



Research

Is Decentralization Leading to “Real” Decision-Making Power for Forest-dependent Communities? Case Studies from Mexico and Brazil

*Reem F. Hajjar*¹, *Robert A. Kozak*¹, and *John L. Innes*¹

ABSTRACT. Decentralization of forest governance has been promoted as a way to conserve forests more effectively, while also improving rural and forest-dependent livelihoods. Prior to assessing the consequences of this decentralization trend, there is a need to critically examine the degree to which decentralization of forest management decision making is actually happening. In particular, it is unclear whether communities are securing legal authority and/or decision-making power over the forests on which they depend. This study uses case studies of community forestry in Brazil and Mexico to examine the amount of decision-making power communities and smallholders have received over forest resources. A framework for assessment is developed that identifies criteria of relevance to community members’ rights and day-to-day activities. We found that in both countries the government maintains significant control over forest resources through heavy regulation of extraction, but that communities have increasing control over day-to-day forest management decisions. We conclude by posing questions on the appropriate levels of decentralization for optimal outcomes.

Key Words: *Brazil; community forestry; decentralization; forest-dependent communities; forest management authority; Mexico*

INTRODUCTION

Decentralization of forest management, the process by which a central government “cedes powers to actors and institutions at lower levels in a political-administrative hierarchy” (Mawhood 1983, cited in Ribot et al. 2006:1865), has been a major trend in global forest governance for the past three decades (Ribot et al. 2006, Agrawal et al. 2008). This is particularly apparent in the developing world: 22% of forests are community-owned or managed (Rights and Resources Initiative and the International Tropical Timber Organization 2009), and more than three-quarters of developing countries and countries in transition are in the midst of experimenting with decentralization of natural resource management (Ribot 2004, Contreras-Hermosilla et al. 2006).

We consider community-based forest management as a form of democratic decentralization of forest governance, i.e., the transfer of power over forest resources and management to local governments and authorities representative of local populations. Theoretically, decentralized management can improve efficiency, equity, democracy, and resource management (Ribot 2004, Ribot et al. 2006), and empirical evidence has shown that decentralization of decision making can benefit natural resource quality (reviewed in Garnett et al. 2007, Sayer et al. 2008). Indeed, community-based forest management in cases around the world has improved efficiency, equity, democracy, and ecosystem health in forest-dependent communities (Larson 2005, Molnar et al. 2007). For these reasons, community-based forest management has been promoted as a model to create long-term economic development and self-reliance in rural communities, while promoting the conservation and sustainable use of forests and consolidating rights over traditional lands and resources (Scherr et al. 2003, Pagdee et al. 2006, Bray et al. 2008).

Effective decentralization strategies are meant to increase the capacity of local populations to make their needs and demands heard, and to increase the interactive capacity of local governments through fair elections, multiple accountability mechanisms, and local government associations (Larson 2003). Yet studies have shown that devolution policies have had both positive and negative livelihood benefits (Edmunds and Wollenberg 2003a), and that, in many cases, devolution of forest management authority from states to communities has been “partial and disappointing” (Charnley and Poe 2007:301). In many cases, statutory rights given to communities have not automatically turned into rights in practice, communities have not been able to turn those new rights into benefits, and central governments oftentimes obstruct the decentralization process and retain control over resource management (Edmunds and Wollenberg 2003b, Wittman and Geisler 2005, Ribot et al. 2006, Larson and Soto 2008). Ribot et al. (2006) note ways that central governments can undermine the ability of local governments to make decisions, including by limiting the kinds of powers transferred. Transfer to local governments of significant authority regarding forest resources is rare (Larson 2005). Even with increased decentralization and an enhanced role for local forest users, such users have often had little influence in deciding on management objectives, especially when state objectives conflict with local livelihoods, cultural values, and local management systems (Edmunds and Wollenberg 2003b).

Thus, prior to assessing the consequences of decentralization on forests and forest-dependent people and gauging the efficacy of decentralization strategies, it is useful to take a step back and assess the extent of democratic decentralization that has actually occurred. Here, this is done by assessing how

¹University of British Columbia

much “real” power communities have acquired over forest resources; are they now the ones in control of the resource and able to make management decisions? This study considers the local level and systematically assesses the amount of power that the forest user and the community have over managing forest resources. This viewpoint is novel in that it seeks an assessment that is local stakeholder-centric; instead of using the central government as the starting point and assessing powers devolved to lower levels of government, it looks at the individual forest user or community and the amount of decision-making power acquired at that level.

An exploratory case study approach is taken to assess decentralization of forest governance in Brazil and Mexico. The question is asked, qualitatively-speaking, how much control do communities have over governing their forest resources? A framework for assessment is developed that identifies criteria of relevance to community members’ rights and day-to-day activities, which are criteria that community members in case study communities identified as important aspects of control or rights over forest resources. These criteria, which form the elements of the framework, provide a tool for systematically assessing, from a community perspective, how much forest management decentralization is actually occurring in terms of decision-making power acquired at the local level. The resulting outcome of this exploratory work is then used to open a discussion questioning the appropriate amount of, and process for, decentralization.

METHODS

Definitions

The terms power, authority, and legitimacy are often used interchangeably in the literature. This study borrows mostly from the description of power provided by Agrawal and Ribot (1999) as the ability to make decisions about how the forest resource is used, to create rules or modify old ones, and to ensure compliance with them. We also borrow from Hutchcroft (2001) and Uphoff’s (1989) descriptions of authority as conferring a formal power role, but specifically use it here to mean authority bestowed by legal decree, without regarding it as having been legitimately conferred by all actors. Within the realm of power and authority, we consider the overall control the community has over the resource, and also distinguish between legally-bestowed, *de jure* control (authority) and *de facto* control, which occurs regardless of legal authority. In this study, aspects of control that emerged from the case studies were used as criteria for qualitatively assessing the amount of decision-making power decentralized to the communities.

The case studies

Communities in Brazil and Mexico were chosen for this study. Brazil and Mexico provide an interesting comparison; both countries have been promoting community forestry, but formal community forestry in Mexico has a longer history, and Mexico is seen as having the most advanced community

forestry sector in Latin America (Klooster 2003). Eighty percent of the remaining forests in Mexico are village-owned properties (Bray et al. 2003). Agrarian reform in the decades following the Mexican Revolution in the early 20th century provided secure tenure to communities over their land, but not their forest resources. In the 1970s, rural forest communities demanded control over logging businesses on their territories to create their own community forest enterprises and oversee forest management (Chapela 2005). In Quintana Roo in the 1980s, a Forestry Pilot Plan established permanent forest areas in several *ejidos* (communally-owned territories), where agriculture was prohibited and for which community timber management plans were developed (Vester and Navarro-Martinez 2005). Communities were provided with training and infrastructure for forestry. This model of forestry continues to this day, although annual cuts and acceptable tree diameters have been reviewed in light of more recent research and, in some cases, adapted to local conditions. Several legislative changes since the 1980s gave increasing power to communities over their resources, culminating in 1992, when removal of a reference to the government’s “primordial” rights over forests gave communities full timber rights.

Community forestry in Brazil came about from an exogenous push largely by non-governmental organizations (NGOs) trying to promote more sustainable forest practices (Amaral and Amaral Neto 2000). Since the early 1990s, community-based timber management projects have been initiated in national forests, extractive reserves, and agricultural colonization areas, after community-based management was identified as one of the principal means to reduce deforestation (Miyasaka Porro and Stone 2005). In 1996, a program known as ProManejo was put in place to promote formal timber management by communities, and Brazilian forestry law was reformed to create a category for community forest management for timber in 1998. After the turn of the century, community forestry proliferated in the Brazilian Amazon, representing a variety of different experiences, with diverse organizational structures, business models, target social groups, and differing access to forest resources and end products (Amaral and Amaral Neto 2000).

Sampling of the case study communities in Brazil and Mexico was nonrandom and purposive (Lincoln and Guba 1985). The case studies were selected with the help of local collaborators in both countries based on preexisting professional and academic relationships with the communities, and were purposively selected in order to have a variety of community forestry models represented. While the communities sampled may not be representative of all communities in the two regions, they reflect a diversity of experiences that provide interesting insights into authority levels in different contexts. The case studies are described in Table 1 and, more fully, in Hajjar (2011).

Table 1. Description of case studies

Mexico			Brazil		
Caobas	Naranjal Poniente	Yaxcabá	Mazagão	Oficinas Caboclas de Tapajós	MAFLOPS
Communities sampled					
Ejido of Caobas, Quintana Roo	Ejido of Naranjal Poniente, Quintana Roo	Select ejidos in the Yaxcabá municipality, Yucatán (interviews in ejido of Yaxcabá and with leaders of Cancobdzonot Tadzibechen, Popola, Yaxuná, Yokdzonot)	Foz de Mazagão Velho, Amapá	Nova Vista and Nuquini, Pará Also interviewed leader of Surucúa	PA Igarapé do Anta and PA Santo Antonio, Pará (also interviewed leaders of PDS Igarapé do Anta and PA Santa Rita)
Number of interviewees (community members and external experts)					
22	16	15	18	19	32
Communal or individual property ownership/use					
Communal ownership (<i>ejido</i>)	Communal ownership (<i>ejido</i>)	Communal ownership (<i>ejido</i>)	Smallholder use (resource use permission on government land)	Communal use (extractive reserve set aside for communities)	Smallholder ownership (colonists in government-sponsored settlement projects)
Management model					
Community-managed timber enterprise, divided in work groups; community sawmill	Community-managed timber enterprise; community sawmill	Individual traditional forest management (no timber commercialization)	Individual traditional forest management with illegal timber commercialization; Small-scale, family-run sawmills within community	Cooperative-managed small-scale wood extraction for furniture-making workshop	Colonist association partnerships with logging company (MAFLOPS), management on individual colonists' lands
Introduced forest initiative? (external agent introducing initiative)					
Yes (government-run pilot program in 1980s)	Yes (government-run pilot program in 1980s)	No	No	Yes (US and Brazilian NGOs)	Yes (local company)

Data collection and analysis

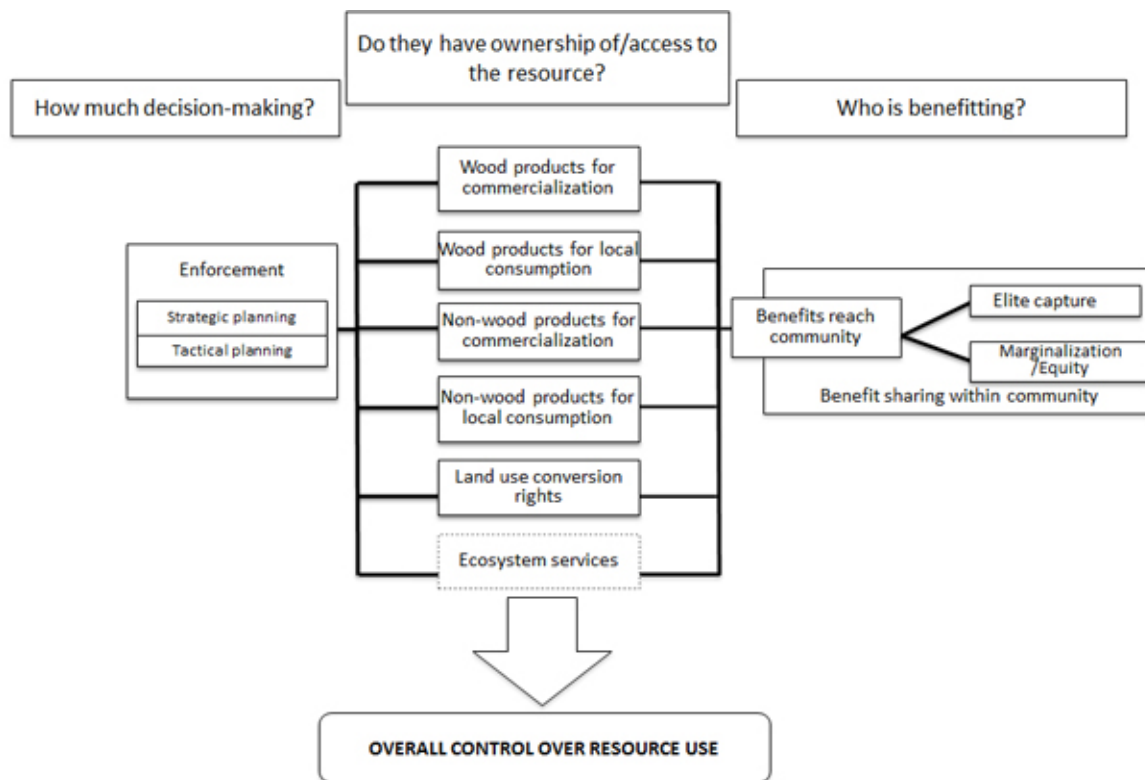
Fieldwork took place between June and October 2008 in Brazil and between February and April 2009 in Mexico. Interviews were conducted with community leaders and other community members during the field visits. Key informants were identified with the help of local collaborators, and a networking approach (Knight 2002) was used to identify other specialized informants in the community who were currently taking part, or had taken part, in forest management. Semi-structured interviews with community members were designed to elicit information on their forest management practices, governance structures, benefit-sharing mechanisms, the amount of authority they had or would like over a particular resource use, and whether they had problems working within the current system of authority or would prefer an alternative. Academic experts, as well as government, industry, and NGO representatives, were also interviewed in order to provide further clarity on the topics at hand. A total of 122 interviews were conducted. A review of relevant legal norms and forestry codes and laws was also conducted to verify the legal rights of resource use in each country.

NVivo 8, a qualitative data analysis software tool, was used to maintain and code the transcribed interviews. Elements of the conceptual framework emerged through the coding as elements identified by community members, where certain aspects of control or decision making over resource use would be pointed out by community members as something over which they would like to have, or currently have, authority.

RESULTS AND DISCUSSION: THE DEVELOPMENT AND APPLICATION OF A CONCEPTUAL FRAMEWORK

The exercise of coding the interview transcripts and thematically organizing the data revealed several aspects of decision-making power and control over resource use that were relevant to community members. These aspects, presented as individual boxes in Figure 1, are a breakdown of elements of forest-related decision-making power, which repeatedly emerged as important to the interviewees. These were then organized into a conceptual framework (Figure 1) that groups the themes around three framing questions: Does the community control access to the resource? Does the

Fig. 1. Decision-making power: a conceptual framework



The elements of this framework emerged as important to community members, and are used here to qualitatively assess the amount of forest management decision-making that a community has, and the overall control they have over resource use. Three main questions frame the conceptual framework: Does the community control access to the resource? Does the community have decision-making power over the management of the resource? Does the community have control over the benefits stemming from the resource use? The dashed line around the “ecosystem services” box indicates that, while this did not emerge as a principal theme from the interviewees at the time of field work, the momentum being gained by such mechanisms as reducing emissions from deforestation and forest degradation (REDD) will likely increase its importance to communities.

community have decision-making power over the management of the resource? Does the community have control over the benefits stemming from the resource use?

In this section, the framework that emerged from the interviews is first described by outlining the elements that fall under the three framing questions. This framework is then used to assess decision-making power in each of the six case studies. Following this, the discussion delves beyond the framework into the themes of power and control in the case studies.

Framing questions of the framework

Does the community control access to the resource?

The first framing question asks who is making the rules for access to forest resources. An important aspect of access that

emerged from the interviews was ownership; ownership of the land, the resource, and/or the ecosystem services provided by the resource was seen as a desirable characteristic of the transfer of power to communities. Further, interviewees specified that, whether or not they have ownership, it was important to have access to the following: wood products that they can commercialize for profit; wood products that they can use for personal consumption; non-wood products that they can commercialize for profit; and non-wood products that they can use for personal consumption. Also, within their access rights, the right to convert one land use to another was often mentioned, as well as the exclusivity of outsiders from these rights. Literature on tenure will often also mention alienation rights (e.g., Barsimantov et al. 2011), but alienation rights did not emerge as a theme from the interviews. Only

one interviewee in Brazil mentioned that they had heard of the possibility of being paid for carbon in standing trees; while this is not an issue that was identified as being important to the interviewees at the time of the field work, it will likely rapidly gain in importance considering the current progression of projects related to reducing emissions from deforestation and forest degradation (REDD) and carbon markets globally. Thus, it has been added to the framework as an issue of ownership of ecosystem services.

Does the community have decision-making power over the management of the resource?

Elements of decision-making power related to management of the resource that emerged from the interviews were divided into strategic planning and tactical planning. Strategic planning here refers to the long-term vision for the landscape and the community. Does the community have a say in what they want the landscape to look like in 50 or 100 years? Are they the ones deciding on the overall forest use or purpose? Are governments or other interventionists deciding for them what the use of the forest will be? If so, are the communities involved in making that decision, and what is the degree of their participation?

Tactical planning includes decisions that are made when implementing the chosen strategic plan. It looks more to operational aspects, and can be further divided into medium-term and short-term decision making. Medium-term tactical planning occurs on the time scale of a harvesting cycle or annual operational decisions. This includes obtaining management plans, deciding on which species to harvest, and the annual or cyclical harvest levels. Short-term tactical planning involves the day-to-day operational decisions: harvesting operations, silviculture methods, and post-harvest treatment and forest maintenance methods; division of labor and of harvest amounts; secondary processing decisions; and sales (deciding on prices, buyers, and quantities).

An additional element brought up in the interviews that encompasses both strategic and tactical planning is enforcement. Who is ensuring compliance with these planning decisions? Is the community self-regulating activities and self-enforcing rules, or is an outside force, such as a national or state government body, enforcing the laws and sanctions?

Does the community have control over the benefits stemming from the resource use?

A final theme that emerged strongly from the interviews was decisions over benefit-sharing. Does the community decide who gets to benefit from the resource use? Are they able to take the decision that the benefits will reach the community? If so, are all members of the community able to partake in benefit-sharing decisions (and thus the benefits), or are there cases of elite capture or marginalization of certain groups? Answering these last questions is an indication of both power over benefit-sharing decisions and the consequences of these decisions.

These three categories (access, decision making over harvesting, and benefit-sharing) are components of the overall picture of how much control a community has over its resource use. Considered together, they provide a useful tool for assessing the overall decision-making power of forest-dependent communities.

Application of framework to the case studies

The framework was applied to each of the case studies to produce a qualitative assessment of the amount of decision-making power the case study communities have over their forest resources. This section summarizes this assessment. Results are detailed further in Tables 2-7.

Table 2. Ownership and access to resources

Community	Ownership	Access
Mexico		
Caobas	Communally owned land (<i>ejido</i>)	Forest resources communally owned by <i>ejidatarios</i>
Yaxcabá	Communally owned land (<i>ejido</i>)	Forest resources communally owned by <i>ejidatarios</i>
Naranjal Poniente	Communally owned land (<i>ejido</i>)	Forest resources communally owned by <i>ejidatarios</i>
Brazil		
Mazagão	All <i>várzea</i> is public land.	Resource use permission documents are being issued to access above-ground resources; most families still waiting for this
OCT	Public land, set aside for community management as an extractive reserve (RESEX).	Communities in RESEX are meant to have exclusive access to resources. Managed communally
MAFLOPS	Dependent on settlement type (collective or individual lots). Currently, private titling on the way.	Access to resources on private properties. Some colonists confused about their access rights once signing contract with logging company (Some colonists' comments: "I don't really understand. It's a reserved area of IBAMA [Federal Institute for Environment and Renewable Natural Resources]. We can't touch it." "We can't really enter there.")

Access

Ownership and access to land and resources are more clearly defined in the Mexican case studies than the Brazilian ones (Table 2). Communal land titles have been secure since agrarian reform in Mexico, while more recent legislative changes have secured communities' timber rights. Unlike Mexico, land and resource ownership in many parts of the Brazilian Amazon is not clear, and there are several different designations of public forests set aside for community administration, including indigenous territories, extractive reserves, and different categories of government-sponsored settlements (for an historical review of the development of

Table 3. Decision making concerning the use of wood products for commercialization and subsistence use

Community	Strategic planning	Medium-term tactical planning for commercialization	Short-term tactical planning for commercialization	Tactical planning for subsistence use
Mexico				
Caobas	The community decides what it wants to do with land and forests, within the limits of some environmental legislation on specific forest types and areas.	Follow legal requirements of timber management, including management plans elaborated by engineers (community-chosen), annual allowable cut (AAC) (although the maximum does not have to be reached), minimum harvestable diameter, proper permitting (also for polewood).	Day-to-day decisions made by work groups, work group leaders and General Assembly. Communally-run sawmill; choose own buyers.	No legal authorization required. Community members inform <i>comisariado</i> of intentions. Polewood and less precious woods for construction internally regulated. For firewood, do not need authorization, but should follow legal norms. Unclear whether these are followed.
Yaxcabá	The community decides what it wants to do with land and forests, within the limits of some legislation on specific forest types and areas.	Residents and community assembly decide on all aspects of forest management, but conduct some aspects illegally (including charcoal commercialization and selling of masks made from <i>chacá</i> (<i>Bursera sinaruba</i>) without proper permits). Law enforcement weak in this area.	Day-to-day decisions made by individuals and General Assembly. Ask permission from their <i>ejido's comisariado</i> for harvesting <i>chacá</i> , but harvesting seems unsustainable.	No legal authorization required. Community members inform <i>comisariado</i> of intentions. Polewood and less precious woods for construction internally regulated. For firewood, do not need authorization, but should follow legal norms. Unclear whether these are followed.
Naranjal Poniente	The community decides what it wants to do with land and forests, within the limits of some legislation on specific forest types and areas.	Follow legal requirements of timber management, including management plans elaborated by engineers (community-chosen), AAC (although the maximum does not have to be reached), minimum harvestable diameter, proper permitting (also for polewood).	Day-to-day decisions made by forest management group and General Assembly. Communally-run sawmill; choose own buyers.	No legal authorization required. Community members inform <i>comisariado</i> of intentions. Polewood and less precious woods for construction internally regulated. For firewood, do not need authorization, but should follow legal norms. Unclear whether these are followed.
Brazil				
Mazagão	Smallholders decide what to do with forest, within legal limits for deforestation (20%). Remaining 80% is legal reserve, smallholders can protect it or manage for timber (with proper authorization) or other products and services.	Legally required to have management plan, 100% inventory, elaborated by engineer. Currently do not follow this, thus smallholders decide on all aspects of forest management, but conduct this illegally. Informal limit of commercializable sawnwood set by local officials limits their decision making. Restrictions actively enforced by environmental police.	Day-to-day decisions made by smallholders.	Decide which species to use and amounts, up to a legal limit for firewood and construction/tools. Limits not enforced.
OCT	Communities fought for the right to designate the area an extractive reserve (RESEX). The government recognized that right, but still imposes restrictions on activities. RESEX-wide management plan, yet to be approved by federal government, provides strategic vision and legal practices within RESEX. RESEX-wide committee supersedes individual community governance.	Management plan required for commercialization from community forest, but wood products can be sold from family plots (except logs or sawnwood) to other members of the RESEX without permits. They follow legal requirements for timber management. At the time of fieldwork, they were still waiting for management plan to be approved, pending approval of RESEX-wide plan. Activities continue regardless.	Day-to-day decisions made by cooperative or community members.	No legal restrictions stipulated in RESEX management plan (awaiting approval). Community members inform community leader of intention to use wood products.
MAFLOPS	Colonists decide what to do with forest, within legal limits for deforestation (20%). Decide whether to enter into partnership with logging company to manage legal reserve.	Company makes all decisions and acquires all necessary documentation. Colonists effectively sign away their decision-making rights when signing partnership contract.	Day-to-day decisions made by company.	Decide which species to use and amounts, up to a legal limit for firewood and construction/tools. Some colonists confused about their rights to use timber on their land post-harvest.

these categories, see Larson et al. 2008a). This is reflected in the different tenure and access arrangements in each of the three Brazilian case studies (described in Table 1). Government delays in titling and permit issuing create further ambiguity in resource access in Brazil. One Brazilian smallholder commented: “I don’t have legal documents for this land, even though I was born here. Without this, I can’t get credit from the bank ... I can’t get a management plan ... and [an international development agency, which is engaged in the community] won’t work with me.” Colonists in the government-sponsored settlements also noted long delays in issuing land titles.

Decision making over resource management and enforcement

In both countries, the government maintains significant control over forest resources through heavy regulation of timber commercialization (Table 3). In Mexico, the community has control over strategic planning for commercialization, but the government strongly inserts itself into medium-term tactical planning by heavily regulating extraction and applying restrictions on certain forest types. Local decision making does, however, take place within this restricted sphere; *ejidos* for the most part can choose not to exploit the maximum amount of timber allowed, as well as the species harvested. They are also free to decide the timber’s end product and destination. While deforestation limits are stipulated by law, the General Assemblies of the *ejidos* have also decreed which areas will be permanent forest reserves, which will be production forests, and which can be converted, and this is well-regulated internally (Table 4). In preserving parts of the forest on *ejido* land, one *ejidatario* commented that “*ejidos* do it out of custom for their own local use.” This means that while strategically the *ejidos* are limited by legislation, local day-to-day decision-making power is high, as interaction with the authorities on forest cover is very limited on a day-to-day or year-to-year basis. Weak law enforcement has also meant that *ejidatarios* of Yaxcabá are able to commercialize charcoal and wooden masks, technically illegal activities, although they generally seek permission from their community leaders.

In Brazil, the government strongly influences the strategic vision through retaining ultimate ownership of most forests, not clarifying tenure in many cases, and by limiting land conversion on otherwise private properties (Table 4). It also has a heavy hand in regulating medium-term tactical planning for commercialization (Table 3). The residents of Mazagão were, for the most part, highly dissatisfied with the level of authority that they had over timber management. Heavy enforcement and timber limits had steered many away from the timber industry: “You need authorization to do anything [...] nobody has this authorization, nobody can follow this law, or they wouldn’t live here.” It was noted that it was easier to obtain a deforestation permit than a forest management permit.

Table 4. Rules regulating land use conversion

Community	Land use conversion
Mexico	
Caobas	Tropical forest and <i>monte alto</i> conversion is highly regulated and prohibited in many cases. General Assembly of the <i>ejido</i> decides on the location of permanent forest reserve. Internal monitoring.
Yaxcabá	<i>Monte alto</i> conversion is prohibited by decree of General Assembly. Internal monitoring.
Naranjal Poniente	Tropical forest and <i>monte alto</i> conversion is highly regulated and prohibited in many cases. General Assembly of the <i>ejido</i> decides on the location of permanent forest reserve. Internal monitoring.
Brazil	
Mazagão	Smallholders decide where to clear forest, within the 20% of the property they are legally allowed to deforest. However, 3 ha can only be deforested per year, and an annual permit is needed to do so. Deforestation permits not always sought.
OCT	Communal forest is not cleared. Location of clearings outside the community forest but on communal lands is internally regulated, within the legal limits.
MAFLO-PS	Smallholders decide where to clear forest, within the 20% of the property they are legally allowed to deforest. However, 3 ha can only be deforested per year, and a permit is needed to do so, which is not always sought.

However, communities seem to have more control over short-term tactical planning, commercialization of non-wood forest products (NWFPs), and subsistence uses of forest products. In both countries, short-term tactical planning is devolved to the community or smallholder level, with the only exception being the case of MAFLOPS and the community-company partnerships, where the company assumes these responsibilities for the colonists in the government-sponsored settlements. NWFP commercialization in Brazil has fewer legal restrictions than for wood products (Table 5), thus there is high local control for this element. NWFP commercialization in Mexico, however, is highly regulated. In general, communities and smallholders have high decision-making power over the use of wood and non-wood products for subsistence purposes, for both medium- and short-term tactical planning (Tables 3 and 5). There are restrictions on hunting in both countries, but these are often disregarded by community members. Community members generally follow their traditional practices for subsistence uses, such as informing community leaders of harvests. In Yaxcabá, one *ejidatario* commented: “it’s just a custom of people that if they need wood they can go take it.”

Edmunds et al. (2003) point to the right or ability to implement policy at the local level, including enforcement, as an important aspect of decentralized management. This varied in the case studies, but generally in both countries, the final word on enforcement resides with a federal government agency. In many situations, when the government agency does not or is

Table 5. Decision making concerning the use of non-wood products for commercialization and subsistence use

Community	Tactical planning for NWFP commercialization	Tactical Planning for NWFP subsistence use
Mexico		
Caobas	Need to follow legal norms on all commercialization of forest products, including NWFPs. Detailed notifications to SEMARNAT meant to be prepared by technicians. They get permits from SEMARNAT for selling <i>huano</i> (<i>Sabal yapa</i>) and <i>chicle</i> (<i>Manilkara zapota</i>).	No restrictions on local use of NWFPs, but need authorization for hunting for local consumption or sale in quantities meant to satisfy basic needs. Hunting continues without authorization. Local committee meant to control this.
Yaxcabá	Do not sell NWFPs except honey. Need permission from comisariado for apiaries.	No restrictions on local use of NWFPs, but need authorization for hunting for local consumption or sale in quantities meant to satisfy basic needs. Hunting continues without authorization.
Naranjal Poniente	Need to follow legal norms on all commercialization of forest products, including NWFPs. Detailed notifications to SEMARNAT meant to be prepared by technicians. They get permits from SEMARNAT for selling <i>huano</i> and <i>chicle</i> .	No restrictions on local use of NWFPs, but need authorization for hunting for local consumption or sale in quantities meant to satisfy basic needs. Hunting continues without authorization.
Brazil		
Mazagão	Commercialization of <i>açaí</i> (<i>Euterpe oleracea</i>) and other fruits under their decision-making power. They are supposed to inform relevant agency of quantities (but do not). Hunting for commercial purposes is illegal.	No restrictions on local use of NWFPs, except for hunting, which is illegal but continues.
OCT	No permits required. Some commercialization of rubber. They are supposed to inform relevant agency of quantities (but do not). Hunting for commercial purposes is prohibited.	No restrictions on local use of NWFPs. Inform community leader of use in community forests.
MAFLOPS	MAFLOPS is trying to start some NWFP projects, but none working yet.	No restrictions on local use of NWFPs, except for hunting, which is illegal but continues.

not able to enforce the law, the community regulates and enforces rules. In the Mexican cases, enforcement of laws governing forest use, exclusive of commercial timber, is weak. In some cases, this has resulted in *comisariados* (elected leadership of the *ejido*) regulating extractive and land clearing activities through informal systems of permissions, and setting up committees to monitor hunting and disarm individuals (in Caobas). In Yaxcabá, the lack of enforcement has not pushed the communities to regulate harvest of *chacá* (*Bursera simaruba*) internally, leading to unsustainable harvesting of *chacá* driven by high demand for artisanal artifacts. In these cases, the lack of enforcement by higher levels of government has led to the *de facto* decentralization of management decisions, with varying consequences for the forest. Thus, if the government is writing laws that they cannot enforce (as is the case in much of Mexico), where does the power lie? Is the lack of enforcement leading to *de facto* decentralization of decision-making power? This is not the case in Mazagão (Brazil), where high levels of enforcement have resulted in less local decision-making power. The development of a legal community forestry project, planned by the state government in this area, will further reduce the decision-making power of the community, as management decisions will be made by outside technicians, and the new structure will supersede existing governance at the household level. This was a common finding in India, where *de facto* decision making of local governments was supplanted with the new government attention brought on by joint forest management initiatives (Edmunds et al. 2003).

Community forestry, as a strategy for democratic decentralization, is meant to empower forest-dependent communities, and an important aspect of empowerment is the ability to make decisions at the local level. These results show that, in some cases, communities have not been empowered by legislation to make certain decisions, and yet they are making them despite existing legislation. For example, in Yaxcabá, local users have high decision-making power over their forests, since they disregard legal prescriptions. They are able to carry on with technically illegal activities in this case due to weak enforcement, but in Mazagão they are unable to do so due to stronger law enforcement.

Benefit-sharing from resource management

Importantly, for the most part, all profits are reaching the community or smallholder directly (Table 6). The exception is the case of MAFLOPS; the company pays the colonists for the timber at lower than market prices, not only because they act as an intermediary between the colonists and the sawmill, but also to cover the costs of road building and logging. Distribution of profits within the communities is unequal in some cases. In Mexico, *non-ejidatarios* (including most women) do not benefit directly from commercialization of timber, and are not part of the decision-making process. With the *Oficinas Caboclas* case, one participant stated “it’s seen that eight families are benefiting from this. We, of course, pass a percentage to the community, but people think that only the *Oficinas* workers are benefiting.” However, the use of the percentage that is passed to the community is decided upon by all community members, not just the *Oficinas* workers.

Table 6. Benefit-sharing from use of forest resources

Community	Benefits reaching community?	Within community: distribution of benefits and decision-making
Mexico		
Caobas	Profits kept within <i>ejido</i> .	Profits from timber are equally distributed among <i>ejidatarios</i> , marginalizing non- <i>ejidatarios</i> (<i>repobladores</i>). <i>Repobladores</i> are not involved in decision making, and do not have the same land and resource rights. Only <i>ejidatarios</i> get a vote in community assembly, and have a say in forestry decision making.
Yaxcabá	Profits from masks and charcoal kept within <i>ejidos</i> .	There are no community projects, so each <i>ejidatario</i> benefits as much as they put in. <i>Repobladores</i> are not involved in decision making, and do not have the same land and resource rights. Only <i>ejidatarios</i> get a vote in community assembly.
Naranjal Poniente	Profits kept within <i>ejido</i> .	Profits from timber are equally distributed among <i>ejidatarios</i> , marginalizing <i>repobladores</i> . <i>Repobladores</i> are not involved in decision making, and do not have the same land and resource rights. Only <i>ejidatarios</i> get a vote in community assembly, and have a say in forestry decision making.
Brazil		
Mazagão	Profits kept within community; directly to smallholder or sawmill owner.	No community projects so far. Some smallholders may have more valuable timber on their land than others. Decision making occurs at the household level.
OCT	Profits kept within community.	5% profits to community fund, for all to benefit. Artisans retain most of the profits, but anyone can join the group. Community has decision-making power over forest resource, participates in the OCT decision making.
MAFLOPS	Company takes a cut of profits by paying the colonist a lower than market price for their timber. Company-colonist relationship criticized for being unequal, commercial contracts were being questioned by social movements as not having many advantages for the colonists.	Each colonist has his/her own contract with the company and is paid directly by the company. Some complaints that the initial engagement of the company was a decision of the community leaders alone, others felt they had no choice if they wanted roads built in the settlement (see Hajjar et al. 2011).

Table 7, summarizing the results of applying the framework to the case studies, shows that assessing how much decision-making power communities have over their forests does not result in a straightforward answer; clear “yes” or “no” results are rare. For many elements, the assessment is multifaceted and nuanced. In some cases, the community has decision-making control over certain aspects of an element, but not all. In other situations, the community member has a statutory right, but is not able to practice that right, or the community does not have a particular right, but continues with an illegal practice anyways. In many situations, decisions are being made at the community level, but communities in both countries are working within such tight regulatory frameworks that many important decisions are being made for them. There seems to be a negative relationship between timescale and local decision making for commercialization; communities have more control over short-term planning activities, while the government inserts itself more into medium-term and long-term planning. However, the results also show that there is variation in forest management authority levels depending on the context, namely, the legal framework of the countries in question, but also the specific community or management model in place.

Thinking beyond the framework

There were several discrepancies between the rights that communities are meant to have and the rights that they actually have. This was the case for access rights in Mazagão, for planning rights in the Extractive Reserve in the OCT case due

to delays in the government’s processing of permits, and for ownership and tactical planning rights in the MAFLOPS case of colonist-company partnerships (Tables 2 and 3). Recognizing the potential for abuse with colonist-company partnerships, the federal government recently passed a decree limiting the possibility of hiring a third party to manage forests in settlements, but without providing for additional training or support for colonists. Thus, without such a service, the colonists are left with rights to exploit the forest, but without the other necessary empowerment tools, such as technical knowledge and technological capacity, to exploit the forest legally. Many interviewees expressed an interest in managing their own forests and increased decision-making power over day-to-day activities of forest harvesting, but could not carry this out for lack of the necessary conditions and support. Larson et al. (2008), in a study of decentralization in several Latin American countries, came to a similar conclusion, that, although communities are being empowered with new legal rights, in practice, they have not yet been able to enjoy these rights due to the lack of support systems and other factors necessary for forest resource management.

Several studies have demonstrated that the transferring of rights to local bodies has resulted in overexploitation of the resource (reviewed in Tacconi 2007), while other studies have shown just the opposite, namely, that forests under community management have lower deforestation rates (Bray et al. 2008, Chhatre and Agrawal 2009). In a study of 80 communities in 10 countries, Chhatre and Agrawal (2009) found that greater

Table 7. Summary of the application of framework to the case studies. √ indicates that the community has authority over that element, X indicates that it does not. √X indicates that the community has authority over some aspects but not others, or that they are meant to have a certain right but do not have it in reality. A bold symbol indicates that the symbol is more dominant when both symbols are present. Detailed information for each element and case study is presented in Tables 2-6 [abbreviations: comm. = commercialized; Dom. = domestic; conv. = conversion]

	ACCESS		DECISION-MAKING					BENEFIT-SHARING			
	Own/ access to resource	Strategic planning	Tactical planning					Benefits reach community	Within community:		
			Comm. wood products: medium- term	Comm. wood products: short-term	Dom. use wood products	Comm. NWFPs	Dom. use NWFPs		Land use conv.	Equal decision- making	Equal benefit sharing
Mazagão	√ x	√ x	√ x	√	√	√ x	√ x	√ x	√	√	√
OCT	√ x	√ x	√ x	√	√	√ x	√	√ x	√	√	√ x
Maflops	√ x	√ x	x	x	√ x	n/a	√ x	√ x	√ x	√ x	√
Caobas	√	√ x	√ x	√	√	√ x	√ x	√ x	√	√ x	√ x
Yaxcabá	√	√	√ x	√	√	√ x	√ x	√	√	√ x	√ x
Naranjal	√	√ x	√ x	√	√	√ x	√ x	√ x	√	√ x	√ x

rule-making autonomy at the local level is positively correlated with high forest carbon levels and livelihood benefits. In many cases, communities have developed elaborate systems of governance with time (Ostrom 1990, Gibson et al. 2007). Ultimately, it is not just a matter of transferring rights, but a question of how the rights have been transferred, and whether appropriate incentives and support have been offered that make for successful outcomes (Larson 2003). Indeed, this is evident from the case studies presented here; the colonists in the government-sponsored settlements said that they would have likely continued to farm and deforest if left without the necessary support to manage their timber, while in Caobas and Naranjal Poniente, the *ejidos* are sustainably managing their forests, partly because of the amount of support they received to begin their enterprises in the 1980s, and partly because of the continued support provided to them by the *sociedades* (inter-community associations) and the federal government. Ribot (2004) argues that central governments should be able to set and enforce minimum standards for resource extraction by local groups to ensure sustainable management without excessively burdensome management plans. However, in Brazil, the process of obtaining legal management plans is still considered a large obstacle to forest management (Hajjar et al. 2011).

An additional factor that should be considered in this assessment of control is the effect of intervention from outside agents on the ability of the community to follow local customs. Interventions and support that come from outside agents (be they subnational, national, or international, governmental, or nongovernmental) in the form of money or training for specific management practices, can ultimately affect the decision-making power of the community by altering traditional

practices or changing local practices as a condition of the funding provided. Such interventions, controlled and defined by external agents, have often had a strong and altering effect on the traditional decision-making structure and harvesting practices of NWFPs (Herrero-Jauregui et al. 2009) and timber management (Medina and Pokorny 2008), and have often disregarded the local context and cultures (Colchester 2008, Pokorny 2009, Pokorny et al. 2010). If the community is pandering to the intervener's choices and decisions, then local control is somewhat compromised. In the same vein, a community's ability to follow traditional customs for managing resources or to interpret national laws at the local level to accommodate traditional practices are also important aspects of local control. If there is flexibility in a nation's legal framework to allow for localized modifications, local management authority is enhanced. Interventions from agents outside the community that have changed the way that resources are managed inside the community are common to almost all of the case studies (Table 8; for further discussion, see Hajjar 2011).

Another important aspect of local empowerment is the ability to effect change in policies if dissatisfied with the current situation. Degrees of satisfaction with the level of authority or control over resource use in the case studies varied by country. In general, community members in Mexico were more satisfied with their levels of management authority than in the Brazilian case studies. The ability of an individual to effect change in local governance in all case studies is high in theory because of mechanisms that promote accountability of local officers to the electorate. These include oversight committees in Mexico, frequent community meetings in both countries, frequent elections and, except for *repladores* in Mexican

Table 8. Influences of outside interventions and ability to follow local customs

Community	Description of case
Mexico	
Caobas	Follow local governance customs. Commercial timber management practices and legal norms brought in from outside. There have been some minor adaptations to local practices.
Yaxcabá	Follow local customs for all forest management. Limited outside intervention and very limited outside enforcement. Government offered to help with a reforestation project, but the Assembly voted against it because people did not want to lose land for agriculture.
Naranjal Poniente	Follow local governance customs. Commercial timber management practices and legal norms brought in from outside. There have been some minor adaptations to local practices.
Brazil	
Mazagão	Following local customs for now, although illegal. Outside intervention (future government-sponsored community forestry project) will change governance structure over forest resources and management practices (see Hajjar et al. 2011).
OCT	Follow local customs for NWFP management. Outside intervention introduced a new furniture-making business for them, and brought scientific legal management.
MAFLOPS	Are not involved in timber management – this is all an outside intervention. Legal timber management is a foreign activity to the mostly agriculturist colonists; the logging company fills a need by providing all management services. However, this perpetuates a cycle of dependency on outside intervention, since little to no training, technology, or forest knowledge transfer occurs from the company to the colonist. The colonist benefits monetarily from a one-time deal, but is not left empowered to manage his/her forest in the future. They follow local customs for other resource use.

ejidos, an equal vote in the community assembly. Paths for effecting change in higher level policy exist in both countries, through the *sociedades* in Mexico and through a consultation process for the creation of a national community forestry policy in Brazil, but effectiveness of these pathways was not investigated in this study.

CONCLUSION

This study created a framework that identifies criteria of relevance to community members in their forest management decision making, and uses this framework to qualitatively assess the actual forest management decision-making power that has been decentralized to the community or local forest user. The framework builds on the concepts of access, rule-making, and command over resources presented, for example, in Schlager and Ostrom's property rights regimes (1992) and Leach and Mearns' environmental entitlements approach (1991), by distinguishing the different elements of forest management that are important to the local forest user and dissecting levels of decision-making power for each. Findings suggest that, in both countries, the government has retained significant amounts of control over forest resources through regulation of extraction of wood and, in some cases, non-wood products. This is a common finding in other regions around the world where governments have tended to obfuscate resource right transfers or limit the kinds of powers transferred (Edmunds and Wollenberg 2003a, Wittman and Geisler 2005, Ribot et al. 2006, Larson et al. 2008). However, in breaking down the elements of forest management of specific interest to the community, it was revealed that the case study communities in this research have high decision-making power over use of forest products for subsistence purposes, and are gaining more control over day-to-day decisions for the

commercialization of forest products, including timber. Importantly, benefits from forest management are now, for the most part, fully reaching the community. This is different from the position a few decades ago in both Brazil and Mexico, where communities had few rights over forest resources and received little in terms of benefits from forest industries operating in their areas. However, as has been the case in several community forests around the world, benefit distribution remains inequitable within the communities studied here.

This study has described the amount of decision-making power, or control, that the case study communities have over their forests. While this purposive and limited sample of communities does not allow for generalizations and broader inferences on the amount of decentralization of forest management that has occurred, this study provides an interesting illustration of the decision-making power acquired by communities in diverse contexts. Ultimately, the question for policy makers and academics to consider is how much decentralization is the right amount? A spectrum of decentralization options can be described, anchored by clear end points with completely centralized forest management at one end and completely decentralized management at the other. In other words, at either end, communities will either have no control or complete control over their forests. However, taking into account the number of elements identified in this framework, the path between these two extremes is not necessarily a simple, linear progression. Meaningfully comparing the position of different communities along this spectrum can be difficult, since some communities have more power over certain elements, but less over others. Additionally, there is ambiguity regarding even the amount of control that a community has over any particular

element. This degree, or quality, of power for each element can perhaps be best qualified using Arnstein's ladder of citizen participation (1969), describing types of participation and nonparticipation, from manipulation to citizen control. These different qualifications indicate that while the endpoints are clear, the area between the two end points in this spectrum can be hazy.

What point along this spectrum is ideal? Is the goal of decentralization really to reach the end point of completely decentralized power so that communities can have "real" decision-making power? Or should the goal be to find a location in the middle of that hazy spectrum where we can balance the best outcomes for the people and the forest? If so, how do we find the optimal balance between forest quality and social satisfaction with level of access, decision making, and benefit-sharing? This study has focused on a qualitative measurement of the amount of decision-making power communities have over their forests, but the next step, to look at the consequences for the forest of different levels of local control, has not yet been undertaken. However, some observations of forest quality during the fieldwork, as well as community perceptions of forest quality, were noted, which varied in each case study community. Even in cases in the same country, where communities have the same levels of power, communities have dealt differently with their natural resources; in two cases (Caobas and Naranjal Poniente), they have regulated harvesting, while in another case (Yaxcabá) with the exact same rights, they have no rules to regulate harvesting of an overexploited species that is in high demand.

Decentralization and forestry modeled on industrial-scale logging are not necessarily compatible without extensive external intervention for funding and training. If communities are acquiring more power over forest management, but are still required to follow strict legislation that is based on the industrial model of forestry, communities will need external technical and financial support to do so. This, then, leaves in question the independence of community decision making given the pervasive influence of external agents in community forestry. NGOs or governments will support communities to manage forests in a certain way for a certain amount of time, yet not necessarily in a way that supports traditional practices or governance structures. Medina et al. (2009:4) state that "community forestry has been transformed into an issue that only well-educated forest engineers can discuss", noting that, in many cases in Brazil, either the logging companies or the development organizations are making the decisions. This leads to the question, should communities be "empowered" to comply with existing legislation, by providing them with the right training to follow rules and laws that are set for them, or should legislation and policy be modified to accommodate traditional practices? Which of these two options will lead to real management power, that is, having the actual legal authority and the ability to make decisions independently and

in a way that is locally meaningful? It has been argued that projects that impose foreign models of forest management and governance are less likely to succeed since they often disregard the local context and long-standing practices and cultures. However, the experience in Mexico shows that, with the right investments, support systems, and governance structures, it is possible to effectively adapt the industrial forestry model to the community level. Mexican community forestry has been upheld as a positive example for others to follow, given benefits that communities there have enjoyed and the maintenance of forest cover, but this study shows that the government is still heavily involved in decision making. Does this mean that in our rights-based approaches, decision-making right and control over resources can be somewhat compromised if other social and economic rights and benefits are fulfilled?

The exercise undertaken here to assess "real" decision-making power seems to have led to more questions than answers, indicating that the debate on the right amount of decentralization continues to be an open discussion. However, this work points to the conclusion that the formula for successful community forestry will likely include a good amount of decentralization of authority, but without reaching the extreme of complete decentralization. Deciding on the right place along that spectrum will likely be context-specific, and will involve a delicate balancing act of local and central authorities, to ensure that both local and nonlocal values and demands are met.

Responses to this article can be read online at:
<http://www.ecologyandsociety.org/vol17/iss1/art12/responses/>

Acknowledgments:

The authors would like to thank collaborating organizations in Brazil and Mexico, in particular researchers at IPAM and CINVESTAV, and Hosny El-Lakany for helpful comments made on a previous version of the manuscript. This study was made possible by funding from the International Development Research Centre and the Social Sciences and Humanities Research Council of Canada.

LITERATURE CITED

- Agrawal, A., A. Chhatre, and R. Hardin. 2008. Changing governance of the world's forests. *Science* 320:1460-1463.
- Agrawal, A., and J. Ribot. 1999. Accountability in decentralization: a framework with South Asian and West African cases. *The Journal of Developing Areas* 33:473-502.
- Amaral, P., and M. Amaral Neto. 2000. *Manejo florestal comunitário na Amazônia Brasileira: Situação atual, desafios*

e perspectivas. Instituto Internacional de Educação do Brasil (IIEB), Belém, Brazil.

Arnstein, S. 1969. A ladder of citizen participation. *Journal of the American Planning Association* 35(4):216-224. <http://dx.doi.org/10.1080/01944366908977225>

Barsimantov, J., A. Racelis, K. Biedenweg, and M. Digiano. 2011. When collective action and tenure allocations collide: outcomes from community forests in Quintana Roo, Mexico and Petén, Guatemala. *Land Use Policy* 28:343-352. <http://dx.doi.org/10.1016/j.landusepol.2010.07.001>

Bray, D., E. Duran, V. Ramos, J. Mas, A. Velazquez, R. McNab, D. Barry, and J. Radachowsky. 2008. Tropical deforestation, community forests, and protected areas in the Maya Forest. *Ecology and Society* 13:56. [online] URL: <http://www.ecologyandsociety.org/vol13/iss2/art56/>

Bray, D., L. Merino-Perez, P. Negreros-Castillo, G. Segura-Warnholtz, J. Torres-Rojo, and H. Vester. 2003. Mexico's community-managed forests as a global model for sustainable landscapes. *Conservation Biology* 17:672-677. <http://dx.doi.org/10.1046/j.1523-1739.2003.01639.x>

Chapela, F. 2005. Indigenous community forest management in the Sierra Juárez, Oaxaca. Pages 91-110 in D. Bray, L. Merino-Pérez, and D. Barry, editors. *The community forests of Mexico: managing for sustainable landscapes*. University of Texas Press, Austin, Texas, USA.

Charnley, S., and M. Poe. 2007. Community forestry in theory and practice: where are we now? *Annual Review of Anthropology* 36:301-336. <http://dx.doi.org/10.1146/annurev.anthro.35.081705.123143>

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, USA* 106:17667-17670. <http://dx.doi.org/10.1073/pnas.0905308106>

Colchester, M. 2008. *Beyond tenure: rights-based approaches to peoples and forests - some lessons from the Forest Peoples Programme*. Rights and Resources Initiative, Washington, D. C., USA.

Contreras-Hermosilla, A., H. Gregerson, and A. White. 2006. *Forest governance in countries with federal systems of government: lessons for decentralization*. Centre for International Forestry Research, Bogor, Indonesia.

Edmunds, D., and E. Wollenberg. 2003a. *Local forest management: the impacts of devolution policies*. Earthscan, London, UK.

Edmunds, D., and E. Wollenberg. 2003b. Whose devolution is it anyway? Divergent constructs, interests and capacities between the poorest forest users and states. Pages 150-165 in

D. Edmunds, and E. Wollenberg, editors. *Local forest management: the impacts of devolution policies*. Earthscan, London, UK.

Edmunds, D., E. Wollenberg, A. Contreras, L. Dachang, G. Kelkar, D. Nathan, M. Sarin, and N. Singh. 2003. Introduction. Pages 1-19 in D. Edmunds, and E. Wollenberg, editors. *Local forest management: the impacts of devolution policies*. Earthscan, London, UK.

Garnett, S., J. Sayer, and J. Du Toit. 2007. Improving the effectiveness of interventions to balance conservation and development: a conceptual framework. *Ecology and Society* 12(1):2. [online] URL: <http://www.ecologyandsociety.org/vol12/iss1/art2/>

Gibson, C. C., D. Dodds, and P. Turner. 2007. Explaining community-level forest outcomes: salience, scarcity and rules in Eastern Guatemala. *Conservation and Society* 5:361-381.

Hajjar, R. 2011. *Community forests for forest communities: an examination of power imbalances, challenges and goals in Brazil and Mexico*. Dissertation. University of British Columbia, Vancouver, B.C., Canada.

Hajjar, R., D. McGrath, R. Kozak, and J. Innes. 2011. Framing community forestry challenges with a broader lens: case studies from the Brazilian Amazon. *Journal of Environmental Management* 92:2159-2169. <http://dx.doi.org/10.1016/j.jenvman.2011.03.042>

Herrero-Jauregui, C., B. Pokorny, M. Casado, and C. Garcia-Fernandez. 2009. When theory meets practice: some constraints in non timber forest products commercialization. Pages 1-9 in *Proceedings from XII World Forestry Congress*, Quebec, Canada.

Hutchcroft, P. 2001. Centralization and decentralization in administration and politics: assessing territorial dimensions of authority and power. *Governance* 14(1):23-53. <http://dx.doi.org/10.1111/0952-1895.00150>

Klooster, D. 2003. Campesinos and Mexican forest policy during the twentieth century. *Latin American Research Review* 38:94-126. <http://dx.doi.org/10.1353/lar.2003.0018>

Knight, P. 2002. *Small-scale research*. Sage, Thousand Oaks, CA, USA.

Larson, A. 2003. Decentralization and forest management in Latin America: towards a working model. *Public Administration and Development* 23:211-236. <http://dx.doi.org/10.1002/pad.271>

Larson, A. 2005. Democratic decentralization in the forestry sector: lessons learned from Africa, Asia and Latin America. Pages 32-62 in C. Colfer, and D. Capistrano, editors. *The politics of decentralization: forests, power and people*. Earthscan, London, UK.

- Larson, A. M., P. Cronkleton, D. Barry, and P. Pacheco. 2008. *Tenure rights and beyond: community access to forest resources in Latin America*. Center for International Forestry Research (CIFOR), Bogor, Indonesia.
- Larson, A., and F. Soto. 2008. Decentralization of natural resource governance regimes. *Annual Review of Environment and Resources* 33:213-239. <http://dx.doi.org/10.1146/annurev.enviro.33.020607.095522>
- Leach, M., and R. Mearns. 1991. *Poverty and environment in developing countries: an overview study*. Report to the Economic and Social Research Council and the Global Environmental Change Programme. IDS, Brighton, UK.
- Lincoln, Y., and E. Guba. 1985. *Naturalistic inquiry*. Sage, Thousand Oaks, CA, USA.
- Medina, G., and B. Pokorny. 2008. *Avaliação financeira do manejo florestal comunitário*. Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA), Belém, Brazil.
- Medina, G., B. Pokorny, and J. Weigelt. 2009. The power of discourse: hard lessons for traditional forest communities in the Amazon. *Forest Policy and Economics* 11:392-397. <http://dx.doi.org/10.1016/j.forpol.2008.11.004>
- Miyasaka Porro, N., and S. Stone. 2005. Diversity in living gender: two cases from the Brazilian Amazon. Pages 242-255 in C. Colfer, editor. *The equitable forest: diversity, community and resource management*. Resources for the Future, Washington, D.C., USA.
- Molnar, A., M. Liddle, C. Bracer, A. Khare, A. White, and J. Bull. 2007. *Community-based forest enterprises in tropical forest countries: status and potential*. International Tropical Timber Organization (ITTO), Rights and Resources Initiative (RRI) and Forest Trends, Washington, D.C., USA.
- Ostrom, E. 1990. *Governing the commons: the evolution of institutions for collective action*. Cambridge University Press, Cambridge, UK.
- 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 & Natural Resources* 19:33-52. <http://dx.doi.org/10.1080/08941920500323260>
- Pokorny, B. 2009. The role of families and forests in the Amazon: a critical analysis of current approaches for local development. Pages 1-11 in *Proceedings of the XIII World Forestry Congress*, Buenos Aires, Argentina.
- Pokorny, B., C. Sabogal, W. de Jong, P. Pacheco, N. Porro, B. Louman, and D. Stoian. 2010. Challenges of community forestry in tropical America. *Bois et Forêts des Tropiques* 303:54-66.
- Ribot, J. 2004. *Waiting for democracy: the politics of choice in natural resource decentralization*. World Resources Institute, Washington, D.C., USA.
- Ribot, J., A. Agrawal, and A. Larson. 2006. Recentralizing while decentralizing: how national governments reappropriate forest resources. *World Development* 34:1864-1886. <http://dx.doi.org/10.1016/j.worlddev.2005.11.020>
- Rights and Resources Initiative and the International Tropical Timber Organization. 2009. *Key data from RRI-ITTO Tropical Tenure Assessment*. Rights and Resources Initiative and the International Tropical Timber Organization, Washington, D. C., USA, and Yokohama, Japan.
- Sayer, J., J. McNeely, S. Maginnis, I. Boedhihartono, G. Shepherd, and B. Fisher. 2008. *Local rights and tenure for forests: opportunity or threat for conservation?* Rights and Resources Initiative and International Union for the Conservation of Nature (IUCN), Washington, D.C., USA.
- Scherr, S., A. White, and D. Kaimowitz. 2003. *A new agenda for forest conservation and poverty reduction: making markets work for low-income producers*. Forest Trends and Center for International Forestry Research (CIFOR), Washington, D.C., USA.
- Schlager, E., and E. Ostrom. 1992. Property-rights regimes and natural resources: a conceptual analysis. *Land Economics* 68:249-262. <http://dx.doi.org/10.2307/3146375>
- Tacconi, L. 2007. Decentralization, forests and livelihoods: theory and narrative. *Global Environmental Change* 17 (3-4):338-348. <http://dx.doi.org/10.1016/j.gloenvcha.2007.01.002>
- Uphoff, N. 1989. Distinguishing power, authority and legitimacy: taking Max Weber at his word by using resources-exchange analysis. *Polity* 22(2):295-322. <http://dx.doi.org/10.2307/3234836>
- Vester, H., and M. A. Navarro-Martinez. 2005. Ecological issues in community tropical forest management in Quintana Roo, Mexico. Pages 183-214 in D. Bray, L. Merino-Pérez, and D. Barry, editors. *The community forests of Mexico: managing for sustainable landscapes*. University of Texas Press, Austin, Texas, USA.
- Wittman, H., and C. Geisler. 2005. Negotiating locality: decentralization and communal forest management in the Guatemalan highlands. *Human Organization* 64:62-74.