Chapter 16

Using community forest management to achieve REDD+ goals

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- Policy makers can improve the likelihood of success for REDD+ initiatives by incorporating success factors identified through decades of research on community forest management. These include sufficient size and clear boundaries of forests, predictability of benefit flows, local autonomy in designing clear and enforceable rules for access and use of forests, and provisions for monitoring and sanctioning rule violations.
- REDD+ outcomes can be enhanced by selecting existing and new community forest management sites with user group and contextual characteristics associated with successful forest outcomes. These include a stable technological and policy environment, low levels of intergroup conflict, and small to medium-sized, forest-dependent user groups that have management experience.
- Community buy-in and participation increase the 3Es+ and therefore the sustainability of REDD+ projects.

Introduction

Who can manage forests better than those living within or beside them? Many have argued that greater recognition of community rights and more

power over forests for communities can help achieve improved forest outcomes (Arnold and Stewart 1991; Charnley and Poe 2007). With REDD+ redefining the forest management and conservation landscape, community forest management (CFM) can contribute to reduced forest emissions and increased forest carbon stocks. Likewise, REDD+ can improve the chances of CFM success and make forest conservation on the ground more profitable. But there are also risks. Joining the existing goals of CFM to REDD+ may dilute the climate objective, and throwing big money into CFM might not necessarily improve cooperation – it might even stimulate opportunistic behaviour.

Communities in many regions of the world have always used and managed forests near their settlements. Recognising the potential of CFM, governments and NGOs have also formally supported different versions of CFM in many parts of the tropics during the past 50 years. On a global scale, communities today exercise use and management rights over a large forested area – at least 10%, or 400 million hectares (White and Martin 2002). Of this, more than half of the world's forests has come under their control during the past 25 years (Sunderlin *et al.* 2008). The area they use and manage is even greater if informal use and control are included (Agrawal 2007).

Historical experience with CFM provides valuable lessons for the REDD+ debate. This chapter distils lessons from studies of pre-existing and externally sponsored CFM, and discusses four clusters of factors that influence CFM success: biophysical, user groups, institutions, and context. We distinguish between exogenous variables based on, for example, natural endowments and design variables that can be influenced by policies. The distillation forms a valuable background to answer two key questions:

- Under what circumstances is community involvement, e.g., through externally sponsored CFM, likely to be viable?
- How can better design improve CFM interventions, or more generally REDD+ involvement of local communities?

What is community forest management?

Community forestry management (CFM) combines two things: a type of resource (forests) and a class of owner/manager (communities) (Chhatre and Agrawal 2008). We use the term CFM broadly to refer to many different, specific forms: participatory forest management (PFM), joint forest management (JFM), forest comanagement and community-based forest management (CBFM). The viability of each management approach depends on the characteristics of the resource systems and their contexts, formal property rights arrangements, informal practices of use and governance, and relations of power and inequality. These power relations interplay within

communities, among them and between communities and higher-level actors (Ostrom 2003).

Community forests are often contrasted with forests under open access, government ownership or ownership by private actors. But forest management in practice is complex within these broad categories, and can combine elements across them (Schlager and Ostrom 1992; Agrawal *et al*. 2008).

Contemporary CFM approaches rest on two important insights. First, earlier studies suggested community management would inevitably lead to degradation and a tragedy of the commons. But recent scholarship has shown that communities can manage forests sustainably in different contexts, particularly when forestry policies at the macrolevel enable local governance efforts (Dietz *et al.* 2003; Ostrom 2009). Second, governments and international agencies now recognise that government forest departments often cannot manage resources sustainably and may fail to distribute forestry benefits equitably. In many parts of the world, lax enforcement coupled with the high value of forest products and the land on which forests stand, has led to corruption in the forestry sector and losses of revenue for governments and benefits for local communities.

CFM cannot solve all the problems of forest governance. Indeed, it is itself vulnerable to problems of corruption, political mismanagement and enforcement. But CFM can address several problems of centralised forest management. Many governments have therefore launched policy initiatives to recognise customary management systems, improve local participation in forest activities, increase benefits that communities receive from forests and address problems of enforcement, equity and livelihoods that plague poorly governed forests.

Community forests contribute substantially to the livelihoods of millions of rural people in the developing world. Development agencies have estimated that forests provide substantial livelihood benefits to more than half a billion people, many of them very poor (World Bank 2004; Eliasch 2008). Evidence is also mounting that community forests can deliver on multiple outcomes – carbon storage, livelihood benefits and biodiversity conservation (Chazdon 2008; Ranganathan *et al.* 2008). CFM can help sequester and store carbon without adversely affecting the livelihood and equity benefits that community forests generate (Chhatre and Agrawal 2009). Thus community involvement has the potential to improve effectiveness, efficiency and equity and provide more co-benefits (the 3Es+) from REDD+ projects.

Communities that rely on forests under national authority can undermine carbon storage goals if they are excluded from REDD+ projects focused on

such forests. Excluding local communities is likely to work against community interests, and may provoke illegal harvesting, fire and arson in forests or other illegal activities that reduce carbon storage. Without strict monitoring and enforcement – forest management features often absent in the developing world – community-level resentment against REDD+ initiatives could thwart national and global goals.

Communities can help manage forests to improve efficiency by lowering the cost of forest carbon sequestration and storage. The labour and administrative costs that forest departments incur for governing forests are typically far higher than what is paid to community guards and decision makers for similar kinds of protection (Somanathan *et al.* 2009). Because CFM can help achieve the objectives of REDD+ initiatives by better addressing the 3Es+, REDD+ designers will benefit from heeding the lessons from CFM. The costs of monitoring forest carbon can also be substantially reduced by involving local communities (see Chapter 8).

Factors promoting success of CFM

Although CFM has long existed, research on the subject began to gain momentum only in the mid-1970s. Significant contributions from the fields of common property, political ecology, ecological anthropology and environmental sociology have offered insights into how different factors promote CFM success (Angelsen and Kaimowitz 1999; Charnley and Poe 2007; Ostrom 2007; Larson and Soto 2008). Common property scholarship is particularly useful for classifying the many factors that affect the success of CFM outcomes (Ostrom 1990, 2009; Baland and Platteau 1996; Agrawal 2001).

These success factors can be grouped into four clusters: biophysical; user group related; institutional arrangements; and external environment (Table 16.1). Biophysical factors relate to the resource system. The user-group cluster consists of local sociopolitical and economic factors. Rules and accountability mechanisms comprise institutional arrangements. Demographic, market and macropolitical variables are contextual factors (Agrawal 2001; Dietz *et al.* 2003; Ostrom 2007, 2009). Within each cluster, some factors can be influenced by design or through policies; others are resistant to change or are exogenously given.

Biophysical factors

Biophysical factors pertain to the resource system that community members use and manage. They include: resource size, clarity of its physical boundaries, whether resources are stationary or mobile, value of the resource, the extent to which resource units can be stored, rate and predictability of benefit flows

Table 16.1. General characteristics of successful CFM

Clusters of success factors	Factors generally contributing to successful CFM	Exogenous vs. design
Resource system	Medium to large community forests	Design
• Biophysical	Well-defined, easily monitored boundaries	Design
	Predictable benefit flows	Mixed
	Value of the resource	Exogenous
User group	Small to medium-sized group (facilitating face-to-face interactions)	Mixed
• Socio-political	Interdependent	Exogenous
• Economic	Homogeneous	Exogenous
	Relatively well-off	Mixed
	Moderate dependence on resources	Mainly exogenous
	No sudden shocks in resource demands	Mixed
	Cultural valuation of forests	Exogenous
	Past experience with forest management	Exogenous
Institutional arrangements	Rules are easy to understand and enforce	Design
	Rules are locally devised	Design
	Rules take into account differences in violations	Design
	Rules help deal with conflicts	Design
	Rules hold users and officials accountable	Design
	Effective local enforcement and sanctions	Mainly design
	Tenure security	Design
	Capacity to exclude outsiders	Design
Context	Stability of demographic conditions	Mixed
• Demographic	Stability of market conditions	Mainly exogenous
• Market	Stability of policy conditions	Mainly design
• Macro-political	Stability of technological conditions	Mainly exogenous
	Government support to reduce collective action costs	Design

and ease of monitoring. Institutional arrangements, technological changes and shifts in relative prices may affect ease of monitoring, resource size and physical boundaries. But other characteristics – storage, predictability, and immobility – are likely to be inalterable or too costly to engineer.

Although research on deforestation and changes in forest condition has emphasised biophysical factors such as soils, topography, fire and pests (Geist and Lambin 2001; Tole 2001), CFM studies have focused instead on how property rights or socio-economic and political variables shape outcomes (Tucker 1999). More analysis that integrates the impact of biophysical, social and institutional factors is required (Agrawal 2001; Chhatre and Agrawal 2009; Larson *et al.* in press-a). Ostrom (2007; 2009) presents a clear framework for examining the relationship between biophysical and social – institutional factors.

Taking into account the different findings from research on resource system characteristics, we conclude that communities are likely to better manage medium to large community forests with well-defined and easily monitored boundaries and predictable benefit flows. The definition of a medium-sized or large forest depends partly on context; existing knowledge does not permit generalisations about effects of forest size beyond 5000 to 10 000 hectares (Chhatre and Agrawal 2009).

User-group factors

Studies of CFM have investigated how user-group characteristics affect forest outcomes. These factors include size, boundaries, heterogeneity, capacity (institutional, technical and economic), interdependence among members and members' dependence on resources (Agrawal and Goyal 2001; Poteete and Ostrom 2004; Charnley and Poe 2007). But the effects of several factors continue to be contested.

Greater interdependence among resource users, availability of resources to undertake monitoring and moderate levels of forest dependence are associated with greater capacity to manage forests. But the impacts of group size and heterogeneity on forest commons outcomes are uncertain (Agrawal 2001). Most resources are managed by groups divided along multiple axes, such as ethnicity, gender, religion, wealth and caste (Agrawal and Gibson 1999). Different dimensions of social versus political versus economic heterogeneity can have different effects on resource governance (Baland and Platteau 1999). The divergent conclusions of a large number of empirical studies suggest that similar group heterogeneities may produce different effects under different circumstances, but that characteristics such as gender, indigenous status, ethnicity, class and income are particularly relevant to explain outcomes (Larsen 2003).

In conclusion, 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). The effects of

homogeneity among community members are less clear. Some of the above factors may occur together only rarely: well-off communities may not be highly forest dependent, and small communities may not possess large forests.

Institutional factors

Common property studies of CFM have shown how resource management is enhanced by three characteristics: tenure security for communities that can devise rules and exclude others; community rules that are easily understood and locally enforceable; and community institutions include sanctioning, conflict resolution and accountability mechanisms (Ostrom 1990; McKean 1992; Dietz *et al.* 2003). A key contribution from Schlager and Ostrom (1992) indicates that clear and enforceable institutional rules related to access, use, management, exclusion and alienation of natural resources are necessary to promote successful outcomes; their findings are equally relevant to CFM and REDD+. Research on decentralised resource governance, in exploring the relationship between local institutions and national policies, has also identified the critical importance of supportive and enabling national-level legislation (Chapter 14; Agrawal and Ostrom 2001; Ribot *et al*. 2006).

The meaning of local is contested (Raffles 1999). Local can be defined in terms of birth, residency, contiguity of location, degree of dependence on the resource or contributions to the creation of a local institution. Local can also refer to units at different levels: district, subdistrict, municipality or village. Local knowledge and engagement are necessary for designing rules and enforcing them (Gibson *et al.* 2005; Chhatre and Agrawal 2008). But some kinds of rules may be better designed and enforced by those beyond the local level, particularly when it comes to enforcement of rules against kin, or disputes across local units of management. Such concerns point to the need to reinforce local processes through supportive national legislation and extralocal policies.

In summary, findings on institutional arrangements for community forestry indicate that rules that are easy to understand and enforce, are locally designed and accepted, take into account different types of violations, help manage conflict and hold users and officials accountable are most likely to lead to effective community forestry management (Ostrom 1990, 2009). Many national policies either do not recognise the role that local institutions can play, or are difficult to understand, and use 'one size fits all' approaches. There is thus a clear need to reform national forestry legislation so REDD+ initiatives can be integrated with CFM.

Contextual factors

Community forests, user groups and community institutions occur within a context. The context is broadly defined by demographic, cultural, technological

and market-related factors; the nature of state agencies; the involvement of NGOs; and international aid. Contextual factors help determine whether communities can manage their forest resources successfully. Most scholars of deforestation see market pressures and population levels and changes as key causal factors (Young 1994; Angelsen and Kaimowitz 1999), with rapid changes in population and market forces (rather than their absolute levels) having more significant impact on the success of CFM. Greater volatility typically implies more negative impacts (Bray *et al.* 2004; Brown 2000).

Market institutions are influencing what happens to forests as new exchange instruments for carbon and watershed services take shape (Taylor 2005). Better market access, resulting in higher farm gate prices for agricultural and forest products as well as greater off-farm employment opportunities, will have mixed effects on the forests. The land rent (von Thünen) framework presented in Chapter 10 can be used for a more detailed investigation. Higher demand for forest products is, however, a two-edged sword: it raises both the incentives for long-term management and the incentives for short-term exploitation and free riding.

Technological innovations that increase the benefit-cost ratio of harvesting forest products are likely to undermine the sustainability of resource systems and their governing institutions, unless they are accompanied by stricter regulatory interventions or alternative employment opportunities that reduce pressure on forests. Indeed, the role of the state and regulatory instruments is critical to the success of CFM. Decentralisation of forestry policies in the past two decades makes it increasingly important to analyse the effects of different authority regimes across levels of governance (see Chapter 13).

Making summary statements is the most difficult for this fourth cluster of context variables: market pressures, demographic shifts, technological changes and state policies. 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).

Applying CFM success factors to REDD+ design

Many factors leading to successful CFM can be influenced by design, but not all. Table 16.1 draws on the large literature on CFM to distil factors that have been identified as leading to success. The last three columns in the table provides a summary assessment of the factors that can be shaped through forestry policies and others that are exogenously given, i.e., that are a result of pre-existing natural endowments, or otherwise difficult to influence through policies. This separation of potential success factors into exogenous versus design is crucial to address the two questions asked in the introduction:

- Under what circumstances is community involvement, e.g., through externally sponsored CFM, likely to be viable?
- How can better design improve CFM interventions, or more generally REDD+ involvement of local communities?

The need for REDD+ policies to adopt institutional design factors associated with success is a relatively clear lesson from our review of the CFM literature. REDD+ policies should promote CFM institutions that comprise equitable, easy to understand, locally devised and locally implemented rules. These institutions should promote accountability and should include sanctioning, conflict-management and adjudication rules. And these institutional arrangements should be promoted in collaboration and conversation with community members.

REDD+ decision makers can use knowledge about exogenous success factors to improve the chances of success of REDD+ projects relying on CFM. This can be done in two ways. First, REDD+ decision makers can use knowledge about the resource system and institutional arrangements to work with communities to create desired attributes for success: the size of community forests, their location and boundaries, and the level of potential carbon benefits. Working with communities to arrive at desired success factors has the advantage of local collaboration and longer-term success.

Second, success based on user group factors can inform the selection of sites for REDD+ interventions that rely heavily on community involvement. Project locations can be chosen so as to concentrate on communities whose features are associated with successful outcomes. For example, existing experience and studies suggest that under some circumstances CFM is likely to fail: large, poor, heterogeneous groups of forest users living in an unstable socio-economic, political and natural environment are unlikely to prove good candidates for CFM or REDD+ projects that aim to involve local participants and that rely heavily on such involvement for success. Other policy options would then need to be considered, such as reducing overall demand for new agricultural land and for products leading to forest degradation (Chapters 10, 15 and 19).

If localities with greater likely risk are selected for political or other reasons, REDD+ projects would need to find the resources necessary to address some of the above characteristics, for example, by focusing on smaller, more homogeneous groups or by providing resources so that poorer groups can undertake local monitoring and enforcement. Implementing REDD+ projects indiscriminately at the local level may lead to outcomes that are ineffective in sequestering carbon, costly to implement, and allocate benefits inequitably.

Differences between CFM and REDD+

In making decisions about how to pursue REDD+ objectives effectively through CFM, some key differences between CFM and local REDD+ projects need attention. These include the fact that carbon in belowground biomass and soil is invisible (unlike forest products used by CFM villagers), carbon storage is a global public good and carbon rights are not well established. Important factors to consider are greater attention to monitoring mechanisms to sanction rule violators and address intergroup conflicts when local rules are broken by powerful nonlocal actors, and judicious use of benefits generated through local REDD+ projects.

Because the amount of carbon sequestered through any single community-based REDD+ project is likely to be small, cost-effective technologies to monitor community forest carbon are critical to ensure the success of REDD+ community projects. Existing field studies already suggest that involving forest-dependent communities in carbon monitoring can be an effective and efficient way of measuring changes in carbon stock and of ensuring stable benefit flows from REDD+ to communities (Chapter 8).

Cash benefit flows from local REDD+ projects to local communities introduce a number of distinctions that set such projects apart from CFM projects. One major issue is the volatility and unpredictability of carbon prices. Such volatility makes for uncertain benefit flows. Although many other forest benefits – timber, fodder, firewood and non-timber forest products – are also subject to price fluctuations, most are valued for their local use. Carbon only has an exchange value. This calls for a credible national system of carbon payments to provide a buffer between international and local carbon prices, for example, through a national REDD+ fund (Chapter 6).

A related problem has to do with the double-edged sword of cash payments for carbon sequestration. On the positive side, such payments can redress the meagre economic compensation that CFM users often receive for restricting local use and managing forests more sustainably. REDD+ could quite substantially increase benefit flows to local users. Imagine that a community manages a forest patch of 200 hectares and can demonstrate that 1 tonne of carbon was sequestered last year in each hectare of its forest. A price of US $20 per tonne of CO_2 would yield close to $15 000 to the community (3.67 tonnes of CO_2 = 1 tonne of carbon). If the community has 100 households, each could increase its income by $150 annually just from the community forest – a significant amount for many poor households that depend on forests.

On the negative side, such high levels of carbon payments could dwarf existing benefit streams and create incentives for local elites to capture community-

based carbon management institutions. Effective institutional arrangements that ensure continued equitable benefit distribution and prevent elite capture of community forestry resources become more important if benefit streams from CFM increase sharply. Otherwise, the sustainability of carbon stored in community forests will be threatened by those who do not receive benefits – in a way analogous to how national REDD+ initiatives are threatened if local communities and forest-dependent poor users are excluded from REDD+ projects.

Conclusion

The substantial literature on community resource management can guide the selection of communities and forest areas to improve carbon sequestration, carbon storage and livelihoods. Many factors that contribute to success and that have been identified in the CFM literature are also relevant to initiatives that include communities in forest carbon management, including externally sponsored CFM projects that make up part of a national REDD+ strategy. Particularly important are factors related to the size and boundaries of selected forests; predictability of benefit flows from forests and sequestered carbon; access, use, management (monitoring and sanctioning) and adjudication arrangements; and levels of local autonomy in designing rules and institutions.

Ignoring the lessons of CFM is likely to undermine carbon storage (effectiveness) and increase the costs of operation for national REDD+ projects (efficiency). It may also lead to ignoring poor forest users, which could undermine their livelihoods and increase economic inequalities. National REDD+ projects can secure higher levels of forest carbon-related co-benefits on multiple dimensions by taking the lessons of community forestry into account when designing REDD+ initiatives. Robust local participation and benefit-sharing mechanisms can improve equity as the benefits of REDD+ are distributed more widely. Involvement of local forest managers in monitoring and sanctioning can reduce costs of managing REDD+ projects. A share in benefits of REDD+ is also likely to reduce local resentments and improve the legitimacy of REDD+ projects, thus improving the likelihood that poor users and communities will not undermine carbon storage objectives of REDD+ initiatives.

It is also worth noting that success on the ground for REDD+ efforts can be secured only partly by design; actual outcomes will also depend in part on realities that policies cannot easily change. Indeed, this consideration makes it all the more important that governments seek local communities as active and willing partners to ensure the success of REDD+ activities.