

Land tenure, forest and political reforms: A look at their implications for common-property forests in lowland Bolivia^{*}

Pablo Pacheco[†]

ABSTRACT

Common-property forests adopt diverse forms and embrace a disparity of local actors (e.g., indigenous people, forest dependent smallholders). In lowland Bolivia, these actors have placed strong demands to the state for the recognition of their collective rights, which coincided with a top-down process of land and tenure reform within broader political trends of state restructuring. While claims for rights on access and management of common-property forests have been acknowledged by the legal and institutional frameworks, particularly after the approval of a new national constitution, the expected outcomes on enhancing people's livelihoods and promoting forest conservation are difficult to achieve in practice since there is still a need to align the land and forest policy with the incentive systems shaping forest resources use in the commons. Uneven social structures and market powers tend to take the economic benefits away from local forest users, and disparate strengths of local systems of authority impede to achieve effective territorial governance. This paper assesses three cases under which local communities are struggling to benefit from their forest resources under differentiated tenure arrangements and market conditions. I argue that greater attention has to be placed on understanding the disparate outcomes for the management and governance of common-property forests resulting from changes in regulatory frameworks and market conditions if better outcomes want to be achieved for forest livelihoods and forests.

Key words: Bolivia, land reform, forest tenure, common-property, livelihoods

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[†] Center for International Forestry Research (CIFOR). Jalan CIFOR Situ Gede, Bogor Barat 16115, Indonesia. Email: p.pacheco@cgiar.org

1. INTRODUCTION

The Bolivian lowlands comprise a diverse number of local actors which hold a mix of collective and individual access to forests and lands, under disparate forms of individual and common-property (Muñoz 1996; Pacheco 1998). There are several forms of common-property forests controlled by indigenous people, other traditional communities, and smallholders (Cronkleton et al. 2009). The access by local populations, mainly indigenous people, to collective lands and their management underwent different transformations over time due to the influence of external actors and processes. The first is associated to the colonial occupation of the territory, with diverse effects in the restructuring of local indigenous societies, and in the management of the common lands and forests. The second is linked to the different waves of natural resources extraction taking place in lowlands Bolivia driven by growing commercial interests on rubber extraction, in the past, and on timber extraction more recently. The third, which is the focus of this paper, corresponds to recent processes of land regularization and political restructuring, which have reshaped the conditions governing the common-property forests.

This paper explores the recent process of policy reform, and their implications in the management and governance of the commons, as well as in their outcomes for people's livelihoods and forest condition, drawing on previous work and other available literature on common property and forest tenure and policy reform in lowland Bolivia. Our reflections also draw on three case studies with fieldwork undertaken in 2007-2008 which are representative of three main processes taking place in this region. The first is related to the recognition of tenure rights for indigenous people, whose implications we explore based on the case of the indigenous collective lands in Guarayos, Santa Cruz. The second corresponds to the resurgence of agro-extractive communities, mainly due to the consolidation of community rights in the northern Amazon where Brazil nuts extraction constitute the main source of livelihoods for smallholders. The third is associated to the adjudication of lands through collective titling to peasant colonists in the northern La Paz. These three processes have reinforced the common-property forests but with different implications for enhancing people wellbeing and forest conservation.

The management and governance of forest commons is not independent from wider political and markets conditions influencing on them, as well as local institutional conditions and authority systems which affect decision-making powers over natural resources use and distribution of benefits. Main trends affecting common-property forests in Bolivia have been a process of formalization of land and forest tenure rights, along with limited devolution of decision-making powers to local traditional authorities, though the new Political Constitution of the State has moved forward by recognizing social, economic and political rights to indigenous people under mechanisms that are still under construction. Furthermore, uneven social structures and market powers tend to take the economic benefits away from local forest users, and weak local authority systems make difficult to achieve local territorial governance. This paper assesses three cases under which local communities are struggling to benefit from their forests under differentiated contextual political and market conditions. I argue here that greater attention has to be placed on

understanding the policy incentives and market conditions, in their interactions with local decision-making, for explaining the outcomes observed in both the management and governance of common-property forests.

This paper is organized in six sections including this introduction. The second introduces the land, forest and political reforms that were implemented in Bolivia during the last period of reform initiated in the mid-1990s, and reformed again the mid-2000s. The third section discusses some of the main trends reshaping land and forest governance in the lowlands, as result of the previous reforms, with implications on the forest commons' management and governance. The fourth section, based on specific case studies, explores three different common-property systems which are characteristic in lowland Bolivia, and their associated forest management and governance systems, as well as their linkages with the forest markets. The section five discusses some implications of the policy reforms on shaping people's livelihoods and forests management in the commons and the policy challenges to enhance those outcomes. The sixth part presents the main conclusions.

2. LAND TENURE, FOREST AND POLITICAL REFORMS IN BOLIVIA

Important legal reforms took place in the mid-1990s that changed the rules of the game in land and forest rights in Bolivia. In 1996, the Bolivian congress enacted a new Forest Law (No. 1700), along with a new Land Law (No. 1715). These two laws attempted to introduce order in the chaotic situation resultant from land conflicts, the inequitable distribution of benefits among different stakeholders, and the small share of rents captured by the state from forest resources use (Hunnisett 1996; World Bank 1993). The Land Law included a mechanism to formalize land ownership through implementing a process of title regularization (*saneamiento*), and by consolidating the rural property cadastres (Hernáiz and Pacheco 2000). In turn, the Forestry Law clarified the forestry rights and introduced some management instruments—such as forest management plans and annual operational plans—in order to make possible sustainable forest management (Pacheco 2007a). In addition, to encourage private property owners to adopt forest management, land and forest rights were merged, so the state could not allocate contracts in privately owned lands. The main rights defined and regulations stated in these laws are detailed in Table 1. The Land Law was revised in 2006 and issued the 'Law for Communal Reorientation of Agrarian Reform' (No. 3545). Main changes promoted through these different laws, and the mechanisms adopted, are described below.

< Table 1 >

Land and forest tenure reform in lowlands Bolivia

In the past, forest rights were disconnected from land tenure rights since the state kept the right to allocate logging contracts or permits even within private landholdings, which led to several tenure conflicts. The Forest Law merged land tenure and forestry rights, hence private landholders have also the right to use exclusively the forest resources located in their landholdings. In a similar way indigenous people benefited from exclusive rights to manage their forest in their titled lands, although forest is still under the domain of state. However, in order to acquire and maintain the ownership to their lands, landholders require to justify its economic and social function (FES by its acronym in Spanish), which includes actual and

projected land-use parameters, primarily taking into account some agricultural and forest land uses. Yet smallholders and indigenous are exempted of justifying FES.

The INRA law formally recognized the collective property of indigenous people over the land that these groups occupied traditionally, but through a category labeled 'community lands of origin' (TCO, by its acronym in Spanish), which granted access, usufruct and exclusion rights but limited the management and alienation rights. Yet, in addition, indigenous territories were granted the rights to make exclusive use of the forest resources, including timber, inside their community lands (Stocks 2005). The allocation of tenure rights was based on territorial claims from the indigenous people, lands which were 'immobilized' by the state, and then implemented, in each of the claimed indigenous lands, a process of identification of local social needs and land demarcation (Martinez 2000). This process was conceived as part of a broader land regularization stipulated in the Land Law (Hernández and Pacheco 2000).

Another way to improve local access to forest resources was the recognition of municipal forest reserves in an extension up to 20% of the remaining public forest in the municipalities, after the devolution of forestlands from logging companies back to the state hands. These forest reserves, which vary in extension according to the municipality, had to be allocated to local forest users groups organized in associations (ASL, by its acronym in Spanish). The municipalities were responsible for demarcating the municipal forest reserves, and proposing them to the Ministry of Environment, which was in charge of their final demarcation based on a report issued from the state land agency (INRA, by its acronym in Spanish). This figure has been removed by the 'adjusted Land Law' in 2006, which states that whatever land identified as public (with no third party rights) should be granted to smallholders through collective titling. The existing Land Law already stated that distribution of public lands should prioritize to smallholders with little lands and landless people.

Regulations to ensure sustainable forest management

A different set of measures were approved following the Forest Law (No. 1700) to stimulate the introduction of sustainable forest management (SFM), mainly through the introduction of reduced impact logging (RIL) techniques in forest management plans (FMP), which became mandatory for commercial logging operations, whatever the tenure system and scale of operation. Non-commercial forest uses do not require authorization. Over time, were approved technical norms even for the commercial use of non-timber forest products, notable Brazil nuts (Pacheco 2007b). Thus, indigenous people, communities and smallholders were compelled to elaborate such plans as an instrument to plan commercial logging activities. The FMP plans have to indicate many technical requirements for logging (e.g., minimum cycle of 20 years between logging operations on the same area, a minimum cut diameter, restrictions to cut less abundant species, and the mandate to leave 20% of the harvested trees as stand trees), as well as the measures to be taken to open and maintain roads, as well as other infrastructure (e.g., bridges), and the protection of water streams.

The forest management fee in Bolivia was set up in US\$ 1 per hectare for the total area of concessions, and individual landholders and indigenous people had to pay the same fee but only for the area intervened every year. Nonetheless, the forest management fee was reformulated by Decree No. 27024 in May 2003. According to the new scheme, it applies only over to the annual intervened area, equally for forest concessions in state public forests

and municipal reserves, and forest management in indigenous areas, plus a differentiated regulation fee according to the type of actor, which was lower for indigenous people (Pattie and Rojas 2003). In the same way, clear cutting operations were required formal authorizations based on cutting annual plans, which, in turn, have to be formulated based on land use plans at the parcel level. The clear cutting fees are equivalent to fifteen times the forest tax (US\$ 15 per hectare), plus the equivalent to 15 percent of the logged timber's value.

Given the fact that the implementation of the FMPs confronted different obstacles in practice, the state forestry agency (SF, by its acronym in Spanish) put in place different 'exception regimes' as a way to promote a gradual adjustment of forest users to the norms. Main exception norms issued during the first years of implementation of the forest reform including those allowing logging in private properties without forest management plans, others allowing small-scale farmers to log in areas less than 3 hectares without the presentation of land use plan, and another approving ASLs to log only with a logging annual operational plan (Pacheco 2004a). The implementation of these forestry regulations faced many distortions in their implementation, thus adding uncertainty on the norms that landholders and communities have to comply to formalize their forest management operations. No changes have been made to the forestry regulations so far in spite of the many attempts of the current administration to modify them (Pacheco et al. 2010a)

Decentralization and autonomous governments

The most important step towards the administrative decentralization of the state was taken with the approval of the Popular Participation Law in 1994 that constituted a top-down process to transfer responsibilities to municipal governments –the country's smallest administrative unit– and to enhance institutional mechanisms for grassroots participation in both public investment planning and the monitoring of public expenditures. This process was designed to increase the flow of resources to local development through redistributing national earnings to municipal governments in a more egalitarian manner according to the population size (Rojas 1996).

Keeping in tune with the previous law, the Forest Law transferred a number of powers to prefectures and municipalities. Prefectures' responsibilities included different functions related to forestry research and extension programs, and developing programs for strengthening municipal institutional capacity in the forestry sector. Municipal governments' new responsibilities included monitoring of logging activities and inspecting raw material supply and processing programs, as well as the demarcation of municipal reserves to be granted to ASLs. In order to carry out their new functions, municipal governments were expected to create municipal forestry units (UFM, by its acronym in Spanish) which should coordinate with the SF in monitoring the forestry operations and illegal logging in their municipalities (Pacheco 2003; Andersson 2002). Different assessments have discussed the difficulties that the municipalities underwent to accomplish these responsibilities (Pacheco 2004b, 2005; Andersson 2003; Andersson and Gibson. 2005). Even more, the UFM's resources substantially shrunk with the reduction of forest fees in 2003, which reduced significantly their operational capacity (Pacheco 2007a).

The debate on decentralization gained momentum since 2006 as part of broader process of political reforms during the new administration primarily driven by claims from social

organizations, including indigenous people, around the approval of a New Political Constitution (NPC) which could formalize the political autonomies of TCOs. These were followed by demands from departmental governments to expand their autonomies to make decisions over fiscal and natural resources allocation and management. The NPC approved in early 2009 under the lead of a leftwing government, formally recognized four different levels of autonomies (i.e., departmental, regional, municipal, and indigenous at the level of TCO). The NPC also provided the foundations that are driving slow change in the legal frameworks of different sectors, including a revision of the land and forestry regulations.

With regard to the management of natural resources, mainly forests, indigenous and peasant populations are now legally entitled to implement in practice their own systems of governance and to develop different models of local use of the natural resources that they own under the frameworks of current national norms and monitoring mechanisms. However, this will imply the establishment of complex mechanisms of articulation of the four levels of governments in the Bolivian country, an issue that has not been discussed yet. Since the architecture of the country's norms are all under revision, in alignment to the NPC, some legislation regarding the functioning of the executive, legislative and judicial systems have been prioritized, thus norms regarding land and forest management are yet in early discussions.

3. TRENDS SHAPING LAND AND FOREST GOVERNANCE

Common-property forests and land regularization

The most significant process associated to land regularization was the demarcation and titling of indigenous lands, agro-extractive communities, and the allocation of some public lands as collective settlements. Yet, these outcomes have been taken place as part of broader trends of land tenure changes which have also led to the encroachment of public lands, often by large-scale holders whose analysis is beyond the scope of this paper. Indigenous titling has been slow and costly, mainly carried out through private companies contracted by INRA (MDS 2005). INRA spent about US\$ 72 million in 8 years, from 1996 to 2004, to regularize only 14 million hectares (of which have been formally titled only 7 million hectares), with a major portion of these resources being spent in TCOs. Main shortcomings involved in the titling of indigenous lands were attempted to solve in the Morales administration, mainly through the simplification of the existing procedures, which has accelerated the titling of indigenous lands in the lowlands to 11 million hectares. But titling of TCOs has not only been constrained due to the lack of enough financial resources, but also due to cases, with anecdotal evidence, of corruption and elite capture (Morales et al. 2009).

Additional efforts were spent to regularize the situation of agro-extractive communities in the northern Amazon, which claimed extensive forest areas which were in dispute with *barracas* (large forest states), due to broader processes of restructuring of the extractive economy in this region (Pacheco et al. 2009; Stoian 2000). The origin and dynamics of the land tenure conflicts between communities and *barraqueros* (owners of *barracas*) have been documented elsewhere (Ruiz 2005). As of today, about two million hectares have been regularized in favor of agro-extractive communities under collective systems of property (Cronkleton et al. 2009). Land demarcation and registration were undertaken on a 500-hectares per family basis. The titling scheme adopted has not necessarily acknowledged the

traditional tenure arrangements established among smallholders, which in some cases were based on the access to Brazil nut trees (Cronkleton et al. 2010). In spite of that fact, regularization of local tenure rights has been a significant progress respect to the past contributing to secure smallholders' forest-based livelihoods.

The Forest Law, in turn, assumed that most of the land identified as public land was going to be allocated as municipal forest reserves, thus limiting the chance of land distribution to smallholders. The 'adjusted Land Law', as mentioned earlier, cancelled that figure, and sanctioned that all public lands, including forestlands, should be granted to colonists through collective settlements with no alienation rights. In addition, the current administration drafted a plan to promote new settlements to allocate the available public lands to smallholders (about 4 million hectares), a major portion of which are forestlands that are mainly located in northern Santa Cruz, in the department of Pando and northern La Paz (Chavez 2009), especially in the forest frontier with disputed rights. It is likely that these settlements will lead to increase the pressures to forests, although a internal guideline issued by INRA endorse "forestry settlements" with the expectation that smallholders would derive income from forest-based activities (INRA 2009).

Forest management and timber market dynamics

While in the past timber companies operating in public lands were the main supplier of timber in the country (Stolz 1986), the forest reforms helped to diversity the supply of timber originated in individual landholdings and community lands since the latter actors have engaged more actively in forest extraction over time, either formally or informally. By 2007, 30% of total timber extraction corresponded to private landholdings, 27% to forest concessions, 20% originated in indigenous and community lands, and the rest was coming from forest clearings (SF 2007). The latter information reports only the formal timber operations under management plans. It is likely that the portion of timber originated in community lands is higher whether the informal timber operations taken place in these lands are taken into account.

Much of the conflicts around access to forestlands decreased as result of forest tenure reform. This since the state acknowledged the rights of communities, and granted rights to companies in public forests, although some overlaps persisted because a few forest concessions were granted on lands which were at that time also claimed by indigenous people, mainly in northern Santa Cruz (Vallejos 1998). The new administration has reduced the overlaps with the 'adjusted Land Law' through affecting some areas allocated previously to forest concessions and favoring the recognition of tenure rights to indigenous people (Pacheco et al. 2010a).

In turn, the forest concessions in municipal forest reserves granted to local forest users did not perform as expected. In practice, only a small area was classified as municipal forest reserves (about 700.000 hectares). The latter resulted from the slow process of land regularization and the lack of a mechanism through which it would be possible to identify public forestlands with no ownership rights. In 2008, there were about 60 local groups embracing 1,600 members organized as ASLs, although only a few of them were granted access to a forest concessions (MDRAYMA 2008). The land law reviewed in 2006 (No. 3545) stated that available public forests will no

longer be devoted to municipal reserves but distributed to smallholders as mentioned before, which however could support their livelihoods on forest-based activities.

Informal logging is still widespread in lowland Bolivia in spite of the implementation of the forest reform (Andaluz and Mancilla 2006). A portion of that timber is supplied by communities which have not other chances to sell their timber in the market due to the difficulties to formulate forest management plans, and by so doing to access to forestry permits (Benneker 2008). Yet, when communities are able to obtain permits, they do not have the necessary capital to finance their forestry operations, so allowing the intervention of loggers inside their lands. In addition, the communities that have the operational and financial capacities to undertake their forestry operations, often face markets that demand only a few timber species, which impede a full recovery of the costs of running such operations (Pacheco et al. 2008).

Also, communities engage in different conditions with markets, some of which tend to embrace relatively well organized value chains, with active participation of timber enterprises linked to national and global markets (Murphy and Schindler 2009), but often local markets in which communities interact are controlled by a few middleman who tend to determine prices and sale conditions (Pacheco and Paudel 2010).

In some cases, external support and subsidies have been crucial in helping some communities to sustain formal forestry operations and to overcome financial and technical barriers to access markets, but this are relatively limited in magnitude and scope (Benneker 2008). In most of the cases, indigenous communities have undertaken informal forest operations, without formal approval of FMPs. This informal logging is financed through credit advances provided by a relatively large group of timber intermediaries and logging companies, aimed at supplying the domestic timber markets. In other cases, communities allow timber companies, in exchange for some payment, to carry out logging operations in their lands. While some community groups, with the help of NGOs, have been able to elaborate and approve FMPs, in general, the timber companies tend to take the compliance of these bureaucratic procedures on their hands. Ultimately, these models tend to create little local capacities for forest management (Pokorny and Johnson 2008).

Restructuring systems of government and authority

The political changes promoted in the mid-1990s enlarged the political role of municipalities and prefectures, and the forestry law attempted to open the space of these two levels of governments to take a more active role in forest resources management. Municipal governments, however, have become key actors in the provision of social services (i.e., health, education, water sanitation), but they have not assumed their roles regarding local territorial planning, and natural resources management. This likely due to the small amount of resources they were allocated to accomplish with these tasks, but also due to the fact of the still limited role they were granted through the decentralization process. In this regard, the role played by municipal governments in forest management, mainly regarding the control of forest crime, and promotion of sustainable forest management has been limited, and they have not become important actors in the process of land regularization. Thus, still key decisions regarding forest resources management are made at the central level, while decision-making regarding forest management takes place at the local level.

The prefectures also have not assumed an active role in land use planning and forest resources management, in spite of the fact that most of them drafted strategies for natural resources management for their respective departments, including forests. Yet, almost none of these plans have been implemented in practice, and small amounts of resources have been allocated to the forestry sector, thus creating an institutional vacuum, which was not assumed by the central state agencies either, for promoting sustainable forest management under broader strategies of land-use planning and territorial development. The prefectures have only occasionally supported the development of some community forest management initiatives, or local land-use planning processes, which has been primarily being driven by the interests of external donors of NGO projects.

In turn, the central state has devoted most of their efforts to enforce the land and forestry regulations but under quite limited operational budgets, thus enforcement has been ineffective in practice, also due to a lack of coordination with prefectures and municipal governments. Furthermore, the central government has spent some efforts to change the current regulatory framework but with limited success since the policy priorities are far from forests, and due to internal political disputes which impeded to consolidate a common perspective on the reform's content and scope.

The approval of the NPC suggests that the new approach of governance in the country is moving the central powers of authority and decision making to the local autonomous units of authority and government. However, as mentioned, this is still in its first stages of discussion. The current debates regarding the restructuring of a more effective system of land and forest governance suggest the need to adopt a new system of 'territorial planning' in order to plan and regulate recommended land uses, as well as the establishment of institutional checks and balances to make possible a more effective and transparent monitoring of land and forest resources use, and the articulation between national minimum standards and local norms for forest resources use. Then the main challenges are related to how to put in place a system that integrates different level of responsibilities for the management of natural resources in a context in which autonomous local units have increased power for crafting and enforcing rules regarding forest management.

4. THREE CASES: POLICY REFORMS AND FOREST COMMONS

This section analyzes the trends and scope of three main processes which have influence on common-property forests in lowland Bolivia. The first is related to the recognition of tenure rights for indigenous people, whose implications we explore based on the case of the indigenous collective lands in Guarayos, Santa Cruz. The second corresponds to the resurgence of agro-extractive communities in the northern Amazon, mainly due to the consolidation of rights to communities whose members base their livelihoods on forest-based resources, notably Brazil nuts. The third corresponds to the adjudication of lands under collective rights to peasant colonists, mainly in the northern portion of La Paz, and in the northern Amazon.

Recognition of rights to indigenous people

This section illustrates the granting of rights to indigenous people, and management of governance of indigenous lands by drawing on the case of Guarayos, a province in Bolivia's Santa Cruz department that is also home of the Guarayo indigenous people. The construction and later paving of a highway opened the region to

outsiders, including timber industries, ranching and large-scale agro interests and smallholder colonists, putting strong pressure on the land that has been occupied and is formally claimed by the Guarayos people. Tenure reform and the promotion of sustainable forest management that were intended to stabilize the region and protect indigenous lands did not sufficiently consider existing indigenous rules for land access and forest use. As result, the region faced growing tensions as indigenous people felt the pressure from land claims and resource extraction by outsiders.

In 1996, the Guarayos indigenous organization (COPNAG) presented a claim for a TCO, which the government approved, determining that about 1.4 million hectares should be allocated to the Guarayos group. From 2000 to 2004, six indigenous communities established forest management plans as a strategy to consolidate their hold on forest areas that were unoccupied and thus viewed as available to outsiders (Albornoz et al. 2008). Land regularization and titling progressed slowly, and still the formalization of property rights remains incomplete since only the lands in the northern portion of the TCO have been titled, which are far from indigenous settlements. The most populated areas, where occurs the highest concentration of indigenous communities are still waiting for regularization (Albornoz et al. 2008).

The main problem faced by the land regularization process in Guarayos was the pressure from outsiders attempting to establish landholdings, sometimes fueling corruption involving third parties, the state land agency and indigenous leaders. At the same time, the tenure situation for most indigenous people has not changed or has changed only marginally, as few people live in the areas that have been granted a title. In addition, the Guarayos people currently lack a unified institutional structure capable of effectively administering and managing their expansive territory, given the dispersed indigenous settlements, distance to the titled areas and the nature of this ethnically mixed and dynamic region (Cronkleton and Pacheco 2008).

In Guarayos, informal property rights institutions have been given a certain degree of formality with the creation of the TCO. Within the TCO, the INRA law defines customary practices (*usos y custumbres*) as the guiding rules for allocating and using property and associated natural resources. Yet, main working institutions function primarily at the village level, while the TCO is supposed to function at a territorial level with authority granted to the Guarayos representative organization COPNAG. There are functional reasons for this dichotomy as village level institutions manage the organization and allocation of land for household subsistence production, while the TCO manages territorial governance, leaving local, internal rules open to interpretation by members. For practical reasons, local level institutions are well developed, while territorial institutions are still emerging and are not functioning well. This is partially due to the fact that as an entity the TCO is vague and incomplete, being a large territory that is not always contiguous and with a diverse ethnic mix that encompasses a significant non-indigenous population.

More importantly, governance responsibility for the territory was passed to COPNAG, which was not designed as an institution to manage and administer a collective area of land and resources but rather as a collective movement to advocate more generally for Guarayo interests. Hence, mechanisms for collective decision making, clearly defined rights and responsibilities of leaders, as well as processes for oversight by constituents are not well developed within COPNAG.

Authority over the process that allocate land for agriculture is held by village councils called *centrales* composed of resident adults with elected leaders. Lands immediately surrounding settlements are divided into 'agricultural zones' (*zonas agrarias*). Beyond these, forest lands and wetlands are considered zones of influence (*zonas de influencia*) that are the loosely defined territories usually extending for 15 to 20 km from each community, depending on its size. Although it is not clear when this form of territorial organization originated, it is similar to the agrarian unions formed by peasants when claiming land. It was influenced by outsiders who arrived with the initial frontier expansion in the 1970s, a time when Guarayos families felt greater pressure to develop a strategy for occupying territory.

The long delays and focus on uncontested areas allowed illicit land transactions to take place in the accessible lands that were highly prized by both indigenous people and outsiders. Some unscrupulous actors paid for forged titles or other documents, including certification from corrupt COPNAG leaders 'proving' the existence of property prior to the TCO demand (Albornoz et al. 2008). Some families that had received individual title to their plots, or documents authorizing their occupation during earlier agrarian reforms, realized that they could sell these rights to outsiders and move further into the forest to establish new plots. During the long delay, members of some agrarian zones claimed by ranchers or non-indigenous farmers accepted payment to drop their claim to the land. In such cases it was apparently easier for indigenous families to make these decisions because of the perception that large areas were going to be titled in their favor (Cronkleton et al. 2009).

In the indigenous territory of Guarayos, informal timber networks are well developed and quite robust and extensive in their geographical coverage, in spite of significant efforts to promote formal sustainable forest management at the community and industrial level. Prior to the TCO demand, the local timber sector was composed of several small- and medium-scale logging companies and sawmills, as well as numerous independent chainsaw operators, sawyers, and truckers, often at the margin of the law. These actors did not qualify for industrial timber concessions granted under the new forestry law, nor could they form logging associations (ASLs) to receive municipal concessions on state lands, because most of the region had been 'immobilized'. Two new actors that have appeared after the TCO creation are *proveedores* (literally, providers) and consultants. These actors serve as intermediaries for brokering timber sales between smallholders and logging companies, sawmills or other buyers. They operate below the 'official' radar, as there is no formal system for registering them or their activities (Albornoz et al. 2008).

Local buyers and sawmills are connected to other actors in urban markets, and it is likely that some of the timber extracted illegally from the indigenous territory is exported by a few plywood and wood manufacturing companies as wood originating from areas under sustainable management. There are several plywood industries working in the region which represent an important proportion of the timber demand which absorbs the supply of communities and informal loggers (BOLFOR II 2007). Therefore, since illegal timber tends to be legalized through different ways, it is extremely difficult to differentiate how these different circuits work in practice.

Resurgence of agro-extractive communities

The northern Bolivian Amazon has been one of Bolivia's more remote forest frontiers. It has been changing in recent times with the construction of a road connecting the region to the rest of the country. Historically, non-timber forest products (NTFPs) have been the basis of the region's economy. Initially, in the late 19th century, occupation of the region was driven by the rubber (*Hevea brasiliensis*) boom but later shifted to Brazil nuts (*Bertholletia excelsa*) due to a growing international market for this product (Stoian 2000). Although this region was traditionally dominated by large estates, agro-extractive communities have recently gained communal property rights over large expanses of tropical forest, which were previously in dispute, based on claims to territory traditionally used for Brazil nut gathering. As mentioned, tenure reform process has resulted in the titling of nearly two million hectares of forest in favor of communities (Cronkleton et al. 2009).

These communities have traditional property rights that evolved over time, and the form taken today has been driven by the demands of forest extraction, which is carried out at the household level. Initially rural families were dispersed throughout the forest to facilitate the daily extraction of wild rubber, but with the emergence of greater dependency on Brazil nuts, communities shifted to more nucleated settlements with seasonal occupation of forest holdings during the harvest. This household level production is linked to extensive networks of intermediaries and buyers that provide financing, materials, transportation and storage services to support the harvest and ship nuts to processing plants and abroad to global markets.

The customary property rights claimed by these families are based on a type of 'tree tenure' (Fortmann et al. 1985) which recognizes access rights to individual trees and related infrastructure held by individual households or family groups. Access rights are organized by '*castaña'*, which are clusters of Brazil nut trees connected by trail networks to a base camp. The system does not emphasize control of contiguous territory but only the key resource (Brazil nut trees) and related infrastructure (trails and storage areas). Together the land claims of agro-extractive communities consist of a mosaic of individual rights to *castaños* held by residents. In addition, families claim usufruct rights to plots of land for agriculture as long as the activity does not infringe on neighboring *castaños*. In newer communities, the system may be less defined, but this customary tree tenure is well developed and quite specific even though no formal documentation of these rights exists (Cronkleton et al. 2010).

The Land Law did not bring immediate change to the region as its implementation was hampered by a tense stand off between *barraqueros* and community level producers and their representative organizations. An initial decree in 1999 would have granted the *barraqueros* concessions to 3 to 3.5 million hectares of forest, which would have benefited only about 200 people (Aramayo 2004), sparking protests by smallholders who felt that their customary claims were being excluded. In response to protests, the government shifted course, determining that in Brazil nut producing territories the minimum area provided to *agro-extractive* communities would be 500 hectares per family (rather than the 50 hectares usually granted to smallholders). This area corresponds roughly to the size of a territory traditionally used by families to harvest Brazil nuts. However, rather than attempting to title individual properties, the policy was interpreted so that communities would receive communal properties more or less equivalent to 500 hectares per family. The internal

rules for distributing resources within the property were left to the communities to determine but were assumed to reflect existing practice (Cronkleton et al. 2009).

Some problems have been encountered in defining the boundaries of community land. Boundary markers for communities are placed by INRA with the assistance of residents to delineate the forests they use, while also taking into account the claims of other communities and private property owners. However, if the residents did not understand the process or it was rushed by INRA technicians, the resulting polygon did not always reflect the traditionally used forest area (Cronkleton et al. 2007). While in most areas communities had reached agreement on traditional boundaries that were seen as legitimate due to customary uses, the polygon boundaries have created new conflicts. Depending on how these conflicts are eventually resolved, such circumstances can undermine the legitimacy of the new legal boundaries.

Because some communities occupied lands that were much smaller than the 500 hectares per family standard, and because some communities grew naturally during the years of the demarcation and regularization process, they were allocated additional lands called compensation areas. However, the way in which INRA has defined compensation areas has limited their benefits to communities. Ideally, compensation areas would enlarge community polygons into contiguous areas, which would be easy for the residents to access. Nevertheless, under pressure to complete the process, INRA apparently found it easier to identify land in remote areas. The agency also grouped small communities together for compensation area grants. Since these communities have no tradition of working together, it is not clear how rights should be distributed among them. In addition, the community members learned that there were already families living in the forest with customary claims over the Brazil nut groves. Though they initially expected the government to remove these families, this has not been the case, and in spite of having title, some community members have had to purchase rights from families occupying the land to gain access. Such options are not open to those with fewer resources, however.

Adoption of collective titling for peasant settlements

Peasant agriculture has developed in lowland Bolivia, mainly in northern Santa Cruz, Chapare and northern La Paz linked to conventional colonization schemes initiated in the mid-1960s and lasting until the mid-1980s, when support to spontaneous and directed settlements was cancelled (Eastwood and Pollard 1985; Pacheco 1998). Nonetheless, a vigorous colonization front continued in northern La Paz due to a larger availability of public lands and road development linked to the completion of the route between San Buenaventura and Ixiamas. Although this region is still very isolated due to the long distance to the main city of La Paz, it has become the 'last frontier' where an important number of smallholders has been able to get access to small-sized plots (50 hectares each) in order to develop their agricultural activities for making a living. The region is also occupied by some indigenous groups (i.e., *Tacanas*, *Araonas* and *Esse Ejjas*), and traditional ranchers (Ibarguen 2008).

In the northern La Paz, about 325,000 hectares have been formally granted to landholders as part of the broader process of land regularization. A total of 42 communities of smallholders, mainly composed by smallholder immigrants, have formalized their access to 200,000 hectares. The colonization process initiated in the 1970 and 1980 when a reduced number of smallholders settled in this region, and it expanded during the 1990. Broadly speaking, the

creation of new communities begin with the initial establishment of one or two families that invite afterwards to relatives or members of their communities of origin, often in the highlands, to settle in lands in which no previous occupation was identified. Smallholders, once initiated the occupation, develop a slash and burn agriculture to secure access to food, which is also a common mechanism adopted to justify land occupation (Ibarguen 2008).

After a process of initial occupation, the settlers undertake the fragmentation of the occupied land through the distribution of plots equal to 50 hectares each (since this is the legal size allowed for small-scale farms), and the registration of the community lands in the state land agency (INRA), either as individual or community lands. In the past, however, the communities were impeded to obtain legal access to the claimed lands since they were located in an area classified as a ‘forest reserve’. The land regularization process initiated in the mid-1990s, however, began to admit the tenure demands from smallholder colonists, and initiate the process of demarcation. Yet since INRA faced many technical and financial constraints to undertake the titling process of individual small-sized plots, a more simplified method of collective titling was adopted consisting on registering the individual plots, demarcating the community boundaries and issuing a collective title to the name of the social community organizations created to submit the claim (Ibarguen 2008).

With the approval of the ‘adjusted Land Law’ in 2006, the latter process was officially adopted, and the INRA began to grant only collective tenure rights. In practice, however, the settlements comprise tenure arrangements under which each household have access to an individual plot, whose ownership is legitimized through the internal social organization. Nonetheless, while individual ownership is clear for determining access to land, it is not so for defining access to forest resources. Often smallholders carry out operations in their own plots, but also they encroach the plots of other smallholders, or public lands outside of their community lands, to carry out small-scale logging operations. It is noteworthy that most of the forests that smallholders had access to in their plots are facing some stage of degradation since they were already intervened by timber companies (Cronkleton et al. 2009).

An important portion of smallholders’ income originates in small-scale logging, a major part of which is carried out outside of the law. Since it is not realistic to develop forest management plans under 20 years harvesting cycles in small-sized plots, often logging inside smallholders’ plots is undertaken by following the legal steps corresponding to ‘forest plans in landholdings less than 200 hectares’ which lead to the harvesting of all the valuable timber available in the plot. Yet, due to the lack of operational financial resources, smallholders are dependent on intermediaries, local loggers and sawmill owners, who in many cases undertake the forestry operations on their own in the smallholders’ plots, which result in relatively small economic benefits flowing to smallholder colonists (Ibarguen 2008). The need to capture additional rents from forest resources extraction, leads in some cases to smallholders to occupy new lands, thus stimulating further the frontier expansion.

A portion of smallholders constitute more specialized sawyers, thus tend to depend more on incomes from small-scale logging operations that conduct in public lands—some of which are protected areas—or other smallholders’ lands. Often they extract some more valuable timber species that have a higher price in the local market. This type of illegal logging is to large extent supported by well developed networks of intermediaries that provide a rapidly expanding small-scale timber manufacturing industry in the city of La Paz, and some large-scale processing industry located in the same city (Ibarguen 2008). The analysis of the

linkages and interactions between the formal and informal timber markets are beyond the scope of this work.

5. THE CHALLENGES FACING THE LOCAL ACTORS

Land reforms have been critical to clarify the rights of community groups—including indigenous people and some smallholders dependent on forest resources—to land and forests in lowland Bolivia. However, these reforms have not necessarily led to enhance the management and governance conditions of forest resources in the common-property commons, nor the livelihoods of the people depending on such resources, though the outcomes varies across and within the common-property forests. The latter is in part related to restrictive and little flexible forest management regulations which have not been accommodated to the different local realities faced by the different groups depending on common-property forests such as indigenous lands, agro-extractive communities, and peasant settlements. Yet outcomes are also related to the diverse market conditions in which these different groups of actors tend to interact, most of them largely dominated by strong informal networks.

For forest commons under control by indigenous people, main positive outcome of the reforms have been the progress made towards the recognition in the statutory law, of the collective rights of indigenous people over the land and forests that they have traditionally occupied over time, supported through a formal process of land regularization which, however, has been quite slow and bureaucratic. Nonetheless, the limited political power that these groups have in practice, mainly at the local level, has impeded them in all cases to exert effective control on their resources, and to benefit from them. The latter has also been related to the difficulties for creating new or adapting current institutions to undertake sustainable forest management in the context of growing commercial pressures from timber markets. Thus, TCOs closer to forest and agricultural frontiers tend to become more exposed to these pressures, and need to invest more efforts to effectively manage them.

Indigenous people, therefore, face three types of challenges to managing and governing their common-property forests. The first is the challenge of making a sustainable use of the natural resources through implementing traditional extraction management systems, or to fall in a more intensive and commercial use of the forests due to the pressure originated in timber markets. Since indigenous people have been granted collective titles, they are also facing the challenge of how to create organizations and institutions that are able to protect the common use of the land, since there are internal actors that are creating pressure to individualize, making use of informal mechanisms, the forestlands that were titled. The third is related to the defense of the acquired rights from other actors, who may consider that indigenous people have become the new large-scale landholders in the country. Thus, indigenous people need to demonstrate that the lands they have accessed are used in a sustainable way allowing for their social and cultural reproduction.

Agro-extractive communities have also benefited from collective land titling, but through a process that largely neglected their local tenure arrangements devised not only to secure access to land but to NTFP, notably Brazil nuts. In spite of that fact, land regularization facilitated the resolution of disputes with land estates and forest concessions. Nonetheless, forestry regulations inspired on large-scale commercial

forestry tended to reinforce the abandonment of NTFPs, and introduced unnecessary complexity, time and transaction costs to access formal timber markets. Thereby, sustainable forest management, according to the formal regulations, was difficult to implement in practice, primarily due to the prevalence of conditions in which communities depend on multiple systems of forest resources use.

Two are the challenges that face agro-extractive communities to manage and govern their forest commons. The first is how smallholders depending on multiple systems of forest management are going to maintain their local tenure and forest use arrangements which allows for the recognition of individual/family rights to access land and NTFPs while adopting the boundaries demarcated by INRA as a way to exclude third-parties and defend their property rights. The second challenge is how to negotiate the actual land occupation versus the formally titled collective rights in a way that ensure equitable individual/family rights to land, and do not perpetuate the power of some influential groups inside the communities. The future of the forest commons under agro-extractive communities will depend, to a large extent, on the way in which the challenges emerging from these two dilemmas are solved.

In turn, smallholders that acquired access to land through collective titling may have the chance to make a living from agriculture and forest-based livelihoods, but it will be difficult under the current forestry regulations. It is known that schemes of land occupation under small-size individual plots inevitably lead to convert forested lands to agricultural land-uses to sustaining the livelihoods of rural households. Yet nothing ensures that collective titling of forested lands will contribute to protect forest uses if actual land occupation is organized through individual/family arrangements, with no access to common lands, and in conditions under which forest resources contribute little to smallholders' livelihoods. These types of tenure arrangements impede to develop sustainable forest management under minimum levels of profitability, thus forest operations are only aimed to acquire some incomes to fulfill some short term cash needs, thereby leading to a more rapid exhaustion of available timber.

The challenge that smallholders face under collective access to forested lands are three-fold. The first is how to build social organizations able to negotiate the individual/family interests with the need to maintain collective access to forested lands in the long run. The second is related to how to organize the access and management, beyond the individual plots, whether the forest resources want to be protected as a sustainable source of income streams over time, and the third challenge is linked to how to balance agricultural- and forest-based activities under market conditions that demand more intensive land-use interventions. The future of forests under collective settlements will depend on how these dilemmas are solved.

The new administration who came to office in 2006 is attempting to create a new model of forest governance under the mandates of the NPC. This model is embedded in an approach of integrated management of forests. The emerging will, in theory, attempt to promote diverse local knowledge and plural social practices of local forest users in the use and management of their forests. Furthermore, there are debates to promote local approaches to local territorial development based on actors' common economic and ecological visions, which in part have been advanced by some indigenous groups. In addition, the new model of forest management will require to effectively articulating the four autonomous levels of governance in order to intervene jointly in the development of economic initiatives to promote integrated land and

forest management in tune with the aims of forest conservation. These reforms expected in the policy frameworks, if any, will decisively influence on the way in which local actors (e.g., indigenous people, agro-extractive smallholders, and peasant colonists in forested lands) will solve the specific challenges and dilemmas they face to enhance the management and governance of their forest commons.

6. CONCLUSIONS

This paper reviews the different common-property forests that are present in lowland Bolivia linked to some specific actors, namely: indigenous people, traditional smallholders dependent on agro-extractive activities, and peasant colonists settled in forested lands. These actors manage their forest commons under different tenure arrangements that to different degrees have been acknowledged in the statutory law, and in some cases collective access has been promoted by land regulations. We argue that the outcomes for forests and people depend of the interactions between policy regulations for forest resources use and specific market conditions, under different local institutional conditions that shape specific forest resources use.

While top-down land regularization has created conditions for the defence of local rights in the face of growing competition for land with more powerful interests and actors, it has also created sources of potential conflict since the formalization of rights has not been accommodated to specific local realities, thus leaving important dilemmas for communities to solve to enhancing the governance of their commons. Furthermore, forest regulations have promoted homogeneous models of forest management, imposing significant constraints for communities, and little space for adapting their traditional systems of management to the regulations. Furthermore, market conditions, which often demand some economies of scale, and specific timber species, impose greater challenges to smallholders and communities. Due to legal, market and institutional conditions, these smallholders and communities tend to engage informally in timber markets, with effects on limiting the benefits they obtain from their forests. These actors will likely not be able to reverse these conditions without a more active support from state in accommodating forestry norms to local realities, providing economic incentives for forest management, developing innovative local arrangements, and reversing market asymmetries.

While the current Bolivian administration has promised significant changes to the forestry regulations, these changes are not taking place yet. However, the approval of a new Political Constitution which consolidates the process of decentralization and political autonomies will require adjusting the legal frameworks governing natural resources management, and forests, which will likely enable local governments, including indigenous governments and other community actors, to enhance their power decision-making over forest resources management. It is still uncertain the magnitude of these changes, and their implications on the forest commons.

REFERENCES

- Albornoz, Marco, Peter Cronkleton, and Marco Toro. 2008. Estudio Regional Guarayos: Historia de la configuración de un territorio en conflicto. Santa Cruz, Bolivia: CEDLA, CIFOR.
- Andaluz, Antonio, and Richard Mancilla. 2006. Analisis preliminar nacional sobre gobernabilidad y cumplimiento de la legislación en el sector forestal de Bolivia. Washington, DC: The World Bank.
- Andersson, K., and C. Gibson. 2005. Municipal Politics and Forest Governance: Comparative Analysis of Decentralization in Bolivia and Guatemala. *World Development*.
- Andersson, Krister. 2002. Explaining the Mixed Success of Municipal Governance of Forest Resources in Bolivia: Overcoming Local Information Barriers. Washington, D.C.: Natural Management Resources - World Bank.
- . 2003. What Motivates Municipal Governments? Uncovering the Institutional Incentives for Municipal Governance of Forest Resources in Bolivia. *Journal of Environment & Development* 12 (1):5-27.
- Aramayo, J. 2004. La reconstitución del sistema barraquero en el Norte Amazonico: Analisis jurídico del Decreto Supremo N°27572. Santa Cruz, Bolivia: CEJIS.
- Benneker, Charlotte. 2008. Dealing with the State, the Market and NGOs: The impact of institutions on the constitution and performance of Community Forest Enterprises (CFE) in the lowlands of Bolivia, Wageningen University, Wageningen, the Netherlands.
- BOLFOR II. 2007. Memoria: Primer taller de análisis sobre la cadena de la madera en la región de Guarayos, Ascensión de Guarayos, 1º al 2 de junio de 2006. Santa Cruz: Proyecto BOLFOR.
- Chavez, Franz. 2009. Informe sobre Distribución y Redistribución de Tierras. La Paz, Bolivia: Instituto Nacional de Reforma Agraria.
- Cronkleton, P., M.A. Albornoz, G. Barnes, K. Evans, and W. de Jong. 2010. Social geomatics: participatory forest mapping to mediate resource conflict in the Bolivian Amazon. *Human Ecology* 38 (1):65-76.
- Cronkleton, P., C. Gönner, K. Evans, M. Haug, M. A. Albornoz, and W. de Jong. 2007. Supporting forest communities in times of tenure uncertainty: Participatory mapping experiences from Bolivia and Indonesia. In *Poverty Reduction and Forests: Tenure, Market and Policy Reforms*. Bangkok, Thailand.
- Cronkleton, P., P. Pacheco, R. Ibargüen, and M.A Albornoz. 2009. *Reformas en la tenencia forestal en Bolivia: La gestión comunal en las tierras bajas*. La Paz, Bolivia: CIFOR, CEDLA, RRI.
- Cronkleton, Peter, and Pablo Pacheco. 2008. Communal tenure policy and the struggle for forest lands in the Bolivian Amazon. In *The 12th Biennial Conference of the The 12th Biennial Conference of the International Association for the Study of Commons*. Cheltenham: IASCP.
- Eastwood, D., and H. Pollard. 1985. The Development of Colonization in Lowland Bolivia: Objectives and Evaluation. *Boletín de Estudios Latinoamericanos y del Caribe* 38:61-83.
- Fortmann, L., J. Riddell, and J. Bruce. 1985. Trees and tenure: An annotated bibliography for agroforesters and others. University of Wisconsin: Land Tenure Center.

- Hernández, I., and D. Pacheco. 2000. *La Ley INRA en el Espejo de la Historia: Dos Siglos de Reformas Agrarias en Bolivia*. La Paz: Fundación TIERRA.
- Hunnisett, Gary. 1996. *The Forest Sector and Deforestation in Bolivia*. La Paz: The World Bank.
- Ibarguen, Roberto. 2008. *La última frontera y las comunidades de pequeños parcelarios en el norte paceño*. La Paz, Bolivia: CEDLA, CIFOR.
- INRA. 2009. *Procedimiento para la Dotación de Tierras Fiscales (Versión Preliminar)*. La Paz, Bolivia.
- Martínez, J. 2000. *Atlas territorios indígenas en Bolivia: Situación de las tierras comunitarias de Origen (TCOs) y procesos de titulación*. Santa Cruz: CPTI-CIDOB.
- MDRAYMA. 2008. *Política Nacional para la Gestión Integral de los Bosques*. La Paz: Ministerio de Desarrollo Rural, Agropecuario y Medio Ambiente.
- MDS. 2005. *Políticas de tierras para el desarrollo sostenible y la conservación*. La Paz, Bolivia: Viceministerio de Tierras.
- Morales, Miguel, Vera Gianotten, Diego Pacheco, and Susana Rivero. 2009. *Informe de Evaluación del Instituto Nacional de Reforma Agraria (INRA)*. La Paz: INRA.
- Muñoz, Jorge. 1996. *Access to Land and Rural Poverty in Bolivia*. In *Bolivia: Poverty, Equity and Incomes*. Washington DC: The World Bank.
- Murphy, James T., and Seth Schindler. 2009. *Globalizing development in Bolivia? Alternative networks and value-capture challenges in the wood products industry*. *Journal of Economic Geography* doi:10.1093/jeg/lbp059.
- Pacheco, P. 1998. *Estilos de desarrollo, deforestación y degradación de los bosques en las tierras bajas de Bolivia*. La Paz: CEDLA, TIERRA, CIFOR.
- . 2003. *Municipalidades y participación local en la gestión forestal en Bolivia*. In *La gestión forestal municipal en América Latina*, edited by L. Ferroukhi. Bogor, Indonesia: Center for International Forestry Research, International Development Research Center.
- . 2004a. *Law Compliance: Bolivia Case Study*. Rome, Italy (unpublished draft): Forestry Department, FAO.
- . 2004b. *What Lies behind Decentralization? Forest, Powers and Actors in Lowlands Bolivia*. *European Journal of Development Research* 16 (1):90-109.
- . 2005. *Decentralization of forest management in Bolivia: who benefits and why?* In *The politics of decentralization: forests, people and power*, edited by C. Colfer and D. Capistrano. London: Earthscan.
- . 2007a. *El nuevo régimen forestal boliviano: una mirada retrospectiva a diez años de su implementación*. *Recursos Naturales y Ambiente* 49:58-67.
- . 2007b. *Enfoques forestales homogéneos para actores diversos: la encrucijada del manejo de bosques en Bolivia*. Documento de Trabajo. La Paz, Bolivia: PNUD.
- Pacheco, P., D. Barry, P. Cronkleton, and A. Larson. 2008. *The role of informal institutions in the use of forest resources in Latin America*. Bogor: CIFOR.
- Pacheco, P., W. de Jong, and J. Johnson. 2010a. *The evolution of the timber sector in lowland Bolivia: Examining the influence of three disparate policy approaches*. *Forest Policy and Economics* 12 (4):271-276.
- Pacheco, P., J. Johnson, and D. Pacheco. 2010b. *Land and forest reforms in lowland Bolivia: Analyzing the outcomes from policy design and implementation*. Paper read at XXIII IUFRO World Congress, August 23-28, 2010, at Seoul, Korea.

- Pacheco, P., E. Ormachea, P. Cronkleton, M. A. Albornoz, and L. Paye. 2009. Trayectorias y tendencias de la economía forestal extractiva en el norte amazónico de Bolivia. La Paz, Bolivia: CIFOR/CEDLA/RRI.
- Pacheco, P., and N.S. Paudel. 2010. Communities and forest markets: Assessing the benefits from diverse forms of engagement. In *Forests for people: Community rights and Forest Tenure Reform*, edited by A. Larson, D. Barry and G. Dahal. London: Earthscan.
- Pattie, P., and P. Rojas. 2003. Análisis de la Patente Forestal por Superficie. Santa Cruz, Bolivia: Proyecto de Manejo Forestal Sostenible BOLFOR.
- Pokorny, Benno, and James Johnson. 2008. Community forestry in the Amazon: The unsolved challenge of forests and the poor. In *Natural Resources Perspective No. 112*. London: Overseas Development Institute, ODI.
- Rojas, G. 1996. *La participación popular: avances y obstáculos*. La Paz: Secretaría de Participación Popular.
- Ruiz, S.A. 2005. Institutional change and social conflicts over the forest use in the Northern Bolivian Amazon, *Freiburger Schriften zur Forst- und Umweltpolitik* (10), Freiburg, Germany.
- SF. 2007. Informe Anual 2006. Santa Cruz, Bolivia: Sistema de Regulación de Recursos Naturales Renovables.
- Stocks, Anthony. 2005. Too much for too few: Problems of Indigenous Land Rights in Latin America. *Annual Review of Anthropology* 34:85-104.
- Stoian, D. 2000. Variations and dynamics of extractive economies: the rural urban nexus of non-timber forest use in the Bolivian Amazon. PhD dissertation, University of Freiburg, Freiburg.
- Stolz, Rainer. 1986. Posibilidades de utilización de los recursos forestales tropicales del norte y este de Bolivia considerando aspectos ecológicos. Bonn, Alemania: FGU-KRONBERG CONSULTING.
- Vallejos, C. 1998. Ascensión de Guarayos: indígenas y madereros. In *Municipios y Gestión Forestal en el Tropic Boliviano*, edited by P. Pacheco and D. Kaimowitz. La Paz, Bolivia.
- World Bank. 1993. Bolivia. Forestry Subsector Review. Washington, D.C.: World Bank, Latin America and the Caribbean Regional Office.

Table 1. Synthesis of land tenure and forest regulations implemented in Bolivia

Actor types	Land and forest rights and regulations			
	Private landholdings	Indigenous/ community lands	Large-scale forest concessions	Forest concessions to local users
<i>Tenure rights</i>				
Access	Landowners need to fulfill a social and economic function to acquire access, title the land, and maintain the right	Access and titling is subject to a process of identification of land needs for each indigenous group	Public forest is granted through long-term forest concessions (40-year period) renewable every five years	Municipalities allocate 20% of public forest in municipal reserves to allocate as concession to local users
Exclusion	Rights to exclude	Rights to exclude	Rights to exclude	Rights to exclude
Alienation	Rights to transfer improvements	No rights to alienate	No rights to alienate	No rights to alienate
<i>Decision-making rights</i>				
Forest clearing	Clear cutting is permitted in areas classified for agricultural use, and specified in land use plans for the parcel	Clear cutting is permitted in areas classified for agricultural use, and specified in the area management plan	Not allowed clear cutting in forest concessions	Not allowed clear cutting in forest concessions
Commercial logging	Logging is permitted in private forestlands previous formulation and approval of FMP	Exclusive right to use forest resources within titled areas, but mandated to formulate and approve a FMP	Mandated to formulate and approve a FMP and annual operation plan / same for Brazil nut extraction	Mandated to formulate and approve a FMP and annual operational plan
Non-commercial extraction	Not required the approval of a FMP	Not required the approval of a FMP		
<i>Tax collection systems</i>				
Land taxes	Self-valuation system / smallholders are exempted	Exempted from taxation system		
Forest taxes	Extraction fee based on the annual intervened area (US\$ 1 per ha) Forest clearing fee equal 15 times the extraction fee	Based on the annual intervened area (US\$ 1 per ha). Do not pay the regulation fee	Based on the annual intervened area (US\$ 1 per ha) plus a regulation free of 35 UFV	Based on the annual intervened area (US\$ 1 per ha) plus a regulation fee of 20 UFV

Notes: FMP = Forest Management Plan; UFV = House Foment Units (it is a financial index which accounts for the level of inflation in the country). Based on Land Law (No. 1715, 2006), and Forest Law (No. 1700, 1996). Taken from Pacheco et al. (2010b)