carbon Partnership Facility (FCPF), which has awarded Nepal US\$3.5 million for consultation, outreach, terms of reference development, REDD+ strategy preparation, monitoring efforts, and investments for long-term REDD+ implementation and management. The government of Finland has also worked with Nepal on a Forest Resources Assessment (FRA) in order to generate baseline data on national forest coverage, carbon stocks, timber products, and other forest resources in protected areas (Government of Nepal 2010). Other major donors include the Swiss Agency for Development and Cooperation, the United States Agency for International Development, and the Japanese International Cooperation Agency.

The Readiness Preparation Proposal (RPP) was developed for Nepal with the above support. The process involved 57 local-, regional-, and national-level consultation workshops, which convened forestry experts, government officials, media representatives, academics, and forest user groups. (Government of Nepal 2010). As a consequence of the RPP, a number of pilot projects have been initiated, led by a combination of community groups and national and international NGOs.

## Pilot Projects

At least seven REDD+ pilot projects have already been implemented in Nepal (Government of Nepal 2011; table 4.2). The projects are all located in community managed forests and address issues such as capacity building and benefit sharing (table 4.2, figure 2.1).

**TABLE 4.2. REDD+ PILOT PROJECTS IN NEPAL**

NO.	PROJECT NAME	LEAD ORGANIZATION(S)	LOCATION	ASSOCIATION WITH COMMUNITY FOREST MANAGEMENT	PRINCIPAL AIMS	PRINCIPAL EFFECTS TO DATE	REFERENCE(S)
1	Forest Carbon Trust Fund (Design and establishment of a governance and payment system for community forest management under REDD+)	ICIMOD ANSAB FECOFUN	In community managed forests in three watersheds, in three different districts in the Middle Hills and Terai.	Includes 10,266 ha of community forest, 105 CFUGs, and 18,000 households.	To pilot a REDD+ payment mechanism: a national demonstration payment mechanism for carbon credits in the community forestry sector.	Payments have been made to forest-dependent communities, via three watershed-level 'REDD+ Networks,' with an equitable benefit-sharing mechanism.	ICIMOD et al. 2011 MoFSC 2011 West 2012
2	REDD - reducing poverty in Nepal	WWF Nepal Winrock International	In 14 districts in the Terai Arc Landscape (TAL).	The project area includes national, community, leasehold, collaborative, private and religious forests.	To prepare for REDD+ by establishing an equitable carbon financing mechanism.	Established a forest carbon baseline, inc. assessment of potential carbon sequestration, additionality, and leakage. Built technical capacity among local staff for carbon measurement. Devised methods for estimating forest carbon.	Joshi and Bhatta 2010 MoFSC 2011
3	Plan Vivo	LFP Rupantaran Nepal	In four districts in the Middle Hills, Shivaliks, and Terai.	Involves eight VDCs. More than 80% of households in the project area are members of CFUGs.	To assist rural communities in accessing financial resources from PES in the form of Plan Vivo credits.	The project has submitted an application to Plan Vivo and is awaiting validation so that project areas may begin generating credits.	MoFSC 2011 LFP & Rupantaran Nepal 2011

(CONTINUED)

**TABLE 4.2. REDD+ PILOT PROJECTS IN NEPAL (continued)**

NO.	PROJECT NAME	LEAD ORGANIZATION(S)	LOCATION	ASSOCIATION WITH COMMUNITY FOREST MANAGEMENT	PRINCIPAL AIMS	PRINCIPAL EFFECTS TO DATE	REFERENCE(S)
4	Grassroots level capacity building on REDD+ in Asia and the Pacific	RECOFTC FECOFUN	In 16 districts in the Middle Hills, Terai and East Nepal.	Implemented through FECOFUN. CFUGs are the focal target of the training.	To build local-level capacity and to educate communities on REDD+ issues.	The project has developed a training manual (in Nepali and English) to prepare national and district level instructors on issues related to REDD+ and climate change, and has trained >350 trainers in climate change and REDD+.	MoFSC 2011 RECOFTC 2012
5	Climate Change and REDD Partnership Program	NEFIN IWGIA AIPP IPICPRE	Nationwide: in 58 districts, with an initial focus on Lamjung District.	Principally targets indigenous communities.	To contribute to the development and implementation of approaches in national REDD+ strategies that take into account both long-term forest conservation and the rights and concerns of indigenous people.	Advocacy & lobbying: distribution of information to government agencies; meetings and dialogue; research. Awareness raising & capacity building: educational materials, training, information dissemination by public media.	MoFSC 2011 Sherpa 2012
6	Hariyo Ban Program	WWF Nepal FECOFUN CARE Nepal NTNC	Terai Arc Landscape.	Inclusive of community managed forests and CFUGs.	To build the structures, capacity and operations necessary for effective sustainable landscape management and REDD+.	Training; REDD and climate change sensitization workshops.	WWF 2012

*Acronyms:* CFUG: Community Forest User Group; FECOFUN: Federation of Community Forest Users Nepal; PES: Payment for Environmental Services; REDD+: Reduced Emissions from Deforestation and forest Degradation; VDC: Village Development Committee.

The most comprehensive pilot project under way in Nepal is the “Forest Carbon Trust Fund” (table 4.2). Four unique features characterize this project. First, it has actually made payments to local communities: initially in 2011 and again in July 2012 when a US\$95,000 seed grant from the Norwegian development agency (Norad) was distributed. These payments represent the delivery of significant financial resources to community forest users: the Chanarwati, Ludhikhola, and Kayerkhola watersheds received US\$44,188, US\$26,122, and

US\$24,691, respectively. Second, payments take into account the condition of the forest before project implementation, so that communities were rewarded for having historically taken care of their forests (Gurung 2011). This deviates from the often-cited expectation that REDD+ can and will pay for only additional reductions in deforestation relative to a recent baseline. Third, the project has designed and implemented a nested system for distributing payments, combining national and subnational strategies. Payments are made to three Watershed REDD+ Networks, each made up of one representative from each CFUG, for their contributions to sustainable forest management. The Watershed REDD+ Networks are then responsible for distributing the money to individual CFUGs (ICIMOD, ANSAB, and FECOFUN 2011). This mechanism bridges the community and the national levels, satisfying both the need to administer payments centrally and the need to make payments to households that reflect local heterogeneity in participation and costs (Newton et al. 2012). Fourth, CFUGs receive payments based on a system that not only recognizes the amount of carbon stored and sequestered, but also takes into account social variables. Only 40 percent of payment values are based on forest carbon enhancement, with the remaining value weighted to favor households with a greater number of indigenous (10 percent), Dalit (15 percent), and female (15 percent) members, in order to favor households in poverty (20 percent). This mechanism may help to ensure that REDD+ benefits reach marginalized groups, and to avoid elite capture.

In sum, the Forest Carbon Trust Fund's differentiated payments are intended to encourage equality and provide social co-benefits, and have led to an increase in wealth for many households and have incentivized sustainable forest management (West 2012). The project was designed to meet the requirements of the RPP, and of all the pilot projects, it comes closest to providing a functioning system that could work for REDD+ nationally. The Watershed REDD+ Networks could be the basis of a model system for designing payment distribution mechanisms that effectively transfer funds from a national to a local level, if REDD+ is eventually implemented more widely (ICIMOD, ANSAB, and FECOFUN 2011).

Finally, several pilot projects engage with community forest management and with collaborative forest management in the Terai region. The Terai forests represent 62.4 percent of Nepal's total above-ground carbon stock and are capable of storing and sequestering more carbon due to the local climate and tree species composition (Baral et al. 2009). However, the Terai forests also have a higher deforestation rate than those in the Middle Hills in Nepal owing to the higher value of their timber (Panta, Kim, and Joshi 2008). Because these forests are high-value and high-threat, it is particularly important to understand the impact that REDD+ on them and on the communities that depend on them (West 2012).

## **WHAT ADDITIONAL INSTITUTIONS ARE NEEDED FOR REDD+ IMPLEMENTATION IN NEPAL?**

The government of Nepal has placed community forestry at the center of its REDD+ strategy, in part because of the country's successful history and confidence in decentralized forest management (West 2012). However, REDD+ carries an additional set of requirements, not all of which may be met by existing CFM institutions.

Additional elements include: institutions to administer REDD+, a payment mechanism for distributing benefits, and increased capacity for monitoring, reporting, and verification.

## **Institutions**

The success of REDD+ in the context of community forest management in Nepal will depend on the coordination and cooperation of state and civil society actors at the national and local levels to present a unified plan of Nepal's REDD+ strategy to the international community (Dahal and Banskota 2009). Nepal's Ministry of Forests and Soil Conservation has demonstrated its recognition of the importance of nonstate involvement both through the RPP's emphasis on multistakeholder engagement (Government of Nepal 2010), and through the central role it has given to community forest groups such as FECOFUN and to the Association of Collaborative Forest Users in Nepal's planned REDD+ strategy (Luintel 2006; West 2012). Likewise, several civil society organizations have proactively sought government involvement in REDD+ pilot projects. For example, the Forest Carbon Trust Fund created positions for government employees on several of its leadership committees (Government of Nepal 2011; ICIMOD, ANSAB, FECOFUN 2011). This suggests that both government and civil society organizations are committed to cooperating with each other in order to further Nepal's climate change interests in relation to REDD+, and that community forest groups are well placed to have a voice in the development of REDD+ strategies in Nepal.

However, Nepal's existing institutions were not sufficient to facilitate the development and implementation of REDD+, and Nepal has invested in developing new institutional arrangements at the national level to facilitate carbon market transactions even as it waits for the resolution of the uncertainty surrounding REDD+. Soon after the FCPF approved Nepal's Readiness Proposal Idea Note in 2009, the government created three national-level institutional mechanisms for implementing REDD+ in Nepal: (1) the REDD+ Forestry and Climate Change Cell (RFCCC), (2) the higher-level REDD+ Working Group (RWG), and (3) the Apex Body, the Multi-Stakeholder Coordinating and Monitoring Committee (MSCMC) (Bushley and Khatri 2011; Government of Nepal 2010). The RFCCC is responsible for communication and outreach among stakeholders, measurement of carbon assets, and initial policy development. The RWG is the planning committee, responsible for approving and monitoring REDD+ activities such as workshops and ensuring that all stakeholders are represented in the decision-making process. The MSCMC approves all REDD+ policies developed by the RFCCC (Government of Nepal 2010). These three institutions developed Nepal's RPP together, and were designed so that they would transition into useful roles during a future implementation phase of REDD+ (although it remains unclear what these roles would be) (Government of Nepal 2010).

## **Payment Mechanism**

The RPP envisions international payments being made into a national carbon trust fund (West 2012). A critical component of all REDD+ architectures is a mechanism to distribute payments from this national level to a local level, and specifically to groups involved in community managed forests (that is, CFUGs), leasehold forests,



collaborative forests, and protected forests. The Nepali government favors a national approach, such as the bundling of forest sites, in order to retain centralized transaction records and to prevent leakage of forest extraction into non-community forests (Dangi 2012). The RPP proposes the distribution of payments from the national level to districts through District Forest Coordination Committees (DFCCs), which are existing multi-stakeholder institutions and may therefore be an efficient means to fulfill this role (Government of Nepal 2010). However, DFCCs have been critiqued for not being inclusive of nonstate actors (Sunam et al. 2010).

### **Monitoring, Reporting, and Verification**

REDD+ implementation requires monitoring, reporting, and verification to satisfy the demands of carbon buyers (Corbera 2012), but Nepal currently lacks the financial and institutional capacity to undertake all the MRV tasks necessary for REDD+ (Jha and Paudel 2010).

Techno-bureaucratic and centralized MRV strategies could stimulate recentralization of forest management activities, while the technical nature and cost of monitoring, especially remote sensing, may exclude CFUGs from participation (Government of Nepal 2010). In any case, collection of district- and community-resolution data is beyond the scope of national-level projects such as the FRA, and will need to be completed more locally (Kandel 2010). Subnational MRV may better account for forest degradation and for local heterogeneity; failing to do so could compromise both environmental and socioeconomic outcomes in forest-dependent communities (Bushley and Khatri 2011).

Nepal does not have a national-level land use change detection program (Jha and Paudel 2010). Nor is there yet a system in place that could conduct local MRV (Government of Nepal 2011), although there are indications that monitoring and measurement by CFUGs could be just as accurate as alternative high-tech approaches (Karky and Skutsch 2010, Puliti 2012).

## **HOW MIGHT REDD+ AFFECT COMMUNITY FOREST MANAGEMENT?**

Civil society organizations, local communities, academic researchers, and government officials in Nepal have all expressed concerns about the possible negative impacts of REDD+ on communities and community forests. These concerns relate to uncertainties about how REDD+ may alter forest resource access, incentivize forest management recentralization, or lead to benefit capture by elite groups.

### **Altered Forest Resource Access**

REDD+ readiness activities in Nepal are focused on community forests, but uncertainties about the direction and magnitude of REDD+ mean that the future impacts on forest use by communities are unknown. In the short term, a REDD+ focus on maximizing carbon additionality in Nepal could reduce other forest benefits

(Bushley and Khatri 2011) and lead to less access to forests for community users. Plantations of fast-growing tree species may maximize carbon outcomes, but can reduce biodiversity and access to subsistence livelihood resources (Ludwig, Hilborn, and Walters 1993; Putz 2009). Tighter control of forest use, such as prohibiting either agriculture or the extraction of forest products, could reduce the value of community forests for subsistence livelihood strategies, income-generating opportunities, or adaptive capacity (West 2012). There have been some attempts to reduce fuelwood consumption by providing electricity and by incentivizing a switch to kerosene or alternative fuel sources, but not all households can afford these transitions (West 2012).

In the longer term, an absence of firm funding commitments from developed countries means that initiatives that started as REDD+-readiness and pilot projects may not be funded for long. Discontinuities between REDD+ pilot projects and full REDD+ implementation may have implications for forest users who have been incentivized to alter their traditional livelihoods. For example, the Forest Carbon Trust Fund pilot project encouraged a Chepang community to plant *Chiuri* fruit trees to replace shifting agriculture. The Chepang complied because of the large seed grant (US\$1,176), but are worried about the continuity of payments (Sherpa 2012). Because it takes 15–20 years for the trees to mature, the Chepang are concerned that they will face food insecurity and poverty if REDD+ does not immediately fill the payment gap once the project ceases (Sherpa 2012).

### Recentralization

Forest management in Nepal has been extensively decentralized, and strong community-level institutions have developed as a result. However, REDD+ could create lucrative financial flows that could incentivize the central government to slow, or even reverse, forest management decentralization in Nepal. One mechanism by which this could occur is if the District Forest Office (DFO) of the central government failed to approve the renewal of CFUG Operational Plans (Kanel 2006).

## Centralized or Elite Capture of Benefits

Two trends suggest that benefits brought by REDD+ may to some degree be captured by the central government or by elite groups. First, although the rights for CFM have been devolved to CFUGs, the government retains ownership rights over all forestlands nationally except for in private forests. CFUGs therefore have the rights to carbon stored in the trees, but not the rights to carbon stored in the soil, which remains with the government. The government could legally claim all revenues from carbon financing that result from soil carbon, unless those rights are formally transferred to CFUGs or other community groups. The REDD+ program currently makes no distinction between below-ground and above-ground carbon, and this discrepancy has fueled conflicting claims and confusion (Bushley and Khatri 2011; Pokharel and Byrne 2009).

Second, the highly profitable timber forests of the Terai are governed predominantly by Collaborative Forest Management. Community forest management has not been extended into the Terai, and this has been interpreted as an indication of the Nepali government's unwillingness to devolve management rights for high-value forests to communities (Ribot, Agrawal, and Larson 2006). Collaborative Forest Management allows more timber extraction and affords fewer rights to local communities than community forestry (Bampton, Ebregt, and Banjade 2007); 75 percent of forest-derived income under this tenure arrangement goes to the government (Bushley and Khatri 2011).

*Women tie up bamboo tree trunks which they collected from the forest. Tanzania Mufindi district, Iringa region. Mikkel Ostergaard / Panos.*



## DISTRIBUTION OF FORESTS AND TENURE

### Forested Land

Approximately 34 million ha of forests cover more than 38 percent of Tanzania, with nine main forest types (MNRT 2001). These include *miombo* woodlands in the lowland areas across central, western, and southern Tanzania; acacia woodlands in the northern regions; coastal woodland mosaics in the east; mangroves along the Indian Ocean; and ancient closed canopy in the Eastern Arc Mountains (Mwakalobo et al. 2011). This heterogeneity in forest types across Tanzania results in varied livelihood opportunities and carbon storage capacity.

Of the total forest area, 18 million ha are designated as forest reserves, national parks, or other types of protected areas where resource extraction is limited or prohibited. The remaining 16 million ha are not formally protected at the national level and are classified as Village Land Forest Reserves or General Land (Blomley et al. 2008; Mwakalobo et al. 2011; Zahabu et al. 2008). Village Land Forest Reserves are overseen at the local level by village councils, while General Land is managed neither by the national government nor local village councils, and is subject to de facto open access use. Much General Land is becoming degraded at a rapid pace due to pressure to convert forests to agriculture, increase charcoal production and harvest firewood (Chiesa et al. 2009). The deforestation rate of General Land is estimated to be between 130,000 and 500,000 ha per year and is greatest in areas where populations are expanding (Zahabu et al. 2008).

### Community Involvement in Forest Management

Throughout the 1990s, Tanzania shifted from a centralized to a more decentralized forest governance system, as the Tanzanian government encouraged more community participation in the conservation and management of forests (Wily 2001). In 1998, the Tanzanian government passed forest policy legislation that created Participatory Forest Management (PFM) as an official land tenure category. This included the creation of village councils, which were intended to create greater local governance autonomy and to increase community participation in land management (Akida and Blomley 2006; Naughton-Treves and Day 2012; Veit, Vhugen, and Miner 2012). However, this legislation was not operationalized until 2002, when two subcategories were implemented within PFM: Joint Forest Management (JFM) and Community Based Forest management (CBFM) (Mukama, Mustalahti, and Zahabu 2012). PFM is a system of forest governance that devolves

authority from the national to the local level, and occurs in both national forest reserves and Village Land Forest Reserves (VLFR). JFM and CBFM are legal land tenure regimes that have been implemented to improve and restore forest quality and the livelihoods of the local communities through community participation. Under JFM, the government owns the forest while the community assists with forest management. However, the communities' access rights to the forest depend on the unique benefit-sharing mechanism established for each JFM site. As a consequence, there are commonly more restrictions for communities and less clear distribution of benefits to the communities in JFM than in CBFM. In contrast, CBFM provides villages with de jure rights over VLFRs, allowing them to define who may access and use forest resources (Blomley and Iddi 2009). As of 2008, more than 2,300 villages (18 percent of all villages nationally) had become engaged in PFM, with 1.6 million ha of forest under JFM and 2.1 million ha under CBFM, representing about 11 percent of all forested land in Tanzania (Blomley et al. 2008). All of these management plans are legally recognized, but all land in Tanzania remains owned by the president on behalf of the nation. Thus, only the rights to the land can be bought or sold, not the land itself (Naughton-Treves and Day 2012). As a consequence, it is very difficult to define clear property ownership, which can complicate forest use and management.

## **CHARACTERIZING CFM IN TANZANIA: IFRI DATA**

The analysis of IFRI cases reported in this section is based on data from 7 forests and 18 forest user groups. We characterized Tanzania's forests in relation to a subset of the factors associated with successful CFM (table 5.1).

### **Factors Associated with Effective CFM**

#### *Environmental*

Community forests in Tanzania were medium-sized: The average size of community forests surveyed by IFRI was  $1922.9 \pm 3217.0$  ha ( $N = 6$ ). Only two forest sites were smaller than 100 ha. Forest size was loosely correlated with per hectare biomass (Pearson = 0.803,  $P = 0.054$ ). Neither the subsistence value nor the commercial value of forests was considered by foresters to be higher than normal (table 5.1).

#### *Socioeconomic*

Forest user groups were large: The average size was  $1320.5 \pm 964.7$  individuals ( $N = 6$ ). Forest users gained multiple benefits from the forests: The mean number of types of benefit was  $5.4 \pm 3.2$  ( $N = 7$ ). Forest users had extensive experience with forest management: The average age of settlements in Nepal was  $42.4 \pm 6.2$  years ( $N = 7$ ).

**TABLE 5.1. CHARACTERIZATION OF COMMUNITY FOREST SITES IN TANZANIA**

VARIABLE	INDICATOR (AND UNIT)	MEAN (OR MODE)	SD (OR N OF MODE)	N	BIOMASS		LIVELIHOODS	
					LEVEL OF ASSOCIATION <sup>a</sup>	P	LEVEL OF ASSOCIATION <sup>a</sup>	P
<b>Environmental</b>								
Medium to large forests	Forest size (ha)	1922.9	3217.0	6	<b>0.803</b>	<b>0.054</b>	-0.432	0.392
<i>Value of the resource (I)</i>	The subsistence value of the forest is higher than normal (1) or not (0)	(0)	(6)	7	N < 5 in at least one group			
<i>Value of the resource (II)</i>	The commercial value of the forest is higher than normal (1) or not (0)	(0)	(5)	7	N < 5 in at least one group			
<b>Socioeconomic</b>								
Small to medium-sized user groups	User group (no. of people)	1320.5	964.7	6	0.018	0.973	0.440	0.383
<i>Moderate dependence on resources</i>	No. of types of benefit gained from the forest (max. 9)	5.429	3.207	7	-0.071	0.879	0.606	0.149
<i>Past experience with forest management</i>	Age of settlement (years)	42.4	6.2	7	-0.424	0.343	-0.251	0.587
<b>Institutional</b>								
Effective local enforcement and sanctions	Users do (1) or don't (0) always comply with imposed penalties	(0)	(4)	7	N < 5 in at least one group			
Tenure security	Forest is owned by the state (1) or not (0)	(1)	(4)	7	N < 5 in at least one group			

<sup>a</sup> Levels of association were calculated using Pearson correlations or Mann-Whitney U tests (in parentheses). Statistically significant (at 0.05) associations are indicated in **bold**.

### *Institutional*

The majority of users did comply with imposed penalties when in violation of forest rules (4/7). Of the seven surveyed forests, four were owned by the government, rather than by communities or by private individuals.

## **Features of Forest Management Specifically Relevant to Effective REDD+**

### *Carbon storage*

The carbon gain from reduced deforestation depends in part on the volume of carbon stored within a forest. Forest carbon is closely related to tree size, as measured by tree diameter at breast height. The average DBH of trees >10 cm DBH was 18.4 ± 7.7 cm (N = 2).

### *Forest dependence*

Local communities used the forests for subsistence and commercial livelihoods: 43.2 ± 47.7 percent of households within forest user groups depended on forests for their subsistence livelihoods ( $N = 19$  forest user groups), and 12.8 ± 29.5 percent for commercial livelihoods ( $N = 17$  forest user groups).

In particular, community managed forests were an important source of fuelwood. Forest user groups depended on community forests for 50.4 ± 43.4 percent of their fuelwood ( $N = 16$  user groups).

### *Capacity for monitoring, reporting, and verification*

Many forest associations had prior experience conducting (defined as coordinating, passing rules for, or modifying rules for) a variety of activities associated with MRV. In Tanzania, half of the forest associations had experience monitoring forest condition, half had experience monitoring conformance with forest rules, neither had experience with sanctioning rule breakers, and half had experience interacting with higher authorities. Forest associations had less experience maintaining records of forest conditions: Only half of the forest associations in Tanzania had done so.

## **REDD+ IN TANZANIA**

The Government of Tanzania acknowledges the benefits that could accrue to both the nation and local people through carbon markets and REDD+, and is researching viable emissions reduction programs (Chiesa et al. 2009). Tanzania is one of nine pilot countries for the UN-REDD program, and pilot projects are being developed and implemented throughout the country (Burgess et al. 2010). It has elected to pursue a two-tiered national REDD+ model rather than a subnational system of direct payments from international donors to local communities. Land conversion to agriculture is the main driver of deforestation and forest degradation in Tanzania, and so programs that address land use practices have the potential to mitigate forest conversion.

Tanzania has been proactive in seeking funding and support from various REDD+ programs and donor countries to implement REDD+ pilot projects. The major donor of the REDD+ program in Tanzania has been the Norwegian Ministry of Foreign Affairs, which has committed Nkr 500 million (US\$91.7 million) in a series of bilateral agreements with Tanzania since 2009 to enable the creation and implementation of subnational REDD+ pilot projects, as well as research and capacity building (Norad 2011). Tanzania has also received about US\$4.28 million from the UN-REDD Programme aimed at supporting national-level institutional reform (Burgess et al. 2010). Other major donors include the government of Finland, for a national forest monitoring system (US\$5 million); and the German Climate Change Initiative (US\$3.5 million), for improving forest management in the Eastern Arc Mountains (Burgess et al. 2010).



## Pilot Projects

Tanzania has created a draft National REDD+ Strategy, which an interim National REDD+ Task Force is implementing through pilot projects and the development of new institutions. Pro-poor implementation and poverty reduction have been national priorities since 2008, and the REDD+ program accordingly focuses on the involvement of local communities in design, implementation, preparation, and monitoring (Mwakalobo et al. 2011; Naughton-Treves and Day 2012).

At least nine different REDD+ pilot projects have been developed, all in PFM forests—two in JFM and the rest in CBFM forests (table 5.2). National and international NGOs have been involved in implementing these pilot projects in Tanzania, in collaboration with local communities and governmental agencies (Deloitte 2012d) (table 5.2). The projects focus on building REDD+ capacity at community and national levels, helping to formulate the national REDD+ strategy, and developing existing PFM and regional and district-level forest institutions (Burgess et al. 2010; MJUMITA and TFCG 2009).

Implementation goals for the pilot projects include the creation of monitoring plots to calculate baseline reference emissions and training communities to monitor, report, assess, and verify carbon data. These pilot projects have been created to integrate within, and to support existing, community forest management structures while additionally achieving the goal of reduced emissions from deforestation.

The Tanzania Forest Conservation Group (TFCG) project “Making REDD Work for Communities and Forest Conservation in Tanzania” (hereafter, TFCG project) is one of the most advanced pilot projects. It has already made trial payments to five villages, and so its experience may be a useful illustration of how a full national REDD+ program might be expected to roll out. The project aims to develop a voluntary market REDD project under the verified carbon standard (VCS) in communities within CBFM landscapes (Deloitte 2012g). Three features of the project are particularly worth noting. First, payments to date have been based on projected carbon market values, and have consequently been relatively low (about US\$10–15 per person) (Deloitte 2012g). This may reflect both the low base rate of carbon trading and the level of mitigation additionality that conservation of dry forests can contribute. In either case, the payments present project participants with a realistic expectation of REDD+ as a future income-generating opportunity, allowing them to balance the gains against the opportunity costs. Second, communities have been granted considerable autonomy in designing payment-distribution systems (Deloitte 2012g). Villages have in many cases accounted for opportunity costs (as determined by deforestation) and community engagement, and have chosen different combinations of direct payments and community development projects. Third, 15 Village Natural Resource Committees (VNRCs) have been established to support the development and implementation of REDD+ payment distribution and forest management plans (Deloitte 2012g).

**TABLE 5.2. REDD+ PILOT PROJECTS IN TANZANIA**

NO.	PROJECT NAME	LEAD ORGANIZATION(S)	LOCATION	ASSOCIATION WITH COMMUNITY FOREST MANAGEMENT	PRINCIPAL AIMS	PRINCIPAL EFFECTS TO DATE	REFERENCE(S)
1	Building REDD readiness in the Masito Ugalla Ecosystem pilot area in support of Tanzania's National REDD Strategy	Jane Goodall Institute	In the Masito Ugalla Ecosystem, in the Kigoma and Mpanda Districts of western Tanzania.	Incorporates 90,989 ha of forest: mostly General Land, but the project aims to establish CBFM within the site.	To conserve one of the last large expanses of intact forest in Tanzania, enhancing biodiversity and ecosystem functions, by giving local communities and governments the tools and training to manage and monitor forests and to sell carbon credits in the global market through REDD.	<p>Trial payments in seven villages.</p> <p>Created an inter-village forest management organization, which has developed a forest management plan and has obtained management rights for the Masito Ugalla forest area from the district government.</p> <p>Promoted beekeeping as an income-generating activity, though training and equipment.</p>	<p>TNRF 2012</p> <p>Deloitte 2012e</p> <p>The REDD Desk 2013</p>
2	Enhancing Tanzanian capacity to deliver short- and long-term data on forest carbon stocks across the country	WWF Tanzania	Nationwide	Inclusive of all forest management types within the PFM structure.	To contribute core data to the Tanzanian national forest carbon MRV system, and to build technical capacity to ensure long-term sustainability.	<p>Establishing a national Tanzanian carbon trading system that is formally integrated with the national MRV system. Carbon stock assessments begun, using plots, LiDAR, and GIS. Training opportunities for community members to learn how to collect data to monitor carbon.</p>	Deloitte 2012j

(CONTINUED)

**TABLE 5.2. REDD+ PILOT PROJECTS IN TANZANIA (continued)**

NO.	PROJECT NAME	LEAD ORGANIZATION(S)	LOCATION	ASSOCIATION WITH COMMUNITY FOREST MANAGEMENT	PRINCIPAL AIMS	PRINCIPAL EFFECTS TO DATE	REFERENCE(S)
3	Making REDD work for communities and forest conservation in Tanzania	TFCG MJUMITA	Lindi District, on the southern coast, and Kilosa District, in the Eastern Arc Mountains.	The project has facilitated creation of new VLFRs that cover 1) 53,200 ha of forest, with 17 participating villages in Lindi; and 2) 27,389 ha of forest, with 16 participating communities in Kilosa.	To demonstrate a pro-poor approach to REDD+ by generating direct and equitable financial incentives from the global carbon market for rural communities that are sustainably managing Tanzanian forests at a sub-national level.	16 Village Land Forest Reserves and 15 Village Natural Resource Committees established.  Progress made towards VCS validation.  Trial payments in 19 villages. Payment values estimated from projected REDD+ revenues. Benefit distribution mechanisms determined by communities.  Support for community forest governance, including training, developing forest management plans, and assisting acquisition of Village Land Certificates to obtain land titles.	TNRF 2012  Deloitte 2012g  The REDD Desk 2013

**(CONTINUED)**

**TABLE 5.2. REDD+ PILOT PROJECTS IN TANZANIA (continued)**

NO.	PROJECT NAME	LEAD ORGANIZATION(S)	LOCATION	ASSOCIATION WITH COMMUNITY FOREST MANAGEMENT	PRINCIPAL AIMS	PRINCIPAL EFFECTS TO DATE	REFERENCE(S)
4	Advancing REDD in the Kolo Hills Forests (ARKFor)	AWF	Kondoa District, in north-central Tanzania	The project is in PFM forests, incorporating 21 villages and 71,632 ha of land, including 19,924 ha of forests, of which 10,114 are in VLFRs and three government reserves.	<p>To improve forest management by enforcing PFM plans.</p> <p>To diversify livelihoods.</p> <p>To market and sell carbon credits.</p>	<p>13 villages formed a JFM association, and drafted a JFM plan for two government forest reserves.</p> <p>Forest monitoring has successfully stopped illegal wood harvesting and has managed grazing in JFM forests.</p> <p>Creation of Village Land Use Plans and Forest Management Plans, which have slowed agricultural expansion and created sustainable harvesting practices in forests, respectively.</p> <p>Progress towards a VCS and CCBA accredited project.</p>	<p>TNRF 2012</p> <p>Deloitte 2012b</p> <p>The REDD Desk 2013</p>
5	Combining REDD+, PFM and FSC certification in south-eastern Tanzania	MCDI	Kilwa District, in south-eastern Tanzania.	Promotes PFM in seven communities, covering 25,000 ha of forest. Assists the establishment of VLFRs.	<p>To use REDD revenues to help communities to expand PFM by creating VLFRs to be managed for a) timber under FSC certification, and b) VCS and CCBS verified carbon credits.</p> <p>To use fire management control to reduce forest carbon loss.</p>	<p>Carbon stock assessment conducted.</p> <p>Socio-economic baseline study conducted.</p> <p>MCDI obtained FSC certification in 2009, and so communities have experience with forest management plans, sustainable timber harvesting, fire prevention and monitoring.</p>	<p>MCDI 2010</p> <p>TNRF 2012</p> <p>Deloitte 2012f</p> <p>The REDD Desk 2013</p>

(CONTINUED)

TABLE 5.2. REDD+ PILOT PROJECTS IN TANZANIA (continued)

NO.	PROJECT NAME	LEAD ORGANIZATION(S)	LOCATION	ASSOCIATION WITH COMMUNITY FOREST MANAGEMENT	PRINCIPAL AIMS	PRINCIPAL EFFECTS TO DATE	REFERENCE(S)
6	<i>Hifadhi ya Misitua ya Asili</i> (HIMA): Piloting REDD in Zanzibar through community forest management	CARE Tanzania	On the islands of Unguja and Pemba (Zanzibar).	Initially in 27,650 ha of community upland forest and mangrove forest, eventually targeting 60,000 ha of forest and 16,000 rural households.	To promote community forest management.  To generate carbon income which will provide direct, equitable incentives to communities for forest conservation.	Four new CoFMAs developed (project target is 12, covering 10,650 ha of forest). Progress made towards reviewing 24 existing CoFMAs (covering 17,000 ha of forest).  Changes to land-tenure legislation: new CoFMAs will be valid for 25 years.  37 VCCs have been formed and are the signatories on the CoFMAs.	TNRF 2012  Deloitte 2012c  The REDD Desk 2013
7	<i>Hifadhi Mapafu ya Dar es Salaam</i> (HIMADA): Piloting REDD in the Pugu and Kazimzumbwi Forests	WCST	In the Pugu and Kazimzumbwi Forest Reserves, in a peri-urban area 40 miles from Dar es Salaam.	Promotes community engagement in the management of these two government-owned forest reserves, through JFM.	To facilitate the establishment of a clear JFM agreement between central and local government and the eight villages surrounding the forest reserve, to foster sustainable forest management and equitable benefit sharing.	The project has been cancelled, in part because the deforestation pressures could not be effectively mitigated by the project activities.	TNRF 2012  Deloitte 2012a  The REDD Desk 2013
8	Community-based REDD mechanisms for sustainable forest management in semi-arid areas	TaTEDO	Shinyanga and Kahama Districts, in the Shinyanga Region of northwestern Tanzania	Focuses on <i>Ngitili</i> forest (privately owned natural forest, managed by communities). Assisting 250 <i>Ngitili</i> owners in 10 villages, but total beneficiaries may total 6,000.	To support communities to sustainably manage the <i>Ngitili</i> forest, using REDD+ carbon payments as an incentive.	Formation of <i>Ngitili</i> carbon associations, and formalization of customary rights of <i>Ngitili</i> owners, and promotion of forest monitoring.  Training of 341 villagers in association management, which has allowed 11 <i>Ngitili</i> groups to be registered.	TNRF 2012  Deloitte 2012h  The REDD Desk 2013

(CONTINUED)

**TABLE 5.2. REDD+ PILOT PROJECTS IN TANZANIA (continued)**

NO.	PROJECT NAME	LEAD ORGANIZATION(S)	LOCATION	ASSOCIATION WITH COMMUNITY FOREST MANAGEMENT	PRINCIPAL AIMS	PRINCIPAL EFFECTS TO DATE	REFERENCE(S)
9	REDD readiness in southwest Tanzania	WCS	In and around protected areas (Forest Reserves and National Parks) in four forests in the Southern Highlands in south-western Tanzania.	Focuses on 52,680 ha of threatened montane forests, but the sites have been deemed inappropriate for JFM, and local communities are not the land owners. 40 villages are participating.	To conserve and sustainably manage the target forest areas.  To establish sustainable alternatives to forest resource use.	Quantification of forest condition (vegetation sampling in two sites), and of carbon usage by communities (conducted by local, trained monitors).  Environmental education (climate change and REDD+), and establishment of tree nurseries and woodlots.	TNRF 2012  WCS 2012  Deloitte 2012i  The REDD Desk 2013
<p><i>Acronyms:</i> CBFM Community Based Forest Management; CCBA: Climate, Community and Biodiversity Alliance; CoFMA: Community Forestry Management Agreement; FSC: Forest Stewardship Council; MJUMITA: Mtandao wa Jamii wa Usimamizi wa Misitani Tanzania; MRV: monitoring, reporting and verification; PFM Participatory Forest Management; REDD+: reducing emissions from deforestation and forest degradation; TaTEDO: Tanzania Traditional Energy Development Organization; VCS: Verified Carbon Standard; WCS: Wildlife Conservation Society; WCST: Wildlife Conservation Society of Tanzania.</p>							

## WHAT ADDITIONAL INSTITUTIONS ARE NEEDED FOR REDD+ IMPLEMENTATION IN TANZANIA?

The Tanzanian government aims to implement REDD+ programs in partnership with communities at the local level. Institutional capacity at various levels is needed to achieve this. Challenges include the need to engage effectively with the international carbon market, to distribute benefits equitably and efficiently, to coordinate all in-country actors, as well as needs for education and outreach both to explain the concepts and details of the REDD+ program to forest users and potential REDD+ participants, and to train them to assist in data collection, monitoring, reporting, and verification (Mukama, Mustalahti, and Zahabu 2012). Additional equipment and technology may be needed to facilitate some of these tasks (URT 2010a). Obstacles such as land tenure ambiguity and a lack of clear guidelines for payment mechanisms will need to be addressed to ensure a positive integration of REDD+ within existing PFM structures (Blomley and Iddi 2009).

### Institutions

Coordination between government agencies and between state and community actors is a central challenge confronting Tanzania's preparations for entry into a global carbon market (Chiesa et. al. 2009). Two interministerial committees have been established, the National Climate Change Steering Committee (NCCSC) and the National Climate Change Technical Committee (NCCTC), which will eventually oversee all

REDD+ activities although the National REDD+ Task Force and a National REDD+ Secretariat are serving interim advisory and coordinating roles (URT 2010b). The task force is a partnership between the Division of Environment (DoE), within the Vice President's office, and the Forestry and Beekeeping Division (FBD) of the Ministry of Natural Resources and Tourism (MNRT), and is tasked with planning and overseeing all REDD+ readiness activities.

Formal institutional structures that link local, regional, and national levels of government are operational in Tanzania and may aid vertical coordination to achieve effective REDD+ implementation in the context of PFM. A network of Regional Administrative Secretariats serves as a bridge between local governments and central government ministries throughout mainland Tanzania (Blomley 2006). Further, the PFM system in place throughout the country provides an institutional foundation for coordination between the national and local governments for REDD+-related activities. PFM represents a hybrid local-national arrangement in which national staff from the FBD and Tanzania Forest Services (TFS) partner with local forest managers and user groups, providing guidance, training, and capacity building, and channeling funds to support sustainable forest management (Blomley 2006). These are exactly the sorts of activities that would need to occur through REDD+ project implementation, and the fact that they are already happening under the PFM system is a positive sign that the vertical coordination needed for REDD+ implementation can be achieved.

While these various committees have set the stage for positive collaboration among numerous government offices and ministries at national and subnational levels, they have been less effective in encouraging the participation of civil society organizations (CSOs), including community forest users. The REDD+ Task Force includes only one CSO representative, the Tanzanian Forest Conservation Group (TFCG), and it is an observer only (Nhantumbo 2012). As a result of their exclusion from the REDD+ planning process, CSOs have adopted a critical stance to government policies, leading to tension between the government and the civil society sector. Some analysts contend that the failure to include CSOs in REDD+ planning will hinder effective REDD+ implementation, because CSOs are uniquely equipped to bridge the gap between national policy and local implementation (Nhantumbo 2012).

The REDD+ pilot projects have been more effective in supporting existing village governance institutions as well as in creating new institutional arrangements to foster effective forest management at the village level (Deloitte 2012g). For example, the African Wildlife Foundation pilot project created new connections between communities surrounding the project forest area. It helped communities to draft a joint forest management plan with input from the district and local government, to create an inter-village management committee to guide project implementation, and to form an inter-village patrol team to monitor and enforce the rules described in the forest management plan (Deloitte 2012b). Similarly, on Unguja and Pemba Islands, 37 Village Conservation Communities (VCC) have been formed and integrated into existing village structures; the VCCs are the signatories on the Community Forestry Management Agreements (CoFMAs). These village institutions have been integrated into training for REDD and CoFMA to facilitate vertical knowledge sharing (Deloitte 2012c). REDD+ pilot projects in Tanzania may thus have the potential to develop institutional and human capital among forest users.

## Payment Mechanism

Another institutional challenge related to the facilitation of carbon transactions is the need to design and operationalize a system for facilitating carbon payments. The Tanzanian government is planning to create a National REDD+ Trust Fund that would centralize the management of all carbon payments (URT 2010b). The national fund would purchase certified emissions reductions from subnational REDD+ projects using revenue obtained from the sale of emissions reductions on the international market. Progress is being made toward this goal through partnerships among governmental, civil society, and community-based agencies (Burgess et al. 2010).

A centralized management system may be preferable for emissions reductions generated on government-owned land, and could provide assistance for communities that lack the capacity to sell their credits autonomously (MJUMITA and TFCG 2011a). However, NGOs such as TFCG have expressed concerns that this system would incur high transaction costs and could be prone to corruption and the misuse of funds (MJUMITA and TFCG 2009, 2011a). TFCG is advocating for a decentralized payment mechanism that would allow local forest user groups to interact directly with buyers on the international market, arguing that this approach would lead to greater economic returns for the communities generating the carbon credits (MJUMITA and TFCG 2009).

Many of the pilot projects currently under way have encountered significant difficulties in designing and implementing revenue sharing mechanisms at the village level. Pilot projects in JFM forests have had particular difficulty, as revenue sharing in these forests requires the participation of the national government. The African Wildlife Foundation pilot project in a JFM forest in the Kondoa District, for example, has been unable to forge an agreement concerning revenue sharing with the national government; this disagreement has prevented payments from reaching the village level (Deloitte 2012b). An exception to these challenges is the TFCG project being implemented in a CBFM forest in the Lindi and Kilosa Districts, which has piloted a scheme of direct payments from the NGO to villagers (Deloitte 2012g).

Whether a centralized or decentralized payment approach is ultimately chosen, the ability to effectively facilitate carbon market transactions will require enhanced institutional capacity at the national, regional, and local levels in order for these various scales of government and civil society to effectively coordinate.

## Monitoring, Reporting, and Verification

A major obstacle to Tanzania's participation in a global carbon market is the absence of accurate, comprehensive baseline data needed to calculate reference emission levels for forest areas nationally (Burgess et al. 2010). The national system of carbon accounting required for REDD+ participation depends on these reference emission levels. A National Forest Resource Monitoring and Assessment project (NAFORMA) has been developed through collaboration between the United Nations Food and Agriculture Organization (UN-FAO) and the FBD (Otsyina et al. 2008).

The REDD+ pilot project of the World Wide Fund for Nature is gathering carbon stock data (biomass and soil carbon) on forests nationally, utilizing NAFORMA guidelines to ensure that its data and results can be



integrated into the national system (Deloitte 2012j). These data will play a key role in the establishment of a National Carbon Monitoring Center needed for Tanzania to access global funding for REDD+ in the future (Deloitte 2012d). The project is engaging communities by building capacity in the form of well-trained field crews to take part in forest carbon stock assessments. Village committee members and students from each study site have been involved.

## HOW MIGHT REDD+ AFFECT COMMUNITY FOREST MANAGEMENT?

Scholars, development NGOs and activists, research analysts, and communities interested in CFM in Tanzania have voiced a number of concerns about the potential negative impacts of carbon markets and REDD+ projects on community forest management.

### Altered Forest Resource Use

REDD+ may alter local livelihoods. Although REDD+ programs often recognize livelihoods as an integral part of forest management priorities, REDD+ has an integral, minimum set of carbon sequestration and storage objectives, and many forest users are concerned that attainment of these objectives may alter their access to forest resources, for either subsistence or income (Mukama, Mustalahti, and Zahabu 2012). For example, REDD+ projects could lead to a decreased supply of fuel in the form of wood and charcoal due to the increased economic value of forest carbon (Chiesa et al. 2009). Access to the carbon market will not provide the same benefits to these villagers because they will lack the resources they previously obtained from the forest (Chiesa et al. 2009). An emphasis on the ecosystem benefits over social benefits could lead to disadvantaged communities that would have been more sustainable or have reaped greater benefits without a REDD+ project.

Additionally, it is not clear that the price of carbon paid to communities will be equal to or exceed the value of timber and other products that can be extracted from the same forests (Mukama, Mustalahti, and Zahabu 2012). Communities are worried about the opportunity costs from giving up valuable land from which they can receive immediate benefits for a process that will compensate them at a lower level sometime in the future. For instance, many households obtain 50 percent of their income from the sale of products derived from *miombo* trees (Mukama, Mustalahti, and Zahabu 2012). Villagers would lose income if they gave up harvesting timber to participate in the carbon market, if the net value of forest carbon were lower than the value of the products that would otherwise be obtained from the *miombo* forest timber. A decrease in income, even if only in the short term, could negatively affect community livelihoods.

In combination, these problems have the potential to lead to increased poverty among communities because their sources of subsistence or cash livelihoods could be reduced or eliminated, particularly if the central government receives the revenues from REDD+ projects. All of these concerns show the importance of considering communities' needs in the creation of a REDD+ strategy, because livelihoods could be greatly affected by the program.

## Recentralization

Of primary concern is the possibility that the progress that has been made toward decentralized forest management could be reversed and that—in an effort to capture revenue from the country's forests—the national government may reappropriate communally managed forests (MJUMITA and TFCG 2011b). This recentralization would likely occur in areas where local governance is weak and land tenure is unclear (Tanzania Natural Resource Forum 2011). Preliminary suggestion of this possibility is provided by the government's decision to base the 2010 draft National REDD+ Strategy on a version of land classification that denotes nearly half of all forested land in the country as General Land, rather than on an alternative version that denotes the same land as VLFR (MJUMITA and TFCG 2011b; Veit, Vhugen, and Miner 2012). NGOs such as the Tanzanian Forest Conservation Group are proactively resisting these signs of potential recentralization and are advocating for formal recognition of village rights to forested lands (Deloitte 2012g).

## Centralized or Elite Capture of Benefits

There is concern over the equitable distribution of benefits for implementing REDD+ in villages. It is uncertain that REDD+ payments can or will be distributed throughout villages (Mustalahti et al. 2012). The majority of the pilot projects have experienced a lag between the start of the project and the receipt of funds, generating concern that villages may not receive expected benefits (Deloitte 2012d). Because many of the REDD+ forests would be under CBFM or JFM, the revenues may go to the community government (or, in the case of JFM, to the central government because they own the forest) and may not be distributed to local forest users (Chiesa et al. 2009).

## Positive Impacts

On the other hand, Tanzania's entry into a global carbon market could potentially have many positive effects on forest-dependent communities. Specifically, there is great potential for the integration of REDD+ payments into Tanzania's existing PFM framework. One of the central problems with the PFM model within Tanzania is that while it allows communities to manage forested lands, it does not provide the resources and incentives necessary to enable this management to be effective. Furthermore, income-generating activities such as timber harvesting are often temporarily or permanently prohibited under PFM arrangements, particularly in degraded or high conservation value forests. The costs of managing forests under PFM can therefore, in many instances, exceed the benefits to local communities (MJUMITA and TFCG 2009). REDD+ financing could provide the revenue stream necessary to ensure the long-term sustainability of PFM, and to improve forest management outcomes (MJUMITA and TFCG 2009). By assigning monetary value to intact forests, communities would receive payments in proportion to their forest management activities, and REDD+ programs would have the potential to serve as a strategic missing component in the current PFM arrangement (Burgess et al. 2010; Chiesa et al. 2009; Hayes and Persha 2010). For example, payments resulting from REDD+ participation could empower local communities to carry out enforcement activities, enabling more effective monitoring of communally managed forests (Hayes and Persha 2010; URT 2010a). Second, REDD+ project implementation may generate employment opportunities for communities, including jobs to undertake MRV tasks. Various REDD+ pilot projects have had success introducing beekeeping and honey production as an activity that both generates income and maintains ecosystem services (Deloitte 2012d).

Thus, REDD+ payments to communities engaged in PFM have the potential to contribute positively to both the health of the forest and the livelihoods of forest users. Distributed equitably, payments may incentivize and enable more sustainable forest resource use and management practices.

*Nazarío Olimpias holding a cocoa plant. Bolivia Pando region. Eduardo Martino / Panos.*



## DISTRIBUTION OF FORESTS AND TENURE

### Forested Land

Of Bolivia's total land area of 109.9 million ha, nearly half (50 million ha) is covered by forests and woodlands (Steininger et al. 2001). Ten million ha of forest are located in the western highlands of the Andes Mountains and 40 million ha are in the eastern tropical lowland plains of the Amazonian basin (figure 2.1; Steininger et al. 2001). These lowland plains contain three broad forest types: humid tropical Amazonian forests in the north, seasonal dry forests in the south and east, and semi-arid woodlands in the south (Killeen et al. 2007). Dispersed across these three forest types, this land is classified into three land-use categories: approved farming lands (*planes de ordenamiento predial aprobados*), permanent forest product lands (*tierras de producción forestal permante*), and multiple-use lands (*tierras de uso multiple*) (Plurinational State of Bolivia 2012a).

Distinct from these categories, forested land in Bolivia can be classified as one of three property types: collective, individual, or state-owned properties (Plurinational State of Bolivia 2012a). Collective property is land for which community groups have ownership rights, and is subdivided into indigenous territories (*territorio indígena originario campesino*; *TIOC*) and properties owned by peasant farmers. Individual property is land for which individual users and corporations have ownership and resource access rights, and is subdivided into small, medium, and "company" properties. State-owned forest property consists of areas leased to an individual or corporate body under "temporal use agreements" and areas protected under the framework of the National System of Protected Areas (though these can overlap with TIOCs) (Plurinational State of Bolivia 2012a).

Bolivia has experienced recent high rates of deforestation, averaging 300,000 ha per year from 2000 to 2008, compared with 47,000 ha per year in the 1960s (Killeen et al. 2008; Plurinational State of Bolivia 2012a). The vast majority of this deforestation is attributable to forest clearance for agriculture and cattle ranching, with the highest rates in the department of Santa Cruz due to mechanization of forestland clearing and as a result of new road networks that allow forest users, farmers, and ranchers easy access to new territory (Killeen et al. 2007, 2008).

Subsistence farming by indigenous and peasant groups has resulted in a relatively small proportion of total deforestation. However, the contribution to forest conversion by these groups appears to have increased (Killeen et al. 2008). For example, in the 1990s the state granted large areas of forestland in the northern Bolivian Amazon that were previously owned by a single individual (for Brazil nut harvesting) to former laborers on the estates. These new landowners supplemented income from Brazil nut harvests with subsistence agriculture, increasing the rate of forest conversion (Ruiz 2005). These deforestation trends position Bolivia as a priority country for forest carbon mitigation and ecosystem service protection policies (Andersen et al. in review; Müller et al. 2013; Sangermano, Toledano, and Eastman 2012).

## Community Involvement in Forest Management

Approximately 9 million ha of forest were formally titled under Forest Management Plans for timber extraction in 2010, of which 2.8 million ha were managed by communities (INRA 2010). Indigenous and traditional communities jointly hold another approximately 22 million ha of forestlands without formal title. With such a large area of forest managed by nonstate actors, community forest management is also an important potential avenue for mitigation of terrestrial carbon emissions in Bolivia (Cronkleton, Bray, and Medina 2011).

The current land titling procedures for forest-dwelling communities were established in the mid-1990s through a series of three land reform laws. First, the Popular Participation Law (1994) established elected authorities for the purpose of decentralizing power, resulting in greater autonomy of decision making at the local level (Cronkleton, Bray, and Medina 2011; León et al. 2012). Second, the Land Reform Law (1996) aimed to consolidate the land rights of indigenous communities by providing a pathway to obtain land titles from the central government (León et al. 2012). In the forested lowlands, competing land claims have drastically slowed the official titling process; at least 50 percent of forested lands have not been titled or have multiple claimants, and many communities are still uncertain about their rights to customary lands and the resources on them (Andersson et al. in review; Plurinational State of Bolivia 2012a). As of 2009, 60 requests for TIOC formation in the lowlands had been received by the government, but only a small fraction of these demands have been titled (Cronkleton et al. 2009; León et al. 2012). Finally, the Forestry Law (1996) sought to allow indigenous communities exclusionary rights to extract forest resources from communal territories through the creation and implementation of official forest management plans (León et al. 2012).

In Bolivia, formal community management of forests (with a state-approved forest management plan, typically for timber extraction) primarily takes place in titled TIOCs and non-indigenous community properties. The bureaucratic and technical challenges associated with creating approved forest management plans means that formal community forest management in these two types of collective properties remains uncommon. However, informal (not sanctioned by the state) self-governance of community forests can also be effective at maintaining forest cover over time. Land cover change data from the years 2000 to 2007 indicate that nearly half of communities informally managing forests in the Bolivian lowlands experienced either no change in forest cover or less than 1 percent loss of forest cover (Andersson et al. in review).

## CHARACTERIZING CFM IN BOLIVIA: IFRI DATA

The analysis of IFRI cases reported in this section is based on data from 16 forests and 36 forest user groups. We characterized Bolivia's forests in relation to a subset of the factors associated with successful CFM (table 6.1).

## Factors Associated with Effective CFM

### Environmental

Community forests in Bolivia were large: The average size of community forests surveyed by IFRI was 9370.2 ± 12,342.6 ha ( $N = 13$ ). All forest sites were larger than 1,000 ha. Forest size was not correlated with per hectare biomass (Pearson = 0.133,  $P = 0.665$ ). Neither the subsistence value nor the commercial value of forests was considered by foresters to be higher than normal (table 6.1).

### Socioeconomic

Forest user groups were small: The average size was 328.4 ± 176.6 individuals ( $N = 14$ ). Forest users gained multiple benefits from the forests: The mean number of types of benefit was 3.9 ± 2.5 ( $N = 16$ ). Forests that offered more benefits were significantly associated with improved livelihood outcomes (Pearson = 0.641,  $P = 0.007$ ). Forest users had extensive experience with forest management: The average age of settlements in Bolivia was 119.3 ± 120.7 years ( $N = 13$ ).

**TABLE 6.1. CHARACTERIZATION OF COMMUNITY FOREST SITES IN BOLIVIA**

VARIABLE	INDICATOR (AND UNIT)	MEAN (OR MODE)	SD (OR N OF MODE)	N	BIOMASS		LIVELIHOODS	
					LEVEL OF ASSOCIATION <sup>a</sup>	P	LEVEL OF ASSOCIATION <sup>a</sup>	P
<b>Environmental</b>								
Medium to large forests	Forest size (ha)	9370.2	12342.6	13	0.133	0.665	-0.155	0.613
Value of the resource (I)	The subsistence value of the forest is higher than normal (1) or not (0)	(0)	(13)	15	N < 5 in at least one group			
Value of the resource (II)	The commercial value of the forest is higher than normal (1) or not (0)	(0)	(11)	15	N < 5 in at least one group			
<b>Socioeconomic</b>								
Small to medium-sized user groups	User group (no. of people)	328.4	176.6	14	0.092	0.754	-0.091	0.757
Moderate dependence on resources	No. of types of benefit gained from the forest (max. 9)	3.938	2.462	16	0.098	0.718	<b>0.641</b>	<b>0.007</b>
Past experience with forest management	Age of settlement (years)	119.3	120.7	13	-0.099	0.748	-0.501	0.081
<b>Institutional</b>								
Effective local enforcement and sanctions	Users do (1) or don't (0) always comply with imposed penalties	(0)	(8)	13	(13)	0.342	(14.5)	0.465
Tenure security	Forest is owned by the state (1) or not (0)	(0)	(9)	14	(19)	0.689	(14)	0.285

<sup>a</sup> Levels of association were calculated using Pearson correlations or Mann-Whitney U tests (in parentheses). Statistically significant (at 0.05) associations are indicated in **bold**.

### *Institutional*

The majority of users did not comply with imposed penalties when in violation of forest rules (8/13). Of the 14 surveyed forests, 9 were not owned by the state government.

## **Features of Forest Management Specifically Relevant to Effective REDD+**

### *Carbon storage*

The carbon gain from reduced deforestation depends in part on the volume of carbon stored within a forest. Forest carbon is closely related to tree size, as measured by tree diameter at breast height. The average DBH of trees >10 cm DBH was  $26.8 \pm 3.5$  cm ( $N = 11$  forests).

### *Forest dependence*

Local communities used the forests for subsistence and commercial livelihoods:  $40.4 \pm 43.0$  percent of households within forest user groups depended on forests for their subsistence livelihoods ( $N = 31$  forest user groups), and  $38.3 \pm 42.1$  percent for commercial livelihoods ( $N = 32$  forest user groups). In particular, community managed forests were an important source of fuelwood. Forest user groups depended on community forests for  $48.1 \pm 47.9$  percent of their fuelwood ( $N = 36$  user groups).

### *Capacity for monitoring, reporting, and verification*

Many forest associations had prior experience conducting (defined as coordinating, passing rules for, or modifying rules for) a variety of activities associated with MRV. In Bolivia, 9/23 forest associations had experience monitoring forest condition, 18/24 had experience monitoring conformance with forest rules, 17/24 had experience sanctioning rule breakers, and 21/24 had experience interacting with higher authorities. Forest associations had less experience maintaining records of forest conditions: Only 1/20 forest associations in Bolivia had done so.

## **REDD+ IN BOLIVIA**

Bolivia was granted support for the development of a UN-REDD National Programme in 2008, as one of the nine original pilot countries. Support for Bolivia's REDD+ National Program Document was signaled during early discussions, in January 2010, by participants including the central government and several civil society organizations, including the Confederation of Indigenous Peoples of Bolivia (CIDOB), the National Council of Ayllus and Markas of Qullasuyu, the Unified Syndical Confederation of Rural Workers of Bolivia (CSUTCB), the Trade Union Confederation of Bolivian Colonizers, and the Bartolina Sisa National Federation of Peasant Women of Bolivia (UN-REDD 2012). In March 2010, the UN-REDD Program Policy Board approved US\$4.7 million for



the development of Bolivia's REDD+ National Program. Other major donors have subsequently included the German Agency for International Cooperation, which pledged €10 million, the Danish development agency (DANIDA), and the Norwegian Agency for Development Cooperation (Norad). The last two have supported civil society organizations such as CIDOB, CSUTCB, and the Friends of Nature Foundation (FAN), which have been active in REDD+ discussions and payment for forest carbon storage projects (Norad 2012). DANIDA has also supported the process of titling indigenous territories in Bolivia, which is central to the development of community forest management.

### Pilot Projects

Two REDD-like pilot projects have been established in Bolivia: the Noel Kempff Climate Action Project (NKCAP) and the Bolivian Amazon Indigenous REDD Program (*Programa Indígena REDD Amazonia Boliviana*) (Benton-Connell 2011) (figure 2.1, table 6.2). Both projects have the goals of promoting economic development and carbon sequestration and storage through forest conservation. The NKCAP began in 1997, whereas the Bolivian Amazon Indigenous REDD Program was initiated only in 2008.

The NKCAP was one of the first global payment for forest carbon storage projects, and aimed to protect forest biodiversity and carbon in and around the Noel Kempff Mercado National Park. The project greatly expanded the park by additionally incorporating 831,689 ha of adjacent former timber concessions and local community lands. It then implemented various carbon protection and monitoring activities within this expanded project area, and was certified for carbon credits under the Clean Development Mechanism by the Société Générale de Surveillance.

NKCAP was initially funded with a US\$10.9 million investment from The Nature Conservancy (TNC) (24 percent), American Electric Power (AEP; 53 percent), PacificCorp (16 percent), and BP America (7 percent) with an endowment fund of more than US\$3 million as of 2006 (The Nature Conservancy 2009). Revenues from certified emission reduction credits were intended to be divided between the corporate investors (AEP, BP, and PacificCorp) (51 percent) and the Bolivian government (49 percent).

**TABLE 6.2. REDD+ PILOT PROJECTS IN BOLIVIA**

NO.	PROJECT NAME	LEAD ORGANIZATION(S)	LOCATION	ASSOCIATION WITH COMMUNITY FOREST MANAGEMENT	PRINCIPAL AIMS	PRINCIPAL EFFECTS TO DATE	REFERENCE(S)
1	Noel Kempff Climate Action Project	Government of Bolivia FAN TNC American Electric Power PacificCorp BP America	In the Noel Kempff Mercado National Park in northeastern Bolivia; 1.5 million ha of lowland tropical and seasonal dry forests.	Seven communities within the project area.	To protect biodiversity and carbon, by ending logging and incorporating former logging land into the national park.  To generate income through carbon credits, for community development and park management.	Estimated by TNC and FAN to have avoided an 1,034,107 metric tons of CO2 emissions, which would have been caused by logging and deforestation between 1997 and 2005.  Estimated by TNC and FAN to have raised \$8.25 million in carbon financing.	Asquith, Vargas Rios, and Smith 2002  Calderon 2005  The Nature Conservancy 2009  Periera 2010  Benton-Connell 2011
2	Bolivian Amazon Indigenous REDD Program	FAN CIDOB CIRABO	Six municipalities in the Amazonian departments of Beni and Pando; 3.8 million ha (of which 2.6 million ha forested)	Incorporated four indigenous territories; 60,000 people live within the project's boundaries	To monitor forest degradation and CO2 emissions, in collaboration with indigenous communities.  To promote the sustainable use of timber and non-timber forest resources.	Gains in infrastructure and technical skill training (forest carbon monitoring).	Seifert-Granzin et al. 2009  Benton-Connell 2011  FAN-Bolivia 2013

*Acronyms:* CIDOB: Confederation of Indigenous Peoples of Bolivia; CIRABO: Central Indígena de la Región Amazónica de Bolivia; FAN: Fundación Amigos de la Naturaleza; PES: payments for environmental services; REDD+: Reducing Emissions from Deforestation and forest Degradation; TNC: The Nature Conservancy.

The NKCAP has been criticized for insufficient consultation or participation in the project design by the seven communities within the project area, as well as inadequate community benefits, as either direct financial gains or alternative livelihood opportunities (Asquith, Vargas Rios, and Smith 2002; Densham et al. 2009). The project restricted resource access by local communities, and the termination of logging resulted in lost income from sawmill employment (Asquith, Vargas Rios, and Smith 2002; Calderón 2005).

Two sequential, five-year community development programs (APOCOM and PRODECOM) sought to address these negative effects (Calderón 2005). They were designed to provide basic education, health, and livelihood services for the communities, as well as to improve roads, facilitate land titling, and promote income-generating activities such as sustainable community forestry (Asquith, Vargas Rios, and Smith 2002; Calderón 2005).

The Bolivian Amazon Indigenous REDD Program was a forest carbon project, funded by DANIDA, the Dutch Government, and the Gordon and Betty Moore Foundation (Seifert-Granzin et al. 2009). It was operated by

FAN, CIDOB, and the Central Indigenous Council of Bolivia's Amazon Region in 3.8 million ha of land covered by four indigenous territories and six municipalities in the Amazonian departments of Beni and Pando (FAN-Bolivia 2013). It was one of the first REDD pilot projects in indigenous communities. However, changes in the Bolivian government's support for PES-type REDD projects (see below) mean that no carbon credits from the project were ever sold and the project was ended in its current form (Benton-Connell 2011).

## Responses to REDD+ in Bolivia

### *Concerns about a forest carbon market program*

The Bolivian government announced its opposition to the UN-REDD program in April 2010 at the World People's Conference on Climate Change and the Rights of Mother Earth, held in Tiquipaya, Bolivia. The People's Agreement produced at the conference stated: "We condemn market mechanisms such as REDD... which are violating the sovereignty of peoples and their right to prior free and informed consent as well as the sovereignty of national States, the customs of Peoples, and the Rights of Nature" (Plurinational State of Bolivia 2010a). Bolivia's president, Juan Evo Morales Ayma, published an open letter to indigenous peoples that also plainly expressed his opposition to the concept of forest carbon markets associated with REDD+ (Morales Ayma 2010).

The Bolivian government elaborated on their concerns about REDD+ as a forest carbon PES-type program in a 2012 submission to the UNFCCC, listing four ethical objections to the commodification of forests as carbon sinks (Plurinational State of Bolivia 2012a). First, new commodity market values may lead to the corruption of social values. Second, the transfer of forest carbon rights to external parties would remove sovereignty over forest resources from the state and local communities and would open the possibility of dispossession of indigenous peoples from their customary lands (Okereke and Dooley 2010; Plurinational State of Bolivia 2012b). Third, REDD+ focuses on the role of forest carbon sequestration and storage in climate change mitigation, without regard for the multiple other benefits (for example, food and energy, from agriculture and firewood) that land provides to local users. Finally, a market-based REDD+ program would allow industrialized countries to continue to emit greenhouse gases. The Bolivian government presented a view that industrialized countries owe a historical climate debt to developing countries, which should be repaid through funding climate change mitigation and adaptation measures rather than through the quantification of greenhouse gas emissions reductions (Okereke and Dooley 2010).

### *The Joint Mitigation and Adaptation Mechanism*

Bolivia tabled an alternative proposal to the prevailing PES-type REDD+ program, which would also promote climate change mitigation and adaptation, but would do so without market mechanisms. The proposal, originally called "Sustainable Life of Forests" (*Vida Sustentable del Bosque*) was presented at the UNFCCC Conference of the Parties (COP) in December 2011, and was subsequently developed into the "Proposal for the Development of the Joint Mitigation and Adaptation Mechanism for the Integral and Sustainable Management of Forests" (hereafter, JMAM), submitted to the UNFCCC in August 2012 (Plurinational State of Bolivia 2012a). At the COP in 2012, Bolivia negotiated further support for the JMAM under two programs: (1) the program of "reduction of emissions of deforestation and forest degradation," while rejecting the acronym "REDD+,"

which it views as a market-centered approach; and (2) the program of “mitigation and various approaches,” for further development of non-market-based mechanisms (D. Pacheco Balanza, Bolivian Delegation to the UNFCCC, personal communication 01/20/2013).

The JMAM aims to reduce carbon emissions from forest conversion while simultaneously reducing climate-change-related risks to, and vulnerability of, people and ecosystems. The priority of the JMAM is to “achieve sustainable development and eliminate poverty” (Plurinational State of Bolivia 2012a). The JMAM’s goals are therefore much broader than those of a forest carbon PES program under REDD+, because they explicitly focus on both climate change mitigation (through sustainable land management) and adaptation (through improving local livelihoods). Community forest management is a central component of the JMAM, as part of a broader commitment to the continued decentralization of forest and natural resource management to municipal governments and local land users.

## **WHAT ADDITIONAL INSTITUTIONS ARE NEEDED FOR JMAM IMPLEMENTATION IN BOLIVIA?**

Implementation of the JMAM in Bolivia will require the modification of existing institutions, the development of new ones, and careful coordination and communication across multiple stakeholders. A principal goal of the JMAM is to strengthen the capacity of community-based user groups for the purposes of more sustainable forest management.

### **Institutions**

Currently there are various government ministries and agencies that are responsible for different aspects of forest management: the Ministry of Environment and Water (MMAyA), the National Protected Area Service (SERNAP), the National Institute of Agriculture and Forestry Innovation (INIAF), semi-autonomous territorial governments, and the Authority for Monitoring and Oversight of Forests and Lands (*Autoridad de Fiscalización y Control Social de Bosques y Tierras*; ABT) (Rojas Quiroga et al. 2013). Currently the ABT is the principal government agency overseeing forest management in Bolivia (Müller et al. 2013).

To oversee the implementation of the JMAM and coordinate activities across the abovementioned government departments, a new government agency is being created, called the Plurinational Authority of Mother Earth (APMT) (Plurinational State of Bolivia 2012b). External sources of revenue for the development and implementation of the JMAM will include the UNFCCC’s Green Climate Fund, the UN-REDD Policy Board, and private donors (Plurinational State of Bolivia 2012b; D. Pacheco Balanza, personal communication 01/10/2013). Financial resources received for the implementation of JMAM initiatives will be directly transferred to public entities, autonomous subnational government agencies (regional and municipal), community-based organizations, and private sector actors (Plurinational State of Bolivia 2012a).

### **Coordination**

Implementing Bolivia’s new JMAM will require cooperation between multiple stakeholders: all levels of government, civil society organizations, and communities (Herold 2009). In particular, the often-strained

relationships between rural communities and the local, departmental and central government will need to be strengthened. Communities are often geographically remote from administrative centers, and larger communal properties often span multiple municipalities, which complicates community-state communication (Cronkleton, Bray, and Medina 2011). Relationships between TIOCs and municipal governments and central government have historically been tested by jurisdiction disputes and by conflicts over expectations about forest management methods, respectively (Hernández and Pacheco 2001; León et al. 2012).

Civil society organizations will need to actively support community efforts to engage with the JMAM development and implementation process with respect to community practices that affect forests. NGOs currently play an important role in supporting the development of community forest management organizations and institutions (Cronkleton, Bray, and Medina 2011). Such external assistance is particularly important because formal community forest management through TIOCs and non-indigenous community properties is still uncommon, but will likely play an important role in advancing the goals of the JMAM.

Even achieving collaboration and consensus within TIOCs can be challenging, partly because many are made up of multiple distinct communities. Communities have little experience in carrying out democratic decision making or in coordinating activities above the village level, which may contribute to poor communication and a lack of transparency (Cronkleton, Bray, and Medina 2011). Strengthening channels of communication throughout the network of government, civil society, and community-based organizations will be essential to the success of the JMAM in the context of community forest management.

## **HOW MIGHT THE JMAM AFFECT COMMUNITY FOREST MANAGEMENT?**

Details about how the JMAM will be implemented are still not well defined, and so it is difficult to infer outcomes and impacts, but it is almost certain that community forest and land management practices will be included in, and affected by, the mechanism. The nuances of JMAM policy have yet to be fully developed, but it will broadly safeguard against the mismanagement of forest resources, such as the extraction of timber or charcoal in locations where harvesting is prohibited (Plurinational State of Bolivia 2012b). Enforcement policies will be designed through a multistakeholder participatory planning process in individual jurisdictions, involving user groups, private actors, and local government agencies. Sanctions will be imposed on communities or individuals not complying with management plans for the sustainable use of forest areas (Plurinational State of Bolivia 2012a).

In sum, Bolivia's Joint Mitigation and Adaptation Mechanism has broader aims than the previously developed PES-type REDD+ program. Its goals are to reduce carbon emissions from forest conversion while also achieving sustainable development in rural communities. Implementation of this new integrated forest management policy will require a greater level of cooperation across multiple stakeholders and levels of government, as well as broad-based modifications to some land use practices at the local level. This poses institutional challenges in the short term, but holds longer-term potential for socioeconomic and ecological benefits in Bolivian community forests.

Community forest management has a strong history in Bolivia, Nepal, and Tanzania. The tenure arrangements in all three countries are characterized by the retention of *ownership* of community forestland by the state, with the devolution of some degree of *use and management* rights to communities. The degree of devolution ranges from complete autonomy in rule making and decision making (for example, community forest management in Nepal), to shared responsibility and benefit distribution between the state and the communities (for example, collaborative forest management in Nepal, and Joint Forest Management in Tanzania). In Bolivia, the government is making a concerted effort to devolve land ownership as well as some natural resource management rights to communities. In all three countries, strong institutions have developed to facilitate the management of community forests at various scales (for example, CFUGs and FECOFUN in Nepal).

With the emergence of negotiations over, and funding for, forest-based climate change mitigation, there is an opportunity to connect CFM with emerging REDD+ architectures. The existence of this possibility is concretely demonstrated by the overlap between the implementation of REDD+ pilot projects in CFM sites and landscapes in both Nepal and Tanzania, and the similar interest evidenced in Bolivia. It is important therefore to examine the extent to which CFM may contribute to REDD+, as indicated through the development of policy and practice in these three case study countries, and how REDD+ may affect established CFM dynamics (table 7.1).

### **APPLYING THE LESSONS OF CFM TO REDD+**

The institutional design principles that contribute to successful CFM provide important guidance about the factors that may also improve outcomes for REDD+. Many of the factors associated with successful CFM are likely to also lead to better REDD+ outcomes. However, successful CFM is defined in terms of maintenance or improvement in both forest condition and local livelihoods. REDD+ has a stronger emphasis on forest condition and carbon than CFM does. Under REDD+, livelihoods and other measures of forest conditions, such as biodiversity, are considered co-benefits, which are important but of somewhat lesser importance than the principal goal—to sequester and store terrestrial carbon in the long run, so as to reduce emissions. Factors that principally contribute to livelihood or

biodiversity outcomes in CFM may therefore be less critical to the design of successful REDD+ programs; those associated more strongly with forest conditions and higher levels of forest biomass in CFM sites are likely to be viewed as being of greater importance from the carbon sequestration perspective.

**TABLE 7.1. INTERACTIONS BETWEEN CFM AND REDD+ IN NEPAL, TANZANIA, AND BOLIVIA**

	NEPAL	TANZANIA	BOLIVIA
<b>Applying lessons from CFM to REDD+</b>			
	There is limited explicit evidence of the lessons from CFM being applied to the design and development of REDD+ programs either within or outside of CFM sites.		
<b>Harnessing CFM arrangements</b>			
<b>1. Achieve REDD+ goals in CFM sites</b>			
<b>National REDD+ strategy</b>	Community managed forests are at the center of the national Readiness Preparation Proposal.	Community managed forests are at the center of the National REDD+ Framework.	Community managed forests are at the center of the Joint Mitigation and Adaptation Mechanism.
<b>Pilot projects</b>	All seven pilot projects have been within CFM forests.  Collaborative forest management has been largely neglected by the REDD+ pilot process.	All nine REDD+ pilot projects are within PFM forests (JFM and CBFM).  The TFCG pilot project is using REDD+ funds to improve PFM.	Both pilot projects have been undertaken in forests close to traditional and indigenous communities.
<b>Effectiveness</b>			
<b>Additionality</b>	Payments by the Forest Carbon Trust Fund (FCTF) pilot project took account of prior forest condition.	The TFCG project is quantifying additionality through a VCS project in CBFM forests.	The JMAM focuses on both mitigation and adaptation; and on environmental and socioeconomic objectives.
<b>Permanence</b>	CFM has an extensive (>20 year) history of sustainable forest management in Nepal.	CoFMA renewals will be valid for 25 years, enabling longer-term planning.  The TaTEDO pilot project links to microfinance institutions to increase permanence beyond project funding.	Improvements in land-titling could aid or hinder forest permanence.
<b>MRV</b>	There is no system in place for sub-national MRV that include communities.	The WWF project is collecting baseline data and building community-based MRV capacity nationally.	No formal MRV is required for the JMAM, which is non-market based.
<b>Efficiency</b>			
<b>Transaction costs</b>	Institutions to bridge the national and sub-national levels for payments: 1) new institutions, e.g., the FCTF pilot project's nested system of watershed networks; 2) existing CFM institutions e.g., FECOFUN.	JFM institutions are experienced in bridging national and subnational levels.	All JMAM projects will be facilitated by the Plurinational Fund for Climate Justice.

(CONTINUED)

**TABLE 7.1. INTERACTIONS BETWEEN CFM AND REDD+ IN NEPAL, TANZANIA, AND BOLIVIA (continued)**

	NEPAL	TANZANIA	BOLIVIA
Opportunity costs	The FCTF pilot project enables CFUGs to distribute benefits according to opportunity costs.	The TFCG project is paying realistic carbon rates, enabling communities to assess income relative to opportunity costs.	The mechanism for JMAM implementation is unknown.
<b>Equity</b>			
Benefit-sharing	The FCTF pilot project made payments to communities in 2011 and 2012.	The TFCG pilot project: 1) made payments to communities in 2012; 2) reached carbon benefit sharing agreements with FBD, Ministry of Finance and local governments in JFM forests.	The JMAM emphasizes equitable benefit sharing.
Inclusivity	The FCTF pilot project weights payments to benefit marginalized groups.  The RPP emphasizes multistakeholder engagement, and has given roles to e.g., FECOFUN.	The TFCG is the only CSO on the REDD+ Task Force, and as an observer only.	The JMAM emphasizes inclusivity of all stakeholders nationally.
Institutional capacity	Three new national-level institutions: RFCCC, RWG, and MSCMC.	VNRCs have been established to support the development and implementation of REDD+.	New national-level institutions: Plurinational Entity of Climate Justice and corresponding Fund.
<b>2. Use REDD+ funds to expand CFM</b>			
Extend existing community forest coverage	Collaborative forest management is increasing in extent, especially in the carbon-rich Terai.	The WCST HIMADA pilot project is establishing a new JFM agreement in Pugu Kazimzumbwi Forest Reserve.  The MCDI pilot project is using REDD+ funds to extend FSC timber certification in PFM forests.	It is uncertain how the JMAM will affect community forest coverage.
<b>Impacts of REDD+ on CFM</b>			
Altered forest resource access	Tighter control of forest resource extraction (e.g., timber, fuelwood) could harm subsistence livelihoods.	Tighter control of forest resource extraction (e.g. timber, fuelwood) could harm subsistence livelihoods.	It is uncertain how the JMAM will affect forest resource access.
Recentralization	REDD+ funding could create incentives for recentralization of forest management.	REDD+ funding could create incentives for recentralization of forest management.	It is uncertain how the JMAM will affect recentralization of community forests.
Elite capture of benefits	There is unresolved uncertainty about the rights to above- and below-ground carbon.	There is an unresolved uncertainty about the rights to carbon benefits in JFM forests.	It is uncertain how the JMAM will affect elite capture of benefits.
Funding	In all three countries, the funding that REDD+ mechanisms could bring to CFM landscapes could help to strengthen existing CFM institutions and to improve sustainable forest management.		
<p><i>Acronyms:</i> CBFM: Community Based Forest Management; CFM: community forest management; CoFMA: Community Forestry Management Agreement; CSO: Civil Society Organization; FCTF: Forest Carbon Trust Fund; FECOFUN: Federation of Community Forestry Users; FSC: Forest Stewardship Council; HIMADA: Hifadhi Mapafu ya Dar es Salaam; JFM: Joint Forest Management; JMAM: Joint Mitigation and Adaptation Mechanism; MCDI: Mpingo Conservation and Development Initiative; MRV: monitoring, reporting, and verification; MSCMC: Multi-Stakeholder Coordinating and Monitoring Committee; PFM: Participatory Forest Management; REDD+: Reducing Emissions from Deforestation and forest Degradation; RFCCC: REDD+ Forestry and Climate Change Cell; RPP: Readiness Preparation Proposal; RWG: REDD+ Working Group; TaTEDO: Tanzania Traditional Energy Development Organization; TFCG: Tanzania Forest Conservation Group; VCS: Verified Carbon Standard; VNRC: Village Natural Resource Committee; WCST: Wildlife Conservation Society of Tanzania; WWF: World Wide Fund for Nature.</p>			



## HARNESSING CFM ARRANGEMENTS

### Modifying Current Community Forest Management to Achieve REDD+ Goals

The underlying aims of CFM and REDD+ differ, and CFM practices do not necessarily optimize carbon outcomes because communities extract forest resources (including timber, firewood, and charcoal) for subsistence and to generate incomes (Benneker and McCall 2009). However, the two programs share the broad objectives of sustainable forest management, sustainable resource use, and the generation of socioeconomic benefits for forest-dependent people. Harnessing, moderating, and expanding the existing capacity of community forest sites can certainly be used to achieve REDD+ objectives, and it is the principal manner in which the two programs currently interact. CFM plays a central role in both the long-term national REDD+ strategies and the short-term pilot projects and readiness activities in all three case-study countries.

#### *National REDD+ strategies*

All three countries have put community forests at the center of national REDD+ policy. The central REDD+ planning documents of each country (Nepal: Readiness Preparation Proposal; Tanzania: National REDD+ Framework; Bolivia: Joint Mitigation and Adaptation Mechanism) emphasize the mechanisms by which community forest sites and institutions can contribute to, and be adapted for, the realization of REDD+ goals (table 7.1). For example, a stated aim of the JMAM is to create a nonmarket alternative mechanism to REDD+ to achieve “full integration of the multiple benefits of forests into mitigation and adaptation to climate change” by simultaneously improving forest governance and the livelihoods of local people (Plurinational State of Bolivia 2012b).

#### *Pilot projects*

REDD+ pilot projects themselves have only limited significance at the national and global levels, in terms of absolute carbon sequestration or livelihood improvement. However, they are relevant to the longer-term and broader-scale development of REDD+ in at least two important ways. First, they highlight some of the operational issues likely to be encountered during the development and implementation of a full national REDD+ program, and provide an early opportunity for learning lessons and finding solutions. Second, they enable capacity development relevant to the integration of CFM and REDD+, particularly in relation to MRV mechanisms that will be critical to the full implementation of future REDD+ initiatives.

The majority of pilot projects in all three countries are located in and around community forestry sites (table 7.1). These sites are attractive because they are characterized by relatively intact forest landscapes; communities that have experience working with government agencies, NGOs, and projects; forest users who strongly support sustainable forest management; and existing institutional capacity that can facilitate project implementation. These characteristics provide an existing infrastructure to which REDD+ pilot projects can be attached, and a strong baseline from which to develop further institutional and human capital.

The payments made in pilot projects such as the Forest Carbon Trust Fund in Nepal and the TFCG and MJUMITA project in Tanzania do not add up to substantial behavior-altering incentives—but they are useful in preparing

communities for carbon-based benefit flows, for example by developing benefit-distribution mechanisms. Even though these payments have not to date been based on precise carbon accounting, they differ from more general development aid in that they are at minimum participation-based, and contingent upon demonstrated adherence and commitment to sustainable forest management activities.

### **Effective, Efficient, and Equitable REDD+**

Here, we discuss the ways in which CFM arrangements are able to achieve the main requirements of REDD+ architectures (table 7.1).

#### *Effectiveness*

##### ADDITIONALITY

REDD+ programs are usually expected to demonstrate additionality relative to the status quo. There are several reasons for which CFM arrangements may not be considered by all parties to be delivering maximum possible additionality, in terms of climate change mitigation. First, if a CFM site is already independently achieving REDD+ objectives, it is unclear whether incorporating existing CFM forests into REDD+ programs achieves any additional gains. Second, CFM balances conservation with socioeconomic and development objectives, and so may achieve lower carbon sequestration and storage than a forest tenure arrangement that has the sole objective of climate change mitigation. Third, the carbon gain from reduced deforestation depends in part on the volume of carbon stored within a forest. Community forests tend to be small: The average size of those surveyed by IFRI was less than 100 ha in Nepal. Small forest sites may result in high administrative transaction costs, unless these costs can be spread across bundled forest sites. In all three of these respects, and relative to other areas with higher deforestation pressure, CFM sites incorporated into REDD+ may be an inefficient means to achieve additionality.

On the other hand, CFM has a record of improving environmental outcomes, both in terms of reduced rates of deforestation and forest degradation, and in terms of forest improvement (Chhatre and Agrawal 2009; Herold and Skutsch 2011; Persha, Agrawal, and Chhatre 2011). CFM may also be a socially and politically more favorable proposition than forests managed with a focus on carbon objectives alone. For example, PFM in Tanzania is more effective in preserving forested lands than are arrangements in which the national government maintains sole management authority over forests (Blomley et al. 2008). If CFM achieves better carbon outcomes than the next-most-likely alternative, such as land conversion to agriculture, then it is achieving additionality toward REDD+ goals. In this context, viewed as a tool by which to ensure low deforestation rates nationally, CFM is an attractive mechanism to employ.

Additionally, while CFM has been more successful than alternative arrangements in many areas, there is often room for improvement in individual sites. For example, the creation of village land use plans and forest management plans by the AWF pilot project has slowed agricultural expansion into Tanzania's JFM forests (Deloitte 2012b).

Further, it can be argued that communities should be rewarded for their past and present performance in maintaining forests. Models of REDD+ credits that include previous conservation and reforestation efforts (such as those used by the Forest Carbon Trust Fund pilot project in Nepal) effectively acknowledge and reward CFUGs for years of continued sustainable forest management. In addition to avoided deforestation, carbon sequestration can be significant: In the forests of three Nepali CFUGs, in the districts of Ilam, Lamatar and Manang, sequestration was estimated at 6.89 tons of carbon dioxide per hectare (Staddon 2009).

Finally, additionality can also be considered to include gains in co-benefits such as biodiversity conservation and improved livelihoods. Because CFM also improves social and environmental outcomes, in addition to carbon maximization, it may give greater visibility to co-benefits and may attract an additional set of interested buyers and donors.

#### PERMANENCE

Although REDD+ projects provide a financial incentive for forest conservation, they do not necessarily directly address the underlying drivers of deforestation. For example, few REDD+ programs make payments directly to farmers, yet agriculture is a key driver of deforestation in many places. Permanence may be more assured when these drivers are incorporated into planning. In Tanzania, two of the principal drivers are subsistence agriculture and fuelwood extraction (Chiesa et al. 2009; MJUMITA and TFCG 2011a; Nhantumbo 2012). Accordingly, REDD+ pilot projects in Tanzania aim to improve yields on existing agricultural land and to increase the efficiency of fuel use (Deloitte 2012d). Similarly, a stated aim of the JMAM in Bolivia is to address the drivers of deforestation, and evidence suggests that substantive engagement of municipal governments with local forest users, particularly through law enforcement related to land tenure and forest management, can reduce unauthorized deforestation in the Bolivian lowlands (Andersson and Gibson 2006). This pairing of REDD+ program implementation with targeted interventions (“Smart-REDD”) may reduce regional leakage and lead to more sustained emissions reductions in addition to greater carbon, biodiversity, and social benefits (Fisher et al. 2011).

The longevity of CFM arrangements—as demonstrated in countries such as Nepal—indicates the likely satisfaction of the need for permanence in achieving REDD+ goals. CFM institutions do not necessarily depend on perpetual influxes of financial support, because the communities are incentivized by the benefits that they receive directly from the forests that they manage. In Tanzania, the Hifadhi Mapafu project has extended the duration of Community Forestry Management Agreements (CoFMAs) to 25 years, enabling longer-term planning (Deloitte 2012c).

Community forestry is also a strong platform for vertical coordination, which is a prerequisite of effective mitigation in the long term. Community organizations have experience in working with local and central governments, and specific organizations that bridge that gap, such as FECOFUN in Nepal, could be invaluable in helping to facilitate the development of benefit-distribution mechanisms from the national to the subnational level.

## MONITORING, REPORTING, AND VERIFICATION

The need to develop MRV mechanisms for REDD+ projects was highlighted by all three country case studies. IFRI data used in this study show that community forest institutions have enabled monitoring and recording of forest condition in prior years, but they must be strengthened if systematic quantification of carbon and ecological outcomes need to be documented. Currently, few CFM user groups or organizations in the studied countries have the needed capacity for monitoring carbon storage or sequestration. For REDD+ programs to operate in CFM sites at a national scale, existing CFM structures need to be adapted and strengthened, and linked across planned intervention sites.

Involvement of communities in monitoring forest conditions, and forest carbon in particular, is likely to be most effective if integrated into a mixed-level approach that combines local- and national-level systems. National-level institutions are likely to be better positioned to determine national baselines, to calculate reference emission levels, and to conduct large-scale monitoring of forest cover using satellite imagery and other technical, high-cost options. Local communities will likely play a crucial role in monitoring variations in forests locally, accounting particularly for forest degradation (Burgess et al. 2010). The inclusion of local communities in forest monitoring would therefore play a complementary role in accomplishing data collection tasks.

Conducting MRV at the community level can be effective, efficient, and more equitable. Data collected by communities in the Forest Carbon Trust Fund pilot project in Nepal were only “slightly worse” than the data collected by professionals (Puliti 2012); participatory monitoring would reduce the costs of technology and experts (Skutsch et al. 2009); and it would engage and empower communities of forest users (Dangi 2012) while alleviating fears of negative impacts from top-down REDD+ implementation (Burgess et al. 2010).

Although communities currently lack the capacity and resources to make the necessary measurements, several pilot projects are developing community capacity for MRV in CFM contexts. For example, Nepal’s diverse and numerous civil society organizations, provided with government support, should be able to quickly train forest users on the use of the tools and methods required for carbon measurement (Jha and Paudel 2010). Community-appropriate methods are available to aid decentralized monitoring, which can include the use of forest plot inventories, GPS units, measuring tapes, and cameras (Asia REDD+ Working Group 2012).

### *Efficiency*

#### TRANSACTION COSTS

The cost of reducing deforestation rates is likely to be considerably lower when achieved by communities and community institutions such as those associated with CFM than it is when enforced by either private or government agencies. Incorporating CFM into REDD+ architectures is therefore likely to be an economical option for achieving REDD+ objectives.

REDD+ strategy design has mainly been focused at the national level, to maximize efficiency by reducing transaction costs. In contrast, CFM is by definition a subnational arrangement, with individual forest sites

managed by multiple, local community user groups. Subnational programs and payments are likely to incur greater transaction costs than national-level institutions, but may be necessary to ensure that REDD+ benefits reach forest users in rural communities. Existing community forestry institutions that bridge the national and subnational scales of governance, such as the Federation of Community Forest Users (FECOFUN) in Nepal, may play a critical role. Such a model could be replicated elsewhere, facilitating the integration of CFM within a national or mixed-scale REDD+ strategy.

#### OPPORTUNITY COSTS

Forest conservation policies may bear opportunity costs for local communities that use those forests for subsistence and commercial livelihoods. In sites surveyed by IFRI, 70 percent of households depended on forests for their subsistence livelihoods in Nepal, 40 percent in Tanzania, and 43 percent in Bolivia. More than a third of all fuelwood in all three countries was sourced from community forests. Changes in forest governance or rules that restricted access to fuelwood (for example, to decrease carbon removal from forests as part of an REDD+ strategy) would therefore affect subsistence livelihoods in a way that carbon payments are unlikely to fully compensate (Karky and Skutsch 2010).

Subnational REDD+ mechanisms to distribute benefits in a manner that reflects the opportunity costs incurred by the communities, is one element of the solution. The Watershed REDD+ Networks of Nepal's Forest Carbon Trust Fund pilot project demonstrates an emerging institution that could carry out this function, with local contextual knowledge informing the relative distribution of benefits among watersheds, communities, and households.

### *Equity*

#### INCLUSION

An important element of equitable benefit sharing is that of ensuring that REDD+ payments reach marginalized groups, and that they do so in a manner that does not treat those groups as recipients of charity (West 2012). Greater inclusion will likely increase social capital across the country. In Nepal, the safeguards built into the RPP include provision for benefit flows to indigenous groups, women, and poorer households, and the weighted payments of the Forest Carbon Trust Fund could represent a model mechanism for ensuring benefit gains by these marginalized groups. The Noel Kempff Climate Action Project in Bolivia illustrates the dangers of excluding local communities: Communities did not participate in the design of the project and were not given the option to modify or reject it, resulting in mistrust, resentment, and confusion in the affected communities (Asquith, Vargas Rios, and Smith 2002). In contrast, policy instruments for the implementation of the JMAM focus on community-generated natural resource management rules (Plurinational State of Bolivia 2012a).

#### INSTITUTIONAL CAPACITY

Preparations for the introduction of REDD+ into the forest landscapes of each of these countries have required new institutional capacity. REDD+ pilot project funding has supported existing institutions, either in their current form or with modification, and the establishment of new ones, at both the national and local

levels. For example, the RFCCC in Nepal was created to facilitate communication and outreach; NAFORMA in Tanzania was established to facilitate monitoring; and the JMAM's Territorial Management Plans in Bolivia will enable better land-use planning.

In Bolivia, the JMAM proposal cites “strengthening forest governance” as a primary issue at the core of sustainable forest management (Plurinational State of Bolivia 2012b). Focal aspects of community forest governance in Bolivia include the development of self-organized community rules about forest use, the monitoring and enforcement of these rules, and the sanctioning of those who break the rules (Andersson et al. in review).

### Using REDD+ Funding to Expand the Existing CFM Network

Community forest management has demonstrable success in achieving sustainable forest outcomes, and has been afforded a central role in the national REDD+ strategies of all three case study countries. Expansion of the community forest network could logically form part of these countries' REDD+ approach: REDD+ funding could overcome the transaction costs involved in establishing additional community forest sites, the selection of which could be guided by the key lessons outlined above. The legal framework for designating forests to communities has been established in all three countries.

There are however, few examples of national policies to expand community forestry beyond its current extent. Uncertainty over the future of REDD+ could be constraining such efforts, which would incur high financial and time costs. This hypothesis is tentatively supported by the strategy of the Mpingo Conservation and Development Initiative project in Tanzania of using REDD+ funds to expand FSC certification programs for sustainable timber. Sustainable timber management under FSC is considered by project managers to have a greater record of longer-term benefit flows, relative to the uncertainty that REDD+ funding will continue beyond the immediate term.

## IMPACTS OF REDD+ ON CFM

### Positive Impacts

Improving forest governance and strengthening community institutions is a critical goal of all three countries' REDD+ programs (Andersson et al. in review; Cronkleton, Bray, and Medina 2011). The ability of community forestry institutions to fully conduct all management activities has historically been constrained by limited financial resources, which has hampered the effectiveness and extent of the enforcement of local regulations on sustainable resource use. Local institutional capacity and human capital, in the form of trained personnel with the knowledge and skills to conduct forest management, have also often constrained community forestry effectiveness. REDD+ could represent a stream of funding, and also a source of training and support, both of which could improve community forestry activities, increasing their capacity to monitor resource extraction

and to enforce rules, and resulting in better forest management that is likely to contribute to greater carbon additionality (table 7.1). For example, the TFCG and MJUMITA projects in eastern Tanzania are supporting the improvement of PFM capacity. In the long term, a permanent stream of REDD+ funding could ensure sustainable forest outcomes in terms of both carbon and livelihood goals.

## Negative Impacts

The resources and attention that REDD+ could bring to forests could also pose a new suite of difficulties and even threaten the integrity of CFM. Here, we issue a series of cautions in trying to connect the two mechanisms, based on the three country case studies.

### *Altered access to forest resources*

There is widespread concern that, in an REDD+ landscape that aims to enhance carbon maximization, the rules of forest use could change, with the effect of reducing community access to valuable subsistence and income-generating resources such as firewood, charcoal, and construction timber. It may therefore not be in the best interests of communities to buy into management plans that prioritize the maintenance of carbon services. Socioeconomic (livelihood) objectives may be more important to local communities, yet are usually considered secondary “co-benefits” in an REDD+ context.

### *Recentralization*

There are concerns that the financial opportunities associated with REDD+ may promote a recentralization of forest governance and a weakening of CFM structures in countries where CFM has been widely established (Phelps, Webb, and Agrawal 2010). That is, an injection of REDD+ funding may act as an incentive to governments to roll back toward a centralized forest system in order to reap rewards more centrally (Sandbrook et al. 2010). Given the high financial values at stake, there is a real possibility that governments could justify recentralization by “portraying themselves as more capable and reliable than local communities at protecting national interests” (Phelps, Webb, and Agrawal 2010). Emerging conflicts in both Nepal and Tanzania demonstrate this concern. The Bolivian government has rejected the mainstream market mechanism of REDD+ and seems more intent on ensuring equity and community benefits from forest management.

### *Greater inequality*

Establishing a system of equitable benefit sharing is a challenging task, further complicated in situations where communities and governments share forest rights. This is the case with JFM in Tanzania, and with CFM in Nepal where the government may claim its rights for revenues from soil carbon. Even when decision-making processes remain at, or are devolved to, the community level, increased cash flows in communities could incite local elite capture of project benefits, and marginalized groups could remain peripheral (Toni 2011).

### *Continuity*

REDD+ pilot project payments may be incongruous with eventual national REDD+ program funding in one or more ways. Pilot project structures may not be representative of permanent national REDD+ architectures, or there may be a temporary discontinuity between REDD+ pilot project payments and longer-term funding, or a national REDD+ program may never be agreed on. In any of these cases, communities may have been presented with false promises. This could damage community relations with government agencies or NGOs, or even cause loss of income if resource-use behaviors have changed because of the pilot project—such as with the Forest Carbon Trust Fund tree-planting program in Nepal. Embedding REDD+ in the existing legal framework may increase the likelihood of continuity beyond donor commitment.

### *Community perceptions of forest management*

Finally, attaching direct financial values to forests that have been managed principally for extractive resource benefits could alter community perspectives about the underlying philosophy of forest management. CFM sites are currently being managed by communities for local benefits, whereas a REDD+ focus would imply that communities are managing the forests at least in part for exogenous benefits derived by donor countries.



As a climate change mitigation strategy, REDD+ seeks to reduce carbon emissions from deforestation and forest degradation. Biodiversity conservation and equitable socioeconomic livelihood outcomes were initially included in REDD+ planning as “co-benefits” (for example, Angelsen 2008) but are now considered by most national REDD+ strategies to be an integral part of the program. Community forest management aims to achieve improved local livelihoods for forest-dependent communities, through sustainable forest resource use. Sustainable ecological outcomes are an objective of CFM, but principally because these are an integral part of sustainable, enhanced livelihoods.

CFM and REDD+ forest management goals therefore have different underlying motivations, but their practical objectives in terms of sustainable forest management are closely aligned. Because of this congruence, there is significant potential for accomplishing REDD+ objectives in CFM landscapes. REDD+ pilot projects are being implemented in CFM sites in Nepal and Tanzania, and Bolivia is beginning to explore ways to connect communities managing forests with support from the JMAM.

REDD+ could benefit from the established successes of CFM in one or more ways. First, REDD+ could adopt the design principles associated with improved outcomes in community forests, for example by identifying large, well-defined forests governed by small to medium-sized user groups with extensive experience of forest management. Second, REDD+ could use the natural, human, social, and institutional capital associated with existing community forest sites as a tool to achieve REDD+ goals. REDD+ funding could help to overcome the historical financial barrier to effective CFM, by increasing the capacity for management activities such as rule enforcement.

Our case study countries of Nepal and Tanzania demonstrate the significant extent to which REDD+ pilot projects are utilizing and strengthening existing institutions in CFM forests. In particular, we find that larger forests and communities with a moderate dependence on forests have a substantial association with improved forest condition outcomes. Attending to these characteristics of CFM in the selection of REDD+ sites and design of REDD+ programs has the potential to advance the REDD+ objectives of higher carbon sequestration. We should note that these relationships between characteristics of CFM programs and forest outcomes based on observational data should be considered as preliminary findings—more rigorous studies using matched or randomized research designs for case selection will be needed for greater confidence.

CFM practices are certainly not a silver bullet in promoting REDD+ outcomes and do not present solutions to all REDD+ design and implementation challenges. Pilot projects and readiness activities are investing particularly in the development of benefit-distribution mechanisms, and the capacity for monitoring, reporting, and verification of carbon objectives. Finally, REDD+ funding is being used to expand the existing network of CFM forests, for example, in Tanzania where new JFM forests are being established.

REDD+ also brings challenges to CFM landscapes. There are widespread fears, tentatively supported by early evidence, that REDD+ programs could restrict traditional patterns of resource access for forest-dependent communities. In both Nepal and Tanzania, there is a concern that REDD+ benefits may motivate a partial recentralization of forest management rights. And fundamentally, there is a distinct difference between the underlying motivation for CFM, which is driven by local benefits, and REDD+, which is driven by the carbon-oriented objectives of nonlocal actors. An awareness of these possible impacts may increase the likelihood of optimal environmental, economic, and social outcomes during REDD+ program design and implementation.

Climate change mitigation policy is evolving in a dynamic economic and political context. As a consequence, many uncertainties about the future of REDD+ remain. However, given the urgency of forest-based mitigation and given the vast experience and significant successes of CFM, it seems probable that CFM will play an important role in the pathway by which many forested, developing countries achieve REDD+ objectives.

Based on our findings, we offer 10 recommendations, categorized by their relevance to policy makers, project developers, communities, and researchers engaged in REDD+ design, implementation, and analysis.

### POLICY MAKERS

1. **Support community forest management (CFM) as an effective mechanism to achieve both carbon and livelihood benefits for REDD+.** The principal interaction between CFM and REDD+ to date has been to strengthen existing community forestry sites. Although the underlying motivations for CFM and REDD+ differ, there is substantial synergy between REDD+ and CFM objectives, and the dual forest conservation and livelihood development focus of both programs means that policies that strengthen and support existing CFM institutions and sites will advance REDD+ objectives.
2. **Formally allocate larger forest patches to communities to make more effective use of REDD+ funding.** Forests managed by communities already account for about 25 percent of forested land in developing countries, and these have a strong record of sustainable forestry and livelihood outcomes. Given that CFM is an effective means to achieve both carbon and livelihood goals, expanding CFM by designating larger forest patches as community forests will advance REDD+ objectives without hurting livelihoods. Such expansion should build on the lessons and experience of CFM to guide site selection and institutional design.
3. **Use REDD+ pilot projects to build community-level capacity, particularly for tracking forest and livelihood outcomes, essential for engagement with future national REDD+ programs.** Communities need to build on their existing capacity in order to meet REDD+ criteria, including functional payment structures, equitable benefit-sharing mechanisms, and operational systems for monitoring, reporting, and verification (MRV). Even though the future of REDD+ remains uncertain, communities need to have these structures in place in order to be well positioned to capitalize on more extensive and lucrative REDD+ opportunities if and when they eventually emerge. Pilot projects and readiness activities are the principal mechanism by which these structures will be developed.

## PROJECT DEVELOPERS

4. **Ensure that REDD+ interventions are linked to performance, and not just to payment transfer.** Many REDD+ pilot project payments are contingent only on participation, with little or no valuation of opportunity costs or carbon. Payment structures that represent probable future REDD+ program approaches, which are likely to be based on altered behavior, would better prepare communities and would create more realistic expectations. Conditional, performance-based payments are more costly to monitor, and so development of indicators for low-cost monitoring of REDD+ outcomes may be a necessary additional activity.
5. **Strengthen and support the development of higher-level community forestry institutions around which interactions among CFM institutions can coalesce and which can coordinate the experiences of local CFM organizations.** Several REDD+ pilot projects have demonstrated the effectiveness of deploying existing CFM institutions to bridge the gap between national and subnational elements of REDD+. This is likely to be an effective strategy to overcome the barriers to vertical coordination in REDD+, to ensure credibility and legitimacy.
6. **Some REDD+ activities should be conducted by communities and local institutions rather than, or in addition to, national-level organizations.** It is advantageous to include communities in the design and implementation of REDD+ structures. In particular, equitable benefit distribution in local contexts is a challenge for national institutions. Empowering community forestry institutions to help determine the local distribution of benefits may ensure that this process is representative of local opportunity costs and that marginalized groups are included in REDD+ activities and benefit sharing. Likewise, community-based MRV may offer a degree of resolution that complements national-level MRV programs.

## COMMUNITIES

7. **Take advantage of the financial and capacity-building opportunities offered by REDD+ pilot projects and readiness activities.** REDD+ may be able to strengthen existing CFM arrangements, both through direct funding that supports better monitoring and enforcement of forest rules, and through training that generates stronger human and institutional capital. Because CFM is a dynamic set of institutional arrangements, the changes brought by REDD+ are not always threats but could also represent opportunities.

8. **Mobilize to secure the possibility of continued implementation of REDD+ pilot projects and the flow of REDD+-related benefits.** Although current REDD+ interventions are temporary and the future of a full REDD+ program at the national and international levels is uncertain, it will be more likely to come into existence with local support and mobilization. Although it might seem prudent for communities to be cautious of any temporary initiative that requires significant or nonreversible alterations in patterns of traditional resource use, contributing to the processes that encourage policy makers to create and implement such programs is more likely to bring them into existence.

## RESEARCHERS

9. **Identify the nature of interactions between CFM and REDD+ more widely and with greater country-level evidence.** In some countries, many or all REDD+ pilot projects are being implemented within CFM landscapes. There are multiple possible interactions between the two programs, with both positive and negative implications for CFM and for effective, efficient, and equitable REDD+. Carefully designed research, based on case studies and primary data collection, could usefully examine REDD+ within and outside CFM sites, and should evaluate the impact of emerging REDD+ structures on CFM arrangements.
10. **Examine the trade-offs and synergies among additionality, leakage, and livelihood impacts of REDD+ in CFM landscapes.** If REDD+ programs attempt to reduce local carbon extraction by restricting community access to timber, charcoal, and fuelwood in community forests, then two outcomes are probable. Either leakage will occur, and these products will be sourced from neighboring, less strictly protected forests, or local livelihoods will be negatively affected (unless alternative subsistence and income-generating opportunities are provided). Optimizing CFM and REDD+ outcomes is a priority for decision makers that requires improved understanding of socioecological dynamics.

## REFERENCES

- Acharya, K.P. 2002. "Twenty-four Years of Community Forestry in Nepal." *International Forestry Review* 4, 149–56.
- Agrawal, A. 2001. "Common Property Institutions and Sustainable Governance of Resources." *World Development* 29, 1649–72.
- Agrawal, A. 2007. "Forests, Governance, and Sustainability: Common Property Theory and Its Contributions." *International Journal of the Commons* 1, 111–36.
- Agrawal, A., and A. Angelsen. 2009. "Using Community Forest Management to Achieve REDD+ Goals." In *Realising REDD+: National Strategy and Policy Options*, ed. A. Angelsen. CIFOR, Bogor. 201–12.
- Agrawal, A., A. Chhatre, and R. Hardin. 2008. "Changing Governance of the World's Forests." *Science* 320, 1460–62.
- Akida, A., and R. Blomley. 2006. "Trends in Forest Ownership, Forest Resource Tenure and Institutional Arrangements: Are They Contributing to Better Forest Management and Poverty Reduction? A Case Study from the United Republic of Tanzania." Dar es Salaam Tanzania: Forestry and Beekeeping Division, Ministry of Natural Resources and Tourism.
- Andersen, L. E., J. Busch, E. Curran, J. C. Ledezma, J. Mayorga, P. R. Junco, and D. Weinhold. 2012. "Efficiency/Equity Trade-Offs in the Design of REDD Incentives: A Comparison Between REDD Payments and Conservation Incentives Using OSIRIS-Bolivia and CISA-Bolivia." La Paz Bolivia.
- Andersson, K., J. P. Benavides, R. Leon, and P. Uberhuaga. In review. "Local Self-Governance of Forests in Bolivia: Why Do Some Communities Enjoy Better Forests Than Others?"
- Andersson, K., and C. C. Gibson. 2006. "Decentralized Governance and Environmental Change: Local Institutional Moderation of Deforestation in Bolivia." *Journal of Policy Analysis and Management* 26, 99–123.
- ANSAB (Asia Network for Sustainable Agriculture and Bioresources). 2011. *A Report on Forest Connect In-Country Experiences in Nepal*. ANSAB.
- Asia REDD+ Working Group. 2012. *Rethinking REDD+ Benefitting the Environment and Forest People*. Kathmandu, Nepal: Community Forestry International.
- Asquith, N. M., M. T. Vargas Ríos, and J. Smith. 2002. "Can Forest-Protection Carbon Projects Improve Rural Livelihoods? Analysis of the Noel Kempff Mercado Climate Action Project, Bolivia." *Mitigation and Adaptation Strategies for Global Change* 7, 323–37.
- AWF (African Wildlife Foundation). 2011. *Advancing REDD in the Kolo Hills Forests (Arkfor): Reducing Emissions from Deforestation and Forest Degradation REDD and Protecting A Critical Landscape for Tanzania's Wildlife and People*. Washington, DC: AWF.
- Bampton, J. F., A. Ebreget, and M. R. Banjade. 2007. "Collaborative Forest Management in Nepal's Terai: Policy, Practice and Contestation." *Journal of Forest and Livelihood* 6, 30–43.
- Baral, S., R. Malla, and S. Ranabhat. 2009. "Above-Ground Carbon Stock Assessment in Different Forest Types of Nepal." *Banko Janakari* 19, 10–14.
- Benneker, C., and M. McCall. 2009. "Are Existing Programs for Community Based Forest Management and Conservation Suitable REDD Strategies? A Case Study from Mexico." *EFTRN News* 50, 1–8.
- Benton-Connell, K., 2011. *Off the Market: Bolivian Forests and Struggles Over Climate Change*. Cochabamba, Bolivia: The Democracy Center.
- Blomley, T. 2006. "Mainstreaming Participatory Forestry Within the Local Government Reform Process in Tanzania." Gatekeeper Series, International Institute for Environment and Development, London, UK.
- Blomley, T. and S. Iddi. 2009. *Participatory Forest Management in Tanzania: 1993–2009 Lessons Learned and Experiences to Date*. Dar es Salaam, Tanzania: United Republic of Tanzania, Ministry of Natural Resources and Tourism, Forestry and Beekeeping Division.
- Blomley, T., K. Pfliegner, J. Isango, E. Zahabu, A. Ahrends, and N. Burgess. 2008. "Seeing the Wood for the Trees: An Assessment of the Impact of Participatory Forest Management on Forest Condition in Tanzania." *Oryx* 42, 380–91.
- Burgess, N. D., B. Bahane, T. Clairs, F. Danielsen, S. Dalsgaard, M. Funder, N. Hagelberg, P. Harrison, C. Haule, K. Kabalimu, F. Kilahama, E. Kilawe, S. L. Lewis, J. C. Lovett, G. Lyatuu, A. R. Marshall, C. Meshack, L. Miles, S.A.H. Milledge, P.K.T. Munishi, E. Nashanda, D. Shirima, R. D. Swetnam, S. Willcock, A. Williams, and E. Zahabu. 2010. "Getting Ready for REDD Plus in Tanzania: A Case Study of Progress and Challenges." *Oryx* 44, 339–51.
- Bushley, B. R., and D. B. Khatri. 2011. "REDD+: Reversing, Reinforcing, Or Reconfiguring Decentralized Forest Governance in Nepal?" Discussion Paper, Forestaction, Kathmandu, Nepal.
- Calderón, N. A., 2005. "Livelihood Impact Assessment: Noel Kempff Climate Action Project NK-CAP., Bolivia." Santa

- Cruz de la Sierra, Bolivia. Fundación Amigos De La Naturaleza (FAN-Bolivia).
- Campbell, B. M. 2009. "Beyond Copenhagen: REDD+, Agriculture, Adaptation Strategies and Poverty." *Global Environmental Change* 19.
- Charmley, S., and M. Poe. 2007. "Community Forestry in Theory and Practice: Where Are We Now?" *Annual Review of Anthropology* 36, 301–36.
- Chhatre, A., and A. Agrawal. 2009. "Trade-Offs and Synergies Between Carbon Storage and Livelihood Benefits from Forest Commons." *Proceedings of the National Academy of Sciences of the United States of America* 106, 17667–70.
- Chhetri, R. 2006. "From Protection to Poverty Reduction: A Review of Forestry Policies and Practices in Nepal." *Journal of Forest and Livelihood* 5.
- Chiesa, F., M. Dere, E. Saltarelli, and H. Sandbank. 2009. *UN-REDD in Tanzania*. Washington DC: Project on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries, Johns Hopkins School of Advanced International Studies. Cambridge, UK: UNEP World Conservation Monitoring Centre.
- Corbera, E. 2012. "Problematising REDD+ as an Experiment in Payments for Ecosystem Services." *Current Opinion in Environmental Sustainability*, 612–19.
- Corbera, E., and H. Schroeder. 2011. "Governing and Implementing REDD+." *Environmental Science & Policy* 14, 89–99.
- Cronkleton, P., and M. A. Albornoz. 2004. *Foresteria Comunitaria en Bolivia: Abriendo Horizontes Para Nuevos Actores, Memoria: Forum Sobre Florestas, Gestão e Desenvolvimento*. Belem, Brazil: CIFOR.
- Cronkleton, P., D. B. Bray, and G. Medina. 2011. "Community Forest Management and the Emergence of Multi-Scale Governance Institutions: Lessons for REDD+ Development from Mexico, Brazil and Bolivia." *Forests* 2, 451–73.
- Cronkleton, P., P. Pacheco, R. Ibarquén, and M. A. Albornoz. 2009. *Reformas en la Tenencia Forestal en Bolivia: La Gestión Comunal en las Tierras Bajas*. La Paz, Bolivia: CIFOR, Centro de Estudios para el Desarrollo Laboral y Agrario.
- Dahal, N., and K. Banskota. 2009. "Discourse for Capitalizing on Potential?" *Journal of Forest and Livelihoods* 8, 41–50.
- Dam, C.V. 2011. "Indigenous Territories and REDD in Latin America: Opportunity or Threat?" *Forests* 2, 394–414.
- Dangi, R. 2012. "REDD+: Issues and Challenges From A Nepalese Perspective." In *Climate Change and UNFCCC Negotiation Process*, ed. D. C. Devkota, B. K. Uprety, and T. N. Bhattarai. Kathmandu, Nepal: Moest Publications.
- Danielsen, F., N. D. Burgess, A. Balmford, P. F. Donald, M. Funder, J.P.G. Jones, P. Alviola, D. S. Balete, T. Blomley, J. Brashares, B. Child, M. Enghoff, J. Fjeldsa, S. Holt, H. Hubertz, A. E. Jensen, P. M. Jensen, J. Massao, M. M. Mendoza, Y. Ngaga, M. K. Poulsen, R. Rueda, M. Sam, T. Skielboe, G. Stuart-Hill, E. Topp-Jørgensen, and D. Yonten. 2009. "Local Participation in Natural Resource Monitoring: A Characterization of Approaches." *Conservation Biology* 23, 31–42.
- Deloitte. 2012a. "End of Year One Review Report: NGO REDD+ Pilot Projects in Tanzania—Wildlife Conservation Society of Tanzania WCST."
- . 2012b. "Mid-Term Review Report of Nine NGO REDD+ Pilot Projects in Tanzania - African Wildlife Foundation AWF."
- . 2012c. "Mid-Term Review Report of Nine NGO REDD+ Pilot Projects in Tanzania - CARE International in Tanzania: 'HIMA Piloting REDD in Zanzibar Through Community Forest Management.'"
- . 2012d. "Mid-Term Review Report of Nine NGO REDD+ Pilot Projects in Tanzania: Higher-Level Overview of NGO REDD+ Portfolio." Deloitte.
- . 2012e. "Mid-Term Review Report of Nine NGO REDD+ Pilot Projects in Tanzania - Jane Goodall Institute JGI."
- . 2012f. "Mid-Term Review Report of Nine NGO REDD+ Pilot Projects in Tanzania - Mpingo Conservation and Development Initiative MCDI."
- . 2012g. "Mid-Term Review Report of Nine NGO REDD+ Pilot Projects in Tanzania - Tanzania Forest Conservation Group TFCG."
- . 2012h. "Mid-Term Review Report of Nine NGO REDD+ Pilot Projects in Tanzania - Tatedo."
- . 2012i. "Mid-Term Review Report of Nine NGO REDD+ Pilot Projects in Tanzania - Wildlife Conservation Society WCS."
- . 2012j. "Mid-Term Review Report of Nine NGO REDD+ Pilot Projects in Tanzania - World Wide Fund for Nature Tanzania Country Office WWF TCO."
- Densham, A., R. Czebiniak, D. Kessler, and R. Skar. 2009. "Carbon Scam: Noel Kempff Climate Action Project and the Push for Sub-national Forest Offsets." Amsterdam, The Netherlands: Greenpeace International.
- Dietz, T., E. Ostrom, and P. C. Stern. 2003. "The Struggle to Govern the Commons." *Science* 302, 1907–12.
- Fisher, B., S. L. Lewis, N. D. Burgess, R. E. Malimbwi, P. K. Munishi, R. D. Swetnam, R. K. Turner, S. Willcock, and A. Balmford. 2011. "Implementation and Opportunity Costs of Reducing Deforestation and Forest Degradation in Tanzania." *Nature Climate Change* 1, 161–64.
- Fundación Amigos de la Naturaleza (FAN-Bolivia). 2013. "The Indigenous REDD Program in the Bolivian Amazon."
- Gilmour, D. A., G. C. King, and M. Hobley. 1989. "Management of Forests for Local Use in the Hills of Nepal: 1. Changing Forest Management Paradigms." *Journal of World Forests Resource Management* 4, 93–110.
- Government of Nepal. 2010. "Nepal's Readiness Preparation Proposal REDD 2010–2013." Kathmandu Nepal: Ministry of Forests and Soil Conservation.
- . 2011. "Study on REDD Plus Piloting in Nepal." Kathmandu Nepal: Ministry of Forests and Soil Conservation.
- Gurung, N. 2011. *ICIMOD Pilots First Forest Carbon Trust Fund in Nepal: Helps Communities Benefit from Forest Conservation and Sustainable Use*. Kathmandu, Nepal: ICIMOD.
- Hardin, G. 1968. "The Tragedy of the Commons." *Science* 162, 1243–48.
- Harvey, C. A., O. Zerbock, S. Papageorgiou, and A. Parra. 2010. *What Is Needed to Make REDD+ Work on the Ground?* Conservation

- International. [www.conservation.org/publications/pages/REDD\\_lessons\\_learned.aspx](http://www.conservation.org/publications/pages/REDD_lessons_learned.aspx).
- Hayes, T., and L. Persha. 2010. "Nesting Local Forestry Initiatives: Revisiting Community Forest Management in a REDD+ World." *Forest Policy and Economics* 12, 545–53.
- Hernández, I., and D. Pacheco. 2001. *La Ley INRA en el Espejo de la Historia: Propuestas de Modificación*. La Paz, Bolivia: Fundación Tierra.
- Herold, M. 2009. *An Assessment of National Forest Monitoring Capabilities in Tropical Non-Annex I Countries: Recommendations for Capacity Building*. Jena, Germany: Friedrich Schiller University.
- Herold, M., and M. Skutsch. 2011. "Monitoring, Reporting and Verification for National REDD+ Programmes: Two Proposals." *Environmental Research Letters* 6, 014002.
- ICIMOD (International Centre for Integrated Mountain Development), ANSAB (Asia Network for Sustainable Agriculture and Bioresources), and FECOFUN (Federation of Community Forest Users Nepal). 2011. *Operating Guidelines of Forest Carbon Trust Fund 2011*. ICIMOD, ANSAB, FECOFUN.
- IFRI (International Forestry Resources and Institutions). 2012. *Research Program Field Manual*. Ann Arbor, United States: IFRI. [http://www.ifriresearch.net/wp-content/uploads/2012/09/ifri\\_manual\\_may2012\\_dec\\_2011.pdf](http://www.ifriresearch.net/wp-content/uploads/2012/09/ifri_manual_may2012_dec_2011.pdf).
- Instituto Nacional de Reforma Agraria. 2012. "La Tierra Vuelve a Manos Indígenas y Campesinas." La Paz, Bolivia: INRA.
- Jha, B. N., and G. Paudel. 2010. "REDD Monitoring, Reporting and Verification Systems in Nepal: Gaps, Issues and Challenges." *Journal of Forest and Livelihoods* 9, 21–32.
- Joshi, G. R., and N. Bhatta. 2010. *Early Action Forest Carbon Project to Prepare for REDD+ and Have an Equitable Carbon Financing Mechanism in Place: Climate, Community and Biodiversity Benefits*. World Wildlife Fund Nepal.
- Karky, B. S., and M. Skutsch. 2010. "The Cost of Carbon Abatement Through Community Forest Management in Nepal Himalaya." *Ecological Economics* 69, 666–72.
- Kandel, P., 2010. "Forest Resource Assessment in Nepal: An Assessment of Data Needs." Kathmandu Nepal: Ministry of Forests and Soil Conservation, Survey, Department of Forest Resource Assessment.
- Kanel, K. R., 2006. *Current Status of Community Forestry in Nepal*. Bangkok, Thailand: Regional Community Forestry Training Center for Asia and the Pacific.
- Killeen, T. J., V. Calderon, L. Soria, B. Quezada, M. K. Steinger, G. Harper, L. A. Solorzano, and C. J. Tucker. 2007. "Thirty Years of Land-Cover Change in Bolivia." *Ambio* 36, 600–606.
- Killeen, T. J., A. Guerra, M. Calzada, L. Correa, V. Calderon, L. Soria, B. Quezada, and M. K. Steinger. 2008. "Total Historical Land-Use Change in Eastern Bolivia: Who, Where, When, and How Much?" *Ecology and Society* 13, 36.
- León, R., P. Oberhuaga, J. P. Benavides, and K. Andersson. 2012. "Public Policy Reforms and Indigenous Forest Governance: The Case of the Yuracaré People in Bolivia." *Conservation and Society* 10, 195–207.
- Ludwig, D., R. Hilborn, and C. Walters. 1993. "Uncertainty, Resource Exploitation, and Conservation: Lessons from History." *Science* 260, 17.
- Luintel, H. 2006. "Do Civil Society Organizations Promote Equity in Community Forestry? A Reflection from Nepal's Experiences." In *Hanging on the Balance: Equity in Community-Based Natural Resource Management in Asia*, ed. S. Mahanth, J. Fox, M. Nurse, and L. Mclees. Bangkok, Thailand: East-West Centre and RECOFTC.
- McKean, M. A. 1992. "Success on the Commons: A Comparative Examination of Institutions for Common Property Resource Management." *Journal of Theoretical Politics* 4, 247–81.
- Ministry of Forests and Soil Conservation, 2009. *Nepal Forestry Outlook Study*. Kathmandu, Nepal: Food and Agriculture Organization.
- MJUMITA and TFCG (Tanzanian Forest Conservation Group), 2009. *Making REDD Work for People and Forests in Tanzania: Lessons Learnt from Participatory Forest Management in Tanzania*. Dar es Salaam, Tanzania: MJUMITA and TFCG.
- . 2011a. Policy Brief: Why Individual Payments Are the Best Option for REDD+. Dar es Salaam, Tanzania: MJUMITA and TFCG.
- . 2011b. Policy Brief: A One-Step Guide to Making the National REDD Strategy More Pro-Poor. Dar es Salaam, Tanzania: MJUMITA and TFCG.
- MNRT (Tanzania Ministry of Natural Resources and Tourism Forestry). 2001. National Forest Programme in Tanzania 2001–2012. Dar es Salaam, Tanzania: MNRT and Beekeeping Division.
- Morales Ayma, J. E. 2010. "Nature, Forests and Indigenous Peoples Are Not for Sale." World People's Conference on Climate Change and the Rights of Mother Earth, Tiquipaya, Bolivia, 22 April 2010.
- Mukama, K., I. Mustalahti, and E. Zahabu. 2012. "Participatory Forest Carbon Assessment and REDD+: Learning from Tanzania." *International Journal of Forestry Research* 2012, 14.
- Müller, R., T. Pistorius, S. Rohde, G. Gerold, and P. Pacheco. 2013. "Policy Options to Reduce Deforestation Based on a Systematic Analysis of Drivers and Agents in Lowland Bolivia." *Land Use Policy* 30, 895–907.
- Mustalahti, I., A. Bolin, E. Boyd, and J. Paavola. 2012. "Can REDD+ Reconcile Local Priorities and Needs with Global Mitigation Benefits? Lessons from Angai Forest, Tanzania." *Ecology and Society* 17.
- Mwakalobo, A., G. C. Kajembe, D. S. Silayo, E. Nzunda, E. Zahabu, S. Maliondo, and D. Kimaro. 2011. "REDD Working Papers: REDD and Sustainable Development—Perspective from Tanzania", London: International Institute for Environment and Development.
- Nature Conservancy 2009. *Noel Kempff Mercado Climate Action Project: A Case Study in Reducing Emissions from Deforestation and Degradation*. Arlington, VA: Nature Conservancy.
- Nature Conservancy, Conservation International, and Wildlife Conservation Society. 2011. *Reducing Emissions from Deforestation and Degradation REDD: A Casebook of On-the-Ground Experience*. Arlington, VA: Nature Conservancy, Conservation International, and Wildlife Conservation Society.
- Naughton-Treves, L., and C. Day. 2012. *Lessons About Land Tenure, Forest Governance and REDD+: Case Studies From Africa, Asia and Latin America*. Madison, Wisconsin: UW-Madison Land Tenure Center.
- Newton, P., E. S. Nichols, W. Endo, and C. A. Peres. 2012. "Consequences of Actor Level Livelihood Heterogeneity for Additionality in a Tropical Forest Payment for Environmental Services Programme with an Undifferentiated Reward Structure." *Global Environmental Change* 22, 127–36.



- Nhantumbo, I. 2012. *Getting REDD-Ready: Two Models of Coordination and Engagement from Africa*. London, UK: International Institute for Environment and Development.
- Norad. 2011. *Real-Time Evaluation of Norway's International Climate and Forest Initiative. Contributions to National REDD+ Processes 2007–2010*. Oslo: Norad.
- Ojha, H. 2003. *Community Forestry in Nepal—Current Issues*. Kathmandu, Nepal: Forestaction.
- Ojha, H., L. Persha, and A. Chhatre. 2009. *Community Forest in Nepal: A Policy Innovation for Local Livelihoods*. International Food Policy Research Institute.
- Okereke, C., and K. Dooley. 2010. "Principles of Justice in Proposals and Policy Approaches to Avoided Deforestation: Towards a Post-Kyoto Climate Agreement." *Global Environmental Change—Human and Policy Dimensions* 20, 82–95.
- Oli, B. N., and K. Shrestha. 2009. "Carbon Status in Forests of Nepal: An Overview." *Journal of Forest and Livelihood* 8, 62–66.
- Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge, UK: Cambridge University Press.
- . 2009. "A General Framework for Analyzing Sustainability of Social-Ecological Systems." *Science* 325, 419–22.
- Otsyina, R., F. Kilahama, G. Kamwenda, and A. Nashanda. 2008. "Status of REDD Readiness in Tanzania." Meeting of the East and Southern Africa Katoomba Group, Forest Trends, Dar es Salaam, Tanzania. September 2008.
- Pagdee, A., Y.-S. Kim, and P. J. Daugherty. 2006. "What Makes Community Forest Management Successful: A Meta-Study from Community Forests Throughout the World." *Society and Natural Resources* 19, 33–52.
- Panta, M., K. Kim, and C. Joshi. 2008. "Temporal Mapping of Deforestation and Forest Degradation in Nepal: Applications to Forest Conservation." *Forest Ecology and Management* 256, 1587–95.
- Pereira, S.N.C. 2010. "Payment for Environmental Services in the Amazon Forest: How Can Conservation and Development Be Reconciled?" *Journal of Environment & Development* 19, 171–90.
- Persha, L., A. Agrawal, and A. Chhatre. 2011. "Social and Ecological Synergy: Local Rulemaking, Forest Livelihoods and Biodiversity Conservation." *Science* 331, 1606–08.
- Phelps, J., E. Webb, and A. Agrawal. 2010. "Does REDD+ Threaten to Recentralize Forest Governance?" *Science* 328, 312–13.
- Plurinational State of Bolivia. 2012a. *Joint Mitigation and Adaptation Mechanism for the Integral and Sustainable Management of Forests*. Cochabamba, Bolivia: Plurinational State of Bolivia.
- . 2012b. "Joint Mitigation and Adaptation Mechanism for the Integral and Sustainable Management of Forests." UNFCCC 18th Conference of the Parties, Doha, Qatar, 12/2012.
- Pokharel, B., and S. Byrne. 2009. *Climate Change Mitigation and Adaptation Strategies in Nepal's Forest Sector: How Can Rural Communities Benefit?* Kathmandu, Nepal: Nepal Swiss Community Forestry Project.
- Pokharel, B., T. Stadtmüller, and J. Pfund. 2005. *From Degradation to Restoration: An Assessment of the Enabling Conditions for Community Forestry in Nepal*. Available from: <http://www.forestrynepal.org/article/publications/269>.
- Puliti, S. 2012. *Analyses of the Feasibility of Participatory REDD+ MRV Approaches to Lidar Assisted Carbon Inventories in Nepal*. Umeå, Sweden: Swedish University of Agricultural Science.
- Putz, F. 2009. "Dangers of Carbon-Based Conservation." *Global Environmental Change* 19, 111.
- RECOFTC (Center for People and Forests). 2012. *A Training of Trainers Manual for REDD+: for National and Subnational Level Facilitators*. Bangkok, Thailand: RECOFTC.
- REDDTZ. 2013. *REDD+ Initiative in Tanzania*. Dar es Salaam, Tanzania: REDDTZ.
- Ribot, J. C., A. Agrawal, and A. M. Larson. 2006. "Recentralizing While Decentralizing: How National Governments Reappropriate Forest Resources." *World Development* 34, 1864–86.
- Rojas Quiroga, R., J. Villanueva Cardozo, R. Chávez Antelo, R. Vélez Rapp, V. Vos, M. Fournier, and P. Cartagena. 2013. "Concreción de Acciones del Mecanismo Conjunto de Mitigación y Adaptación para el Manejo Integral y Sustentable de Bosques, en los Territorios Priorizados: Chiquitania Norte, Norte de La Paz, y Pando y Riberalta." La Paz, Bolivia: Centro de Investigación y Promoción del Campesinado.
- Ruiz, S. A. 2005. *Rentismo, Conflictos y Bosques en el Norte Amazónico Boliviano*. Bogor, Indonesia: Center for International Forestry Research.
- Sandbrook, C., F. Nelson, W. M. Adams, and A. Agrawal. 2010. "Carbon, Forests and the REDD Paradox." *Oryx* 44, 330–34.
- Sangermano, F., J. Toledano, and J. R. Eastman. 2012. "Land Cover Change in the Bolivian Amazon and Its Implications for REDD Plus and Endemic Biodiversity." *Landscape Ecology* 27, 571–84.
- Seifert-Granzin, J., B. Hinojosa, J. Quispe, A. Rodriguez, and G. Tejada. 2009. "Programa Indígena REDD Amazonia Boliviana: Monitoring Degradation Emissions within a Subnational REDD+ Scheme." Copenhagen, Denmark: UNFCCC 15th Conference of the Parties. Fundación Amigos de la Naturaleza.
- Shahi, P. 2012. "Forest Mgmt Fails to Reward Women." June 23, 2012. *The Kathmandu Post*.
- Sherpa, P. D. 2012. *Issues and Challenges Related to the Rights and Livelihoods of Indigenous Peoples*. In: *National REDD+ Processes: A Compilation of Case Studies to Inform Negotiations at COP 18*. ACCRA Caucus on Forests and Climate Change. Accra, Ghana.
- Sherpa, P. D., P. Sherpa, K. Ghale, and Y. Rai. 2010. *Land, Forest and Indigenous Peoples' Rights in Relation to Climate Change and REDD Policy and Program Analysis*. Nepal Federation of Indigenous Nationalities.
- Skutsch, M. M., P. E. Van Laake, E. M. Zahabu, B. S. Karky, and P. Phartiyaal. 2009. "Community Monitoring in REDD." In *Realising REDD+: National Strategy and Policy Options*, ed. A. Angelson. Denmark: Center for International Forestry Research.
- Staddon, S. 2009. "Carbon Financing and Community Forestry: A Review of the Questions, Challenges and the Case of Nepal." *Journal of Forest and Livelihood* 8, 25–32.

- Steininger, M. K., C. J. Tucker, J. R. Townshend, T. J. Killeen, A. Desch, V. Bell, and P. Ersts. 2001. "Tropical Deforestation in the Bolivian Amazon." *Environmental Conservation* 28, 127–34.
- Sunam, R. K., M. R. Banjade, N. S. Paudel, and D. B. Khatri. 2010. "Can Bureaucratic Control Improve Community Forestry Governance?" Discussion Paper Series 10:2, ForestAction Nepal, Kathmandu, Nepal.
- Sunderlin, W. D., A. M. Larson, and P. Cronkleton. 2009. "Forest Tenure Rights and REDD." In *Realising REDD+: National Strategy and Policy Options*, ed. A. Angelson. Bogor, Indonesia: Center for International Forestry Research.
- Tanzania Natural Resource Forum. 2011. *REDD Realities: Learning from REDD Pilot Projects to Make REDD Work*. Dar es Salaam, Tanzania: Tanzania Natural Resource Forum.
- Toni, F. 2011. "Decentralization and REDD+ in Brazil." *Forests* 1, 66–85.
- UN-REDD. 2012. "Report on the High-Level Mission to Bolivia and Recommendations to the UN-REDD Programme." Paper presented at UN-REDD Programme Ninth Policy Board Meeting, Brazzaville, Republic of the Congo.
- United Republic of Tanzania (URT). 2010a. *Draft National Strategy for Reduced Emissions from Deforestation and Forest Degradation REDD+*. Dar es Salaam, Tanzania: URT.
- . 2010b. *Final Draft: Forest Carbon Partnership Facility Readiness Preparation Proposal*. Dar es Salaam, Tanzania: URT.
- Veit, P. G., D. Vhugen, and J. Miner. 2012. "Threats to Village Land in Tanzania: Implications for REDD+ Benefit Sharing Arrangements." In *Lessons about Land Tenure, Forest Governance, and REDD+: Case Studies from Africa, Asia, and Latin America*, ed. L. Naughton-Treves and C. Day (pp. 11–22). Madison, Wisconsin: UW-Madison Land Tenure Center.
- West, S. 2012. *REDD+ and Adaptation in Nepal, REDD-Net*. London, UK: Overseas Development Institute.
- White, A., and A. Martin. 2002. *Who Owns the World's Forests? Forest Tenure and Public Forests in Transition*. Washington, DC: Forest Trends.
- Wily, L. 2001. *Forest Management and Democracy in East and Southern Africa: Lessons From Tanzania*. London, UK: International Institute for Environment and Development.
- Wollenberg, E., L. Merino, A. Agrawal, and E. Ostrom. 2007. "Fourteen Years of Monitoring Community-Managed Forests: Learning from IFRI's Experience." *International Forestry Review* 9, 670–84.
- World Wildlife Fund. 2012. *The Hariyo Ban Program: Newsletter No. 1*. Kathmandu, Nepal: WWF Nepal Programme.
- Zahabu, E., M. Skutsch, R. Malimbwi, and N.G.S. Nordholt. 2008. *The Likely Mechanism for Implementing REDD Policy in Tanzania*. Morogoro Tanzania: Sokoine University of Agriculture.



THIS REPORT EXAMINES THE LINKAGES BETWEEN COMMUNITY FOREST MANAGEMENT (CFM) AND REDUCING EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION (REDD+). WHILE THESE APPROACHES HAVE DIFFERENT UNDERLYING MOTIVATIONS, THEIR PRACTICAL OBJECTIVES IN TERMS OF SUSTAINABLE FOREST MANAGEMENT ARE CLOSELY ALIGNED. BECAUSE OF THIS CONGRUENCE, THERE IS SIGNIFICANT POTENTIAL FOR ACCOMPLISHING REDD+ OBJECTIVES IN CFM LANDSCAPES. DRAWING ON POLICY DEVELOPMENTS, PILOT PROJECTS AND FIELD DATA IN BOLIVIA, NEPAL AND TANZANIA, THE STUDY OFFERS AN ANALYTICAL FRAMEWORK FOR EXPLORING THE INTERACTIONS BETWEEN CFM AND REDD+, AND PROVIDES A SET OF CONCLUSIONS AND RECOMMENDATIONS ON HOW REDD+ COULD BENEFIT FROM THE ESTABLISHED SUCCESSES OF COMMUNITY FORESTRY.

FIRST, REDD+ COULD ADOPT THE DESIGN PRINCIPLES ASSOCIATED WITH IMPROVED OUTCOMES IN COMMUNITY FORESTS, FOR EXAMPLE BY IDENTIFYING LARGE, WELL-DEFINED FORESTS GOVERNED BY SMALL TO MEDIUM-SIZED USER GROUPS WITH EXTENSIVE EXPERIENCE OF FOREST MANAGEMENT. SECOND, REDD+ COULD USE THE NATURAL, HUMAN, SOCIAL, AND INSTITUTIONAL CAPITAL ASSOCIATED WITH EXISTING COMMUNITY FOREST SITES AS A TOOL TO ACHIEVE REDD+ GOALS. THIRD, REDD+ FUNDING COULD HELP TO OVERCOME THE HISTORICAL FINANCIAL BARRIER TO EFFECTIVE COMMUNITY FOREST MANAGEMENT, BY INCREASING THE CAPACITY FOR MANAGEMENT ACTIVITIES SUCH AS RULE ENFORCEMENT.



**PROFOR**

**PROGRAM ON FORESTS (PROFOR)**

THE WORLD BANK  
1818 H ST NW  
WASHINGTON DC 20433 USA  
TEL: + 1 202 473 5844  
FAX: + 1 202 522 1142

---

EMAIL: [PROFOR@WORLDBANK.ORG](mailto:PROFOR@WORLDBANK.ORG)  
WEBSITE: [HTTP://WWW.PROFOR.INF](http://WWW.PROFOR.INF)

Profor is a multi-donor partnership supported by:

