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Indigenous Land Tenure Insecurity Fosters Illegal Logging in Nicaragua

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Summary—Titling of Indigenous common-property lands in eastern Nicaragua is a necessary base for forest management. Titling alone will not be sufficient to assure sustainable practices, and the success of demarcation programmes rests on processes of negotiation leading up to tenure decisions; nevertheless, a review of decades of history in Indigenous territories suggests that key problems in forest resource administration are inextricably linked to tenure insecurities, as explorations of current resource disputes in seven villages demonstrate. Analysis also suggests that ineffective implementation of Nicaragua's multiethnic autonomy fosters illegality and resource mismanagement. Fundamental structural changes to improve inclusion, accountability and transparency are necessary. Remediation also requires inclusive multiscale negotiations of land claims and participatory mapping to resolve tenure disputes.

Keywords—illegal logging, land tenure, Indigenous peoples, decentralised policy terrain, multiscale resolutions

INTRODUCTION

In the North Atlantic Autonomous Region (RAAN) of Nicaragua unsustainable forestry practices spawn from land tenure insecurity and incomplete or conflictive devolution of authority after regional autonomy reforms in 1987. While illicit extraction does not only occur in Indigenous territories or in areas of tenure conflict, illegal hotspots often exhibit both traits. Land titling is not a magic bullet that can eliminate illegal logging, but it is an essential starting point. However, on a cautionary note, tenure insecurity may dampen legal harvests (Bohn and Deacon 2000). Thus, tenure resolution may encourage future commercial extraction, meaning that along with the need to strengthen institutions to carry out socially-equitable titling, reforms are also necessary to assure sustainable forest management (SFM).

Illegality in the forest sector involves a multitude of activities that violate international, national or subnational legislation from the point of initial extraction to the final marketing of timber products (Ravenel and Granoff 2004, World Bank 2006b). It is a dynamic process with complex economic and political roots; as such, it cannot be dealt with merely through punitive measures as practices will continue to evolve to bypass norms (Casson and Obidzinski 2002). There may be justifiable interests that spur illegal logging, especially in areas of tenure insecurity. Moreover, inappropriate or unrealistic policies may make seemingly legitimate activities illegal. Simultaneously, forest sector corruption, defined as the unlawful use of public office for private gain (Smith and Walpole 2005), can lead to cynicism about and even outright rejection of governmental authority to oversee extraction. These caveats all exist in eastern Nicaragua and while they are often supported by legitimate criticisms of individual and institutional practices they are also grounded in tenure conflicts whereby Indigenous leaders have historically challenged state jurisdiction over their traditional lands (Offen 2003b, 2005).

Since the impact of tenure security on forest clearance differs from place to place (Godoy *et al*. 1998), researchers must pay specific attention to local and regional opportunities and constraints. During three years of fieldwork in a series of RAAN Indigenous villages, the author observed multiscale causes and consequences of both tenure conflict and illicit logging (Brook 1999, 2005, Finley-Brook 2007a). Solutions will require attention to various scales (e.g., international, national, regional, municipal, village, household) as well as multiple sectors (e.g., state, donor, nongovernmental organisation (NGO), private firms, Indigenous peoples, migrant populations). Forest policy in eastern Nicaragua has generally been determined at the national level, often after international consultation, without sufficient prior knowledge of local tenure regimes and livelihood activities. Policy incompatibilities developed across decades contributed to an illegal logging crisis starting in 1990 and continuing to the present. Illegal extraction has repeatedly spurred the Nicaraguan state to impose temporary moratoriums on extraction of target species or illegal hotspot locations, such as the RAAN, in an attempt to regain administrative control. Yet, moratoriums are drastic measures that can have unintended consequences, such as encouraging greater illegal harvest, over harvesting and corruption (Ascher 1999).

While there has been a log export ban in place in Nicaragua for more than a decade, 95% of logs were exported unprocessed in 2006 (Bodan 2006). Forest policy changes in 2003 to increase domestic processing capacities have not made the gains expected in the RAAN partially due to tenure insecurities. Logging firm owners openly admit an unwillingness to locate mills in Indigenous territories due to fear of sabotage from disenfranchised local populations (pers. comm. 10/12/02, 11/07/02, 05/23/03).[1] Poor transportation, communication and electricity infrastructure in the region is another investment disincentive that stems from the historic economic marginalisation of Indigenous populations.

High rates of illegal export cannot be explained by racial inequality alone, although much illicit timber escapes from inadequately developed port towns in the country's east where minority populations are concentrated. Nevertheless, national statistics suggest corruption and mismanagement inundate the domestic forest sector as a whole. In 2003, as much as 80 percent of exported lumber was believed to be laundered. Richards *et al.* (2003) calculated the annual direct fiscal loss from illegal logging in Nicaragua to be $2.2-4.0 million and noted that revenues from illegal activities were likely to be expatriated through foreign lumber intermediaries from countries like Honduras, Costa Rica, El Salvador, and the Dominican Republic.

Academic attention to the RAAN forest sector has been insufficient. While the national sector has not been widely covered either, there has been increasing analysis in recent years. Richards *et al.* (2003) summarise illegal logging in Nicaragua and Honduras, although not focusing specifically on Indigenous territories. Legalisation of illicit lumber is possible at many points during extraction, transport, and processing. Those responsible for oversight during the harvest and movement of lumber, namely forestry officials, the police, and the army, accept bribes at transport checkpoints created to deter illegal trafficking and increase state collection of taxes and fees. As it was frequently explained to the author by state officials and the general public alike, this generally involves the acceptance of missing, tampered or reused transport or extraction

[1] The author translated all personal communications from Spanish.

permits, but may also include camouflaging illegal timber among legal species or other commodities.

Lumber merchants interested in illegal wood are attracted to the complex policy environment in eastern Nicaragua as the involvement of multiple scales and various sectors makes monitoring difficult and leaves openings for arbitrary interpretation, as will be shown with examples of village approval processes. INAFOR foresters are responsible for large tracts of forest in areas where law enforcement is weak. One individual, who was responsible for six out of the seven case study villages, admitted being unwilling to strictly enforce forestry laws with mill operators that have a history of violent behaviour due to fear for his own personal safety (pers. comm. 10/22/02).

The need for multiscale analysis in eastern Nicaragua is clear. National policies have significant repercussions for regional and local processes. Meanwhile, international sources contributed 85 percent of national forest sector funds between 1991 and 2004 (Guevara 2004). Foreign land demarcation funding, such as those distributed through the $32 million World Bank Land Administration Project (2002-2008), is similarly high. Yet, while drawing attention to international and national processes, this work focuses on the decentralised policy terrain at the subnational level arguing that lack of understanding of these processes is a major constraint for land and resource programmes.

Results from various local sites as well as regional analysis over a range of time may assist in the formulation of culturally-sensitive policies that can simultaneously advance SFM and social justice. While multisite case studies such as the seven presented here are important for understanding local ramifications, cross-national comparisons supplement this critique as they address a wider range of situations. The author draws from Bohn and Deacon (2000) and Amacher *et al*. (in press) in reference to changing governance and tenure regimes, from Contreras-Hermosilla (2003a, 2003b), Ravenel and Granoff (2004) and World Bank (2006b) on illegal logging, and from Colchester (2004) on issues of Indigenous rights. Multitemporal studies are also necessary as historical analyses can help explain current impediments (Larson and Ribot 2007). Thus, the objectives of this work are (a) to place recent village-based observations in broader theoretical, temporal and geographical contexts; (b) to examine policy developments in Nicaragua to highlight the roots of maladapted practices and current decision-making processes; and (c) to provide suggestions for remediation. In searching for solutions, a focus on conflict management is determined to be insufficient: it is increasingly necessary to identify underlying structural constraints in order to resolve conflict (Colchester *et al.* 2003, 2006, Larson and Ribot 2007).

Research Methods

This paper utilises data from primary and secondary sources gathered over twelve years, including three years of fieldwork in a series of Indigenous villages. Research throughout 2002 and 2003 consisted primarily of participant observation, household surveys and analysis of ten community forestry projects. The author interviewed 287 individuals in the forestry sector, including foresters, loggers, inspectors, lumber intermediaries, company owners, state officials, NGO representatives, foreign donors, and Indigenous leaders. Some of the richest data collection resulted from observation of community meetings as well as forums for decision-making or reporting at the regional and national levels.

Villages located in the forested interior of the RAAN were selected for in-depth analysis. The most attention was granted to Alamikangban, where the researcher lived. Fifty household surveys on forest governance were completed in this village, signifying coverage of more than thirty percent of the households. Significant attention was also devoted to the proximate villages of Tasbapauni, Tungla, Klarindan, Las Crucetas, Layasiksa, and Wasakin. All these villages experience tenure insecurity and became hotspots for illegal logging starting in the 1990s. They later hosted foreign-sponsored forest development initiatives.

In addition to focus on local process, this research required particular attention to the intermediary subnational scales, as other researchers working on similar issues in autonomous regions have suggested (McCarthy 2002, Ashley *et al*. 2006). In order to obtain multiscale perspectives, extended periods of research were completed in the municipal[2] and RAAN seats of governance as well as the national capital. The 287 interviews can be broken down by scale: village (25.4%), village bloc (3.1%),[3] municipal (12.2%), regional (22.0%), national (20.2%), and international (17.1%) and by sector: Indigenous (30.7%), state (28.9%), NGO (22.0%), private (16.3%), and other (2.1%).

The author returned to Nicaragua for a month from 2006-2007 to update earlier findings. She again sought interviews and information from multiple scales and various sectors. Collection of state, NGO, media and aid agency reports continues to supplement fieldwork data.

LATIN AMERICAN LAND TENURE PROGRAMMES

Programmes for the formalisation of tenure rights, often called land 'regularisation', exist throughout Latin America (World Bank 2006a, Deininger 2005). Tenure stabilisation programmes are tied to the premise that resource commerce, land markets, and investment security require formally titled, measured, and regulated properties (Figure 1). Many programmes primarily aim to strengthen the legal and institutional framework for land registry and cadastre services; however, titling programmes may also partner social goals, such as rural development, urban services, poverty reduction, or gender equity though joint titling (World Bank 2006a, IDA/World Bank 2007).

Figure 1: Land Administration Project Justifications

Category	Related Objectives
Administrative effect	• Increase efficiency, cost-effectiveness, transparency and accessibility of land administration systems • Improve rates of property rights registration • Expand the operation of financial markets
Security effect	• Increase productivity and rates of return from land • Improve the sustainability of resource management • Institutionalise conflict resolution mechanisms • Increase equity through increased bargaining power for

[2] Municipalities in eastern Nicaragua involve a seat (large village or small city) surrounded by dozens of small indigenous and non-indigenous villages.

[3] Blocs of shared resource governance among proximate villages are customary in some parts of the RAAN.

	traditionally marginalised social groups
Collateral effect	• Enhance the access of producers to credit • Reduce the real cost of borrowing
Transaction effect	• Develop real estate and rental markets • Provide a base for payment of environmental services

Subcomponents of Latin American land administration programmes often focus on Indigenous and Afro-descendent territories due to the widespread problem of tenure insecurity. Administration improvements in these territories often targets natural resource management. While structuring payments for environment services (e.g., carbon storage, oxygen production, and pollutant filtration) in Indigenous territories is a current concern, there may be less need for real estate transactions in these areas than in other types of tenure regimes. In eastern Nicaragua the transfer of Indigenous lands is strictly prohibited and these territories are inalienable through sale, rental, or seizure.[4] This may limit the use of collective property as collateral, given that loan originators could not leverage property in lieu of payments.

Sensitivity to the cultural implications of property rights change is necessary (Ashley *et al*. 2006). Indigenous systems have particular traits that have received preliminary attention in land administration literature (e.g., Deininger 2005, World Bank 2006a); nevertheless, attention to customary norms is usually a minimal part of broader studies. While the understanding of local processes usually remains insufficient, the transfer of land administration policies from country to country has been widespread based on the advice of foreign consultants (Offen 2003a, 2003b, 2005).

Collectively-managed lands and areas with customary tenure norms require special consideration. Customary systems often exhibit bundles of rights whereby multiple parties claim specific resources, such as water, medicines, fodder or timber (Wiebe and Meinzen-Dick 1998). Usufruct rights defining the use of agro-forestry resources within common-property areas may be based on gender, ethnicity, kinship or status. There are often overlapping formal (*de jure*) and informal (*de facto*) rights, which may or may not be held up in a court of law (Schlager and Ostrom 1992).

Indigenous Land Tenure in Eastern Nicaragua

Indigenous territoriality in eastern Nicaragua is based in a long history of self-governance under the Miskitu Kingdom in partnership with British allies well before incorporation into the Nicaraguan state in 1894. Current land politics combine historical claims, including those from Indigenous titles granted to small areas by a short-lived Titling Commission in the years following the 1905 Harrison-Altamirano Treaty,[5] and new terms created by the 1987 Autonomy Statute (Dana *et al*. 1998; Offen 2003b, 2005). The Statute arose out of conflict between multiethnic populations and the state in the 1980s. The Sandinista Administration agreed to complete a survey of eastern Nicaragua as a preliminary base for broad land titling. However, the Indigenous-produced map claimed ownership to much more than what the Sandinistas anticipated (Hale 1994). As Indigenous discourses consolidated around the need for historical vindication of land and

[4] Current state policies noted later encouraging Indigenous land rental are in direct violation of this norm.
[5] The British-Nicaraguan treaty established procedures for land titling; thirty collective titles were defined as a result.

resource rights, the relationship between the Sandinistas and Indigenous leaders became increasingly conflictive. State concerns led to the arrest of several Indigenous leaders in 1981. Upon their release from prison these leaders instigated a massive relocation to Honduras; underlying tensions escalated into open guerrilla combat and civil war.

In 1987 the Sandinista government granted political autonomy to eastern Nicaragua, partially as a means to quell violence, after consultation with all five regional ethnic populations (Hale 1994, Cunningham and Barbeyto 2001). The Miskitu, Mayangna, and Rama are Indigenous peoples while the Creole and Garifuna are Afro-descendent populations. The interior of the RAAN, covered in this research, hosts the two most populous ethnic groups in eastern Nicaragua, the Miskitu and Mayangna.

The Autonomy Statute created North and South Atlantic Autonomous Regions, which combine to cover nearly 50 percent of Nicaragua but contain less than 11 percent of the total national population (Roldan 2001). The Statute was adopted into the national constitution and it recognised common-property land tenure as well as other cultural and economic rights. It stated that Indigenous populations would benefit from resource extraction from their territories, but in accordance with national development, which has taken precedence over local demands partially due to population imbalances between eastern and western Nicaragua.

Communal land holdings dominate the landscape in eastern Nicaragua (Dana *et al*. 1998). These lands fall under the broad category of common-property tenure (*sensu* Ostrom 1990) due to shared resource use and governance. Nevertheless, the situation in eastern Nicaragua is highly dynamic and violates the basic characteristics of robust common-property institutions, which Ostrom defines as requiring clear boundaries and membership. Schlager and Ostrom (1992) suggest that generally communal lands may support the right of management (to regulate internal use patterns), but not the rights of exclusion (to determine who will have access) or alienation (to sell or lease lands). However, it should be noted that communal systems in Asia, Africa and Latin America may be significantly different, making it difficult to define international 'best practices' for demarcation or resource management (Fitzpatrick 2005).

The inability to exclude others can be a major constraint to sustainable resource use. Migration often increases resource extraction pressure (Amacher *et al.* in press), such as in frontier region along the interior of eastern Nicaragua where colonists enter the Indigenous periphery from the heavily populated *mestizo*[6] core. Logging was used to demonstrate tenure, as clearing land is seen an 'improvement' and could make a settler eligible for an agrarian reform title. However, under the 2003 Demarcation Law, it was determined that all settlers that had arrived within untitled land after 1987 would need to arrange a rental contract with Indigenous 'owners' in order to stay on the land, or if they chose to leave could sell it and any improvements back to villages. While few steps have been taken toward implementation of the Demarcation Law, processes are even more conflictive than they had been prior to this policy shift, which is viewed widely by colonists as unfair. Indigenous leaders would like migrants to leave, but they remain uncertain where to find funds to indemnify colonists for property (pers. comm. 12/20/06).

New tenure policies aimed at enhancing tenure security may actually contribute to greater conflict if they lack implementation procedures, a major problem in eastern Nicaragua. Legislative shifts often falter for years before the state drafts the *reglamentos*

[6] Mestizos have mixed European and Indigenous ancestry.

(codes) that mandate how it will be enforced, leaving procedures open to interpretation. The reglamentos of the 1987 Autonomy Statute were undefined for fifteen years. Nevertheless, the initial Autonomy Statute did reinforce traditional governance in the form of the *sindiko* (natural resource and land overseer), *wihta* (judge), and Council of Elders, and these leaders were slowly brought into state forest permitting processes, with mixed results. Only the signature of the sindiko was legally necessary in subsequent forestry norms. Contreras-Hermosilla (2003b) has noted that reducing the scope of individual control is often important to limit illegality. In the case of village sindikos, decision-making transitioned from community-based public forums to clandestine negotiations whereby firms transported the sindiko to a (semi-)urban center and paid for accommodations before coming away with a signature permitting extraction (Finley-Brook 2007a). In logging concessions in the seven villages under analysis, the researcher consistently found that community members usually did not know if the sindiko had signed any agreement. The few people that were aware of possible contracts did not know how much the sindiko had received for extraction from communal property. With this lack of transparency and accountability, it is no surprise that corruption of sindikos was widespread (Brook 2005).

After fifteen years of mismanagement, subsequent state policies attempted to address the situation, although the 2003 reglamentos of the Autonomy Statute inspired little reform. It was the 2003 Demarcation Law that established a Communal Assembly to oversee commercial resource extraction and a Territorial Assembly to oversee subsistence use. However, entrenched patterns of elite capture were difficult to reverse and competing mandates fed discord. While the Communal Assembly was an important step toward the recognition of customary public decision-making, the continuation of the sindiko's role to sign off on timber extraction exacerbated conflict when the community forum was grafted on top. Moreover, the multivillage Territorial Assembly of communal authorities such as sindikos and wihtas (in contract with the public Communal Assembly open to all members of a single village) did not exist in most locations historically and was formulated by the state without consulting village leaders, which lead to contestation.

New tenure policies may increase conflict if they counter local customs, norms and histories (Deininger 2005). Yet, RAAN customary oversight procedures are also inadequate because they were created when there were not a large number of mestizo colonists, pressure on leaders from large timber concessions providing minimal local employment,[7] or multi-million dollar forest development projects premised upon community participation. These extra-regional pressures make resource governance more complex.

Intra-regional processes are also multifarious. After Indigenous migration in search of wage employment, relocation from war, and changes in village locations after disease outbreaks or natural disasters, current tenure claims are highly dynamic and often contradictory. RAAN perspectives shift depending on a person or household's village alliance, family claim, ethnicity, age, or date of arrival to an area.

[7] There have been large-scale foreign timber concessions in eastern Nicaragua for centuries, but historic concessionaires hired local populations, and therefore maintained popular support, but by law they did not need local approval. Today, companies work through intermediaries or arrive with outside workers and large machinery. If legal norms are followed, they should harvesting permission from the sindiko.

Subnational institutions, specifically named in the 2003 Demarcation Law as the main titling authorities, must demarcate land even though consensus does not exist and there is little experience with conflict resolution. The Autonomy Statute created several regional institutions that were to oversee local processes, but these have been severely underfunded since they initiated in 1990 (Acosta 2007). The RAAN government relies almost entirely on economic transfers from the central government and officials complain that they only receive back a small portion of the resource extraction fees and taxes that are sent to the capital city (pers. comm. 11/13/03). Additional problems, particularly in the initial administrations, arose from near total lack of government experience. A further constraint has been that Indigenous officials have lost the support of traditionalists, who strongly criticise any involvement in party politics, which is required to win regional seats (Brook 2005). Traditionalists point to a long list of compromises that Indigenous politicians have made to pursue political alliances. Meanwhile, civil war hostilities from the 1980s based in land tenure conflict between Indigenous and state sectors have never been adequately redressed. In addition to feeding on-going resentment toward the central government,[8] this has contributed to RAAN polarisation since political parties were active on different sides of the war.

Formal tenure rights for Indigenous populations would lessen central government control over timber concessions as it would supersede the legal fallback that defines all untitled land as state land. In recent years, international institutions have attempted to step in to rectify the Nicaraguan government's violation of Indigenous rights by delaying titling. The Organisation of American States (OAS) insisted on demarcation after hearing the case of the village of Awas Tingni. In the mid-1990s, President Chamorro granted a thirty-year 62,000 hectare timber concession that intercepted the land claims of this Mayangna community (Brook 1999). Villagers brought unsuccessful cases to national and regional courts. Then, working with international lawyers, they took a case to the OAS Inter-American Court for Human Rights arguing that Nicaragua was violating its own laws on Indigenous communal rights as well as international norms protecting Indigenous rights. In 2001, when the Court handed down a sentence in favour of Awas Tingni, an important international precedent was set. In spite the lack of a de jure land title, the Court recognised communal land as a human right for Indigenous peoples and ordered titling of Awas Tingni's de facto claims (Brook 2005).

Six years after the OAS Court's ruling Awas Tingni's territory remains untitled. In a initial national commission (2001-2003) created by the state to negotiate the village boundaries, there were thirteen state lawyers and only two representing the Indigenous village, along with three communal leaders (Brook 2005). This lopsided arrangement led to impasse due to the state's attempt to overpower Indigenous voices.

With the 2003 Demarcation Law, the central government passed Awas Tingni titling over to regional institutions, but disagreement between Mayangna villagers and Miskitu settlers, who arrived through a Civil War resettlement programme, continued to delay resolution. The OAS decision required *saneamiento,* or ethnic cleansing of targeted 'others' from the land claim, which generated conflict between the historical use by Awas Tingni and the more recent land acquisition by two blocs of Miskitu villages known as Tasba Raya and Diez Comunidades. That the OAS only heard the perspective of Awas

[8] There has been some suggestion that these tensions may resurface due to the 2007 inauguration of President Daniel Ortega, who governed during the civil war in the 1980s.

Tingni, in spite of the fact that the other villages were living on the land, shows the need to more fully understand local processes before defining rights.

The Awas Tingni situation is yet another example of the overlap between logging conflict and land tenure discord. The desire to control timber access combined with illegal logging to fuel the land conflict between the two ethnic groups, which at times led to violence (Brook 2005). Until 2007 regional officials were unable to negotiate even an informal agreement between the Miskitu and Mayangna claimants, which demonstrates the necessity for stronger regional institutions, with greater funding to carry out improved participatory consultation with villages and more training in conflict resolution, to deal with problems expeditiously.

THE NICARAGUAN LOGGING SECTOR

The interrelation of tenure conflict and forestry programmes in the RAAN through time shows how self-governance constraints continued well beyond the regional autonomy designation in 1987. There was a reversal of Indigenous power following the military-backed incorporation of the eastern region into the Nicaragua state in 1894. After centuries of Indigenous and British trade, "an influx of American speculators and tropical tramps" came to eastern Nicaragua (Parsons 1955: 54). US mining and logging concessions covered the region until 1979 (Hale 1994): these were determined through the central government without Indigenous consultation. Policy focused on assuring tax revenue to the state and reforestation requirements were routinely avoided with payments to high-level officials (Vilas 1990).

Rapid extraction of big-leaf mahogany (*Swietenia macrophylla*) and Caribbean pine (*Pinus caribea*) in first half of the twentieth century was followed by initial sector development in the 1950s. Plans to modernise forest production consolidated under the National Development Institute (INFONAC), founded in 1953 to funnel international assistance to agriculture and industry (Vernooy *et al.* 1991). By the mid-1970s INFONAC holdings and concessions covered 11 percent of the country (BCN 1974). More than 83 percent of INFONAC holdings were officially considered state lands, yet most INFONAC areas were historically claimed by Indigenous populations (Vilas 1990).

The Northeastern Forestry Project was a major INFONAC programme. With foreign technical support, officials established pine plantations, reforestation, and fire control. The project's central offices were located in the capital city of Managua and the Indigenous populations living in the pine plains were merely hired as workers. Some continued to burn annually to support traditional livelihoods. Burns provide palatable grasses that attract wild game and livestock was set to graze among the trees or in areas that had been deforested and converted to grasslands. In addition, local populations increased their earnings when they were hired to fight the fires they set (Vilas 1990).

After the overthrow of the Somoza dictatorship in 1979, the Sandinista Front for National Liberation (FSLN) confiscated foreign-owned companies. The People's Forestry Corporation took charge of lumber firms, but forestry in the Caribbean region faced land tenure conflict. Indigenous populations demanded proceeds from extraction and denounced the nationalisation of their lands in proposed forest reserves (Sollis 1989). In 1983, after the onset of a civil war, rebels supported by Indigenous populations burned a large area of reforested pine within the Northeastern Forestry Project on lands claimed by local populations. The state tried to continue fire control programmes, but they

eventually ended in 1985 due to lack of funding. Military expenditures for the war were a major drain on state resources.

When the Sandinistas were voted out of power at the end of the 1980s, President Chamorro (1990-1997) initiated neoliberal economic policies to reduce barriers to trade, shrink public expenditures, encourage privatisation, and increase exportation. She granted numerous forestry concessions to foreign companies. In many cases these were located within Indigenous territories, but were granted without consultation with local leaders (de Camino 1997, Brook 2005).

The rate of illegal extraction became so severe that in 1992 Chamorro passed a moratorium on all commercial logging, but the ban excluded permits that had received prior approval. The moratorium did not halt illegal extraction and was soon reversed. By 1996 the National Assembly stepped in to try to limit natural resource concessions after more than a hundred formal requests for exploration and exploitation of mining, fishing, or forestry were made in one month. National councilors passed a law that would have restricted the types and amounts of concessions, but the president vetoed parts stating that it was bad for the economy (Brook 2005). Starting in the mid-1990s, several logging concessions greater than 30,000 hectares in Indigenous territories drew international attention. Local villagers appealed extraction in national and international courts, but cases proved to be slow to remediate problems.

Logging companies commonly maintained legal concessions as a front, but earned most of their profit from supplemental extraction of valuable species outside their permitted areas (Brook 2005). The state began decommissioning and auctioning illegal lumber, but this usually ended up back in the hands of the extractor who had harvest it illicitly, so the auction became known as a method to legalise lumber without completing an expensive management plan.

The next Nicaraguan President, Arnoldo Alemán (1997-2001), continued with large multinational timber concessions. One company, Solcarsa, cut trees outside its approved area, installed a processing plant without corresponding environmental permits, and broke lumber purchasing agreements with Indigenous communities (Controlería General de la República 1998) before the Supreme Court order its concession area to be cancelled due to violations of regional law under the Autonomy Statute (Brook 1999). Two other large RAAN firms, Madensa and Prada, who soon took over Solcarsa's mills and operations, had legal forest harvest areas but preferred to purchase illicit lumber so they did not have to finance a forester to write a management plan and avoided taxes (Brook 2005).

In 1997, the president placed a moratorium on the harvest of three species for five years: big-leaf mahogany, Spanish cedar (*Cedrela odorata*) and pochote (*Bombacopsis quinatum*). According to an INAFOR official, extraction of these species rose as a result of increased profit on the black market; meanwhile, confiscated lumber was auctioned (pers. comm. 10/22/02). Vast numbers of trees were harvested from Indigenous territories. Although the corruption of local leaders was widespread, in many instances harvest occurred without local approval (Brook 2005). Using timber intermediaries, firms funded selective harvest of these species. They also frequently paid mestizo colonists for trees.

After Hurricane Mitch in 1998, an Operative Forestry Plan (POF 98) was passed making it legal to extract blown-down lumber. In the midst of the moratorium, extractors

used POF 98 permits to cut big-leaf mahogany and Spanish cedar. An inventory of damaged trees in either coniferous or broadleaf forests was never carried out. According to an INAFOR official, "POF was put in place because of the moratorium of Alemán. It had nothing to do with [Hurricane] Mitch…most extractors would just arrive with list and they would say that they had more down than they really did" (pers. comm. 10/22/02). POF 98 fees were small compared to the value of the lumber, which was predominately mahogany: $35 per cubic metre. Corruption contributed to loss of state income: the fees collected were only 60 percent of what they should have been (INAFOR 2001a).

When President Alemán cancelled the moratorium he instated the Autonomous Region Plan 2000 (PRA 2000) to legalise vast amounts of harvested mahogany (INAFOR 2001b). In the three months between when PRA 2000 was announced and an inventory of felled lumber occurred, INAFOR officials believe thousands of additional trees were harvested (pers. comm. 10/22/02). They also suggest that foresters recorded higher numbers of trees in return for payment; extractors were then able to cut even more wood (pers. comm. 10/22/02, 12/12/02). Like POF 98, the majority of PRA 2000 applications came from non-Indigenous extractors harvesting in Indigenous territories.

President Alemán created other disincentives to legality. In 1999 and 2001, he increased fees and taxes on the extraction of precious species. He justified this as a means to reduce harvest, but fees for legalising illicit lumber remained low. Illegal extraction was viewed as the most cost-effective option (Richards *et al.* 2003). In contrast, legal operations required costly planning and permitting. Moreover, state approval processes for concessions took months, meaning that companies could miss the short extraction period during the dry season waiting for permits. Since so many operations functioned illegally, firms justified their own illicit behaviors as necessary to compete.

In the midst of these administrative problems, there was an influx of aid into Nicaragua's forest sector in the late 1990s. The World Bank was a main funding source for a Forestry Promotion Office (PROFOR) (1997-2003). While the majority of PROFOR pilot projects involved plantations in the west of Nicaragua, a few Caribbean projects created community sawmills in Indigenous villages, like Layasiksa and Las Crucetas, in spite of land tenure disputes. The World Bank reversed its earlier ban of financing extraction from natural forests, but only if critical habitats were protected and aid recipients worked towards Forest Stewardship Council certification. Support for is process came primarily from the RAAN-based office of World Wildlife Fund (WWF) that advised specific indigenous forestry projects. The three villages and village blocs that WWF worked with extensively became some of the most successful in regulating extraction, but faced on-going problems with marketing and land tenure conflict.

While there have been global forest management advances as a result of certified forestry, important concerns exist about equity in operations (Thornber 2003). Most certificates are in developed countries and are dominated by industrial enterprises. Small firms may have less access to information about certified markets, less ability to pay additional costs as a result of certification requirements, and may not produce at costs competitive with industrial growers. Certification in Indigenous territories is rare.

Untitled communal holdings cannot receive certification, eliminating the majority of eastern Nicaragua for eligibility for these programmes, although irregularities can occur. In the first FSC-approved area in Nicaragua, initiated in 2001, untitled Indigenous lands were illegally privatised into a series of small plots held by non-Indigenous populations

just prior to the entrance of the logging company (Finley-Brook 2007a). Most of these titles were illegal because the agrarian reform policies under which ownership was granted required that recipients make land improvements and live on the plot for years. Interviews in the area and a review of firm reports revealed that some landowners received their titles the same day they signed the land over to the company and that others had never lived on their lands. FSC certifiers were unaware of these administrative flaws and flew to the concession area by helicopter, meaning that they did not talk to the Indigenous populations living further inland that have historic de facto claims to this land.[9]

Under the next Nicaraguan President, Enrique Bolaños (2002-2007), a Law of Conservation, Promotion, and Sustainable Forest Sector Development passed in 2003, after being stalled for nearly a decade. INAFOR officials recognise that this occurred due to political manoeuvering, even noting that opposition to the law was inspired by the fact that stronger forestry norms reducing illicit behavior would hit National Assembly officials "in their pockets" (pers. comm. 11/12/03). Legislative delays due to elite benefit from illegal logging are an international problem cited by Contreras-Hermosilla (2003a).

The 2003 Forestry Law briefly mentioned forest certification and environmental services as ways to create positive incentives for better management. Yet, a main focus was an increase in punitive sanctions. Instead of only decommissioning illegal lumber, INAFOR could also auction the vehicles used in transport. Individuals or companies that had wood auctioned were prohibited from purchasing the same lumber. In addition, to reduce corruption, private foresters were granted responsibilities over specific concessions. These regents were to provide a supplementary oversight mechanism and alleviate state overload. However, according to a regional INAFOR official, since they earned their fees directly from logging firms, abuses of power merely shifted from the public sector to the private (pers. comm. 01/08/07). Meanwhile, overextended INAFOR officers were now required to track yet another series of transactions inundated with inconsistencies.

Another change in the 2003 law was that environmental impact assessments (EIAs) were required for all extraction plans larger than 500 hectares. Previously this was required only for those greater than 5 000 hectares. Since EIAs are expensive, extractors began to partition larger areas into segments of 499 hectares or less, arguing that they could not afford the additional assessment given low lumber prices on national markets (pers. comm. 12/20/07). INAFOR officials have criticised that the numerous small concessions are hard to monitor, especially since they are often sold between firms and intermediaries (pers. comm. 12/21/07).

The 2003 Forestry Law did not promote SFM to the extent expected. Attention to petty corruption continued to distract from the problem of vested interests among policymakers. Richards *et al.* (2003) note that it was easier to blame Nicaragua's poor for illegality than elites. Uneven application of forest laws meant that large firms with strong political connections got away with practices that smaller companies and individual extractors could not.

With ongoing illegality, in 2006 President Bolaños declared a state of emergency in the RAAN. He eliminated domestic or minor plans (*planes mínimos*), which are smaller than 10 hectares, due to the difficulty of oversight. However, these smaller plans were the

[9] The FSC certification body was Scientific Certification Systems.

ones that Indigenous populations were most likely to pursue if they were to seek state permits at all. Local populations cannot commercially log legally, even at low rates, if they cannot afford to pay a forester to write a management plan under a formal concession. There have only been three RAAN Indigenous forestry projects, discussed in the next section, that provide exceptions to this trend. In addition to the lack of investment capital, inadequate knowledge of state permitting system creates Indigenous dependency on outside firms[10] or encourages individuals to extract illegally.

Almost immediately following the announcement of the forestry emergency, Preseident Bolaños created a new moratorium on extraction of six species, including big-leaf mahogany, for ten years. The eighteen articles in the moratorium lacked precision[11] and violated prior legislation, so state foresters were uncertain which laws to apply (pers. com. 01/08/07). The ban also, once again, blocked exports of all unprocessed wood (raw trunks, squared timber or rough-cut boards) with the goal to force industrialisation. However, additional financial support is necessary to make this transition as few domestic companies, particularly Indigenous enterprises, have the capacity or capital to process lumber for legal export.

LOCAL RAMIFICATIONS

The previous section depicts RAAN processes, but does not adequately shed light on ramifications for Indigenous villages. During fieldwork, the author repeatedly observed the following processes (Brook 1999, 2005):

(a) increased discord in development projects or logging concessions after changes in resource access violated customary tenure norms;
(b) insignificant knowledge on the part of state officials, firms and donors about the specific reasons for and implications of local tenure conflicts;
(c) corruption of individual leaders;
(d) predatory logging based on the notion that it is better to extract now while tenure is disputed than risk the chance that titling will cull future opportunities;
(e) limited benefit to non-elite local populations from legal and illegal logging.

Future negotiations of land demarcation and titling will likely be protracted in each of the seven cases discussed. Until tenure conflicts are resolved, SFM remains at risk (Figure 2). Although similarities exist with many other RAAN villages, not every community experiences the same degree of conflict. While tenure insecurity fosters disagreement between Indigenous villages and outsiders, it also feeds inter- and intra-community discord.

Figure 2: Tenure Insecurity and Logging in Select Villages

Actors	Tenure Conflict	Results
Alamikangban	Forest reserve boundaries	Extraction from and annual fires

[10] RAAN Indigenous populations involved in timber transactions with non-local actors receive 3.4 - 7.3 percent of the total value of the wood on the national market when they sell trees by the foot (Larson 2006).
[11] For example, there was a ban on all cedar, even though *Carapa guianensis* is abundant. There was lack of clarity concerning which pine species could be harvested from various regions.

& state		within protected area
Klarindan & ex-combatants	Former president awarded land to civil war ex-combatants without consulting previous land claimants	Conflict over a logging concession with inequitable distribution of proceeds
Klarindan & Dos Amigos	Two Indigenous villages claim an area that both have used historically	Dos Amigos supports extraction while Klarindan does not. Without demarcation, opponents have no means to stop extraction
Layasiksa & Kukalaya	Two Indigenous villages dispute a logging concession that was first awarded to Kukalaya and later transferred to Layasiksa	Management plans had to be rewritten; illegal logging has occurred on the part of the disenfranchised community
Layasiksa & colonists	An Indigenous village and mestizo migrants dispute land rights	Unregulated forest clearing and timber extraction near homesteads; situation exploded into violence with kidnappings and exchange of fire
Las Crucetas & surrounding villages	An Indigenous village formulated a large timber concession on lands partially held by other villages; Las Crucetas is a new settlement predominately from one extended family, although the father has historic claims to the area	One village (and its dominant family) has unequal control of logging and mill operations and receives inequitable benefit
Tasbapauni	Illegal land sale to a mestizo rancher	Loss of communal land; transferred lands were cleared for cattle
Tungla & colonists	Indigenous village and mestizo migrants dispute lands; former sindikos were accused of illegal land sales	Violence has risen between and among colonists and villagers.
Tungla & logging firms	Amorphous logging firms sold and traded logging permits without community knowledge; firms extracted trees outside of legal concession area.	Thousands of illegal mahogany trees were abandoned after legal transport permits could not be obtained.
Wasakin & a foreigner of Arabic descent	Indigenous village disputes a land purchase in an area of timber extraction.	Situation is complicated by state offices siding with the foreigner and villagers illegally cutting timber from the sold land

The specific background in each situation is highly complex. While every case cannot be covered in detail, a few illustrative examples will demonstrate additional concerns. There has been only one instance in the RAAN, in the village of Las Crucetas, where Indigenous populations have self-organised legal extraction under a large concession on communal lands. In this case foreign investment and consultation was imperative, but the

initiative came from an Indigenous family; however this led to tenure conflicts in 2003 between neighboring villages (Figure 2). At the time RAAN officials reported having no knowledge of these disputes (Finley-Brook 2007a). National and international stipulations to release project funds only required them to organise participatory consultation exercises in Las Crucetas, where the mill was to be located. The author attended municipal and local meetings were tenure problems were openly disputed. The claims presented at this local scale contradicted the knowledge of decision-making officials in the regional seat 200 kilometres away.

Two other foreign-sponsored RAAN projects maintain they have organised Indigenous forestry (Brook 2005). Although Layasiksa's land was eventually recognised (Figure 2), the forest concession is officially owned by Prada, a multinational corporation with a history of Indigenous rights violations and conflict with the RAAN government (Brook 1999, 2005). With extensive technical support and training from WWF and financial backing from foreign donors, Layasiksa community members improved their timber contract terms with Prada and other extractors. Yet, the RAAN logging moratorium, the cancellation of Prada's certification in 2006 due to on-going violations of FSC standards (Smartwood 2007), and the termination of WWF's support in 2007 make future extraction and marketing uncertain.

Limi-Nawâh touts itself as the first Indigenous Corporation in Nicaragua. Since 2002 this Canadian-sponsored forestry project worked with 16 villages including Alamikangban, Wasakin, Klarindan, Tungla, and Tasbapauni (Brook 2005). After initial timber extraction characterised by delays, Limi-Nawâh was restructured in 2006 and the local administration structure established in 2003 was eliminated. For the period of 2007-2009 a Canadian investor, and a key administrator of the project from the start, has assumed primary control. If Limi-Nawâh emerges from bankruptcy in spite of the RAAN moratorium on most of the species the project planned to extract, this investor suggests he will then divest and pass administration back to village populations (pers. comm. 12/19/06).

From 1999-2003, prior to and at the start of Limi-Nawâh, untitled claims in a series of indigenous villages, including Alamikangban, Tasbapauni, Tungla and Klarindan, came into conflict with another proposed foreign development project. In 1974, four North Americans had purchased land claimed by twelve villages. The title to the 60,000 hectares they purchased was originally bought in 1908 by a private shipping company. In 2000, RAAN courts backed the foreigners' claim to the land (Brook 2005). Appeals to a different RAAN court after the 2003 Demarcation Law reversed this decision and annulled the foreigners' title. This example suggests a fundamental advance in Indigenous land protection with regard to de facto claims.

Over the years of this tenure conflict, the impacted villages became internally divided. Since the foreigners that had purchased the private land title offered jobs in a proposed reforestation and ecotourism project, some community members supported them in spite of the threat to their own communal lands. In 2002, a household survey in Alamikangban showed that approximately ten percent would sell communal land rights in exchange for limited (seasonal or temporary) work opportunities (Brook 2005). Others would consider selling if benefits were larger. This situation reflects the fact that villagers have come to see communal resources in economic terms, in spite of restrictions on the transfer of lands under the Autonomy Statute.

Alamikangban had registered a land title with regional offices in 1998 after a proposed cattle ranching project provided leaders economic support to pursue the formalisation of their historic land claims (Brook 2005). When the regional court case sided in 2000 with the foreigners discussed above, this title was revoked. The central office of INAFOR utilised the same annulled title as the basis for logging permits until 2003. When the author asked officials in 2002 how they could use a document without legal validity, they admitted having no knowledge of the regional court case (pers. comm. 12/11/02). Later, as INAFOR devolved oversight to regional offices, it was argued that there would be more knowledge about tenure conflicts, but the lack of transparency in regional courts and poor dissemination of information are continuing impediments (Acosta 2007).

Regional and national officials, as well as international donors, relayed dissatisfaction about local resource management in nearly every interview conducted for this research. In spite of the potentially inconclusive nature of the clandestine transactions described below, the goal of these narratives is to show the lack of local regulation. In 2002 when the author approached a village Elder in an Alamikangban with copies of INAFOR documents that touted his name as a co-owner of a forestry concession with a national logging firm, he expressed surprise. Whether this was due to his being totally unaware of being named as a co-owner, as he claimed, or as a result of the written proof involucrating him in the concession that other villagers openly protested, is unresolved. Either way, collective property was not being administered transparently. The illiterate leader asked the author to read him the concession document. His difficulty at understanding basic legal terms suggested that he would need additional training to comprehend the terms of the contract (see Brook 1999 for similar conclusions from research in the village of Betania). Legal support for Indigenous leaders appears necessary during negotiations with logging firms, but this cannot occur if processes remain clandestine. Moreover, lawyers expecting due payment for services are unlikely to work in areas as remote and poverty-stricken as Alamikangban.

Logging firm owners working in the RAAN frequently claim that they are victims of manipulation on the part of Indigenous leaders (pers. comm. 10/12/02, 11/07/02, 05/23/03). In-depth observations suggested that the hidden nature of transactions with village leaders may at times backfire. By law, sindikos should receive a small stumpage fee (e.g., $0.15-$0.35 per board foot) for lumber extracted commercially from communal land, yet this price is not standardised between villages and depends on the market price of particular species being cut and the negotiation skills and oversight ability of the sindiko.[12] From 2001-2003 the author observed a series of Alamikangban community protests against the same firm that listed the above Elder as a co-owner in one of its many concession areas. As the details of the events unfolded and the author interviewed the individuals involved it appeared increasingly likely that the conflict originated from the sindiko misleading other villagers about payments he received in order to hide the fact he was being compensated but not sharing proceeds. The result was that villagers directed their anger at the non-local concession owner, who had no proof of stumpage payments he insisted he had paid to the sindiko at regular intervals.

[12] Historically stumpage fees created a type of emergency social fund that could be distributed to needy families, widows and orphans. More recently sindikos have tended to use stumpage fees as a payment for their services.

INDIGENOUS RIGHTS AND SUSTAINABLE FOREST MANAGEMENT

Nicaraguan policy changes after 2003 aimed to support Indigenous rights and improve forest management, but the two goals were not sufficiently linked. The changes in policy and enforcement, while resolving some problems, contributed to the creation of new ones. This is similar to the conflicts created through devolution in the Autonomy Statute, a progressive law with positive intentions that inspired contradictory results. Detailed analysis of the results of these laws leads to two central findings (a) there is an urgent need for better understanding of local and regional processes, and (b) structural reforms are required, rather than grafting new legislation on top of ineffective norms.

Multiscale Solutions to Address Illegal Logging

Decentralisation of Nicaraguan forest administration has been encouraged to improve Indigenous involvement in forest governance. High levels of Indigenous participation in the regional and municipal governments contrasts with the central government. However, elite capture, corruption and abuses of power spread to all governance scales (Brook 1999, 2005). If one official or state entity was not open to pay-offs they could be out-manoeuvered by public-private alliances at another scale. Companies took advantage of the fact that each level was poorly informed about activities at other scales. Improved communication among scales through cross-scale alliances is necessary to address these constraints (Finley-Brook 2007a).

Given the documented forestry potential (Roldan 2001, Guevara 2004), RAAN commercial logging should continue, but it will need to be fundamentally restructured. Most communal forests have been high-graded,[13] meaning that the most valuable species have been selectively harvested, often to the point where their natural regeneration is at risk. As a regional INAFOR officer warned local RAAN loggers in 2003, "You have 25 species that could be harvested, but now you are only cutting mahogany…Who is going to come all this way to buy only 'white' wood[14] when that is all that remains?"

Livelihood alternatives to illegal logging are necessary. Few opportunities for legal extraction currently exist in Indigenous territories, and most have been dampened with the passage of the forest moratorium. Both historically and contemporarily villagers have predominately supported themselves from agriculture, small livestock herds, hunting and gathering. Commercial logging has a long history in the RAAN, but it has usually only been a major source of village income when outside companies or intermediaries initiate or encourage extraction. While all seven case studies villages have a percentage of the population that rely on commercial logging, making up approximately 10% of male household heads in Alamikangban (Brook 2005), this number waxes and wanes. If there are no markets, Indigenous populations generally only log for subsistence needs. However, in recent years, with the loss of agricultural crops from frequent flooding and population pressures on land rotation cycles, loggers have been more persistent about looking for illegal avenues to sell trees. A village logger captured this general sentiment

[13] There are many areas where only mahogany and Spanish cedar have been cut. Extensive commercial extraction would require expensive drainage and road-building as seasonal wetlands reduce accessibility.
[14] Nicaragua does not generally use the international categorisation of soft and hardwood. The majority of wood is considered "white". "Red" woods, such as mahogany and Spanish cedar, are increasingly sparse.

in 2003, “We are going to keep cutting because there is no other work and the agricultural harvests are not like they were.”

At regional and national level, fundamental forest sector reforms are necessary to create checks and balances. However, Contreras-Hermosilla (2003a, 2003b) states that the timing and sequencing of reforms is important. In the case of Nicaragua, reformed disclosure rules for all state and communal leadership positions will be necessary. Better recordkeeping could combine with industrywide codes of conduct to assist state oversight (World Bank 2006b), but many firms in the RAAN are unwilling to voluntarily commit to uphold the law. Reforms of sanction-oriented laws may need to provide additional incentives for positive behaviour before it becomes part of accepted regional and national culture. Contreras-Hermosilla (2003a, 2003b) also suggests need to make regulations simpler, and where possible, fewer in number in order to make legislation more enforceable and penalization more realistic. Then it may be necessary to circulate a blacklist of companies that continue to break the law. In Nicaragua, stipulations such as this would require a rupture of intimate ties between large logging firms and their political and financial allies in state institutions as well as national media.

Once the above reforms are in place, independent monitoring and certification may be more successful. In eastern Nicaragua, tenure conflicts, the reversal of FSC certification in the case of Prada, and on-going difficulties to find markets for certified lumber had led to cynicism about this oversight mechanism among groups interviewed. However, as these constraints continue to be resolved, certification discussions can provide a forum for community education and improved public awareness and information access that could encourage collaboration between external experts and local populations. There have been a positive steps encouraged by international groups, such as WWF and Rainforest Alliance, as well as national groups like Nicambiental, to orchestrate efforts between NGOs, universities, donors, private firms and state agencies. This cooperation reduces overlap between programs and contributes to a search for more comprehensive solutions with less institutional, political or technical bias than frequently occurred when these actors worked in isolation.

Many World Bank and Inter-American Development Bank loans for community development have targeted Indigenous territories. As part of national mandates these programmes predominately focused on improving the state’s balance of payment through increased export products (leather, meat, palm oils, nontraditional agroforestry) and improved marketing channels (Finley-Brook 2007b). At termination of funding, projects had generally not resolved tenure insecurities, human development constraints, or governance weaknesses, partially due to unrealistic five-year funding cycles. Local elites often assumed positions on advisory commissions or attend stakeholder meetings as a means to gain access to information and resources (Brook 2005). These individuals did not always represent the interests of the larger community but their input often formed the backbone of local consultations. State, donor, or business representatives working in Indigenous villages need to utilise open, inclusive public assemblies to provide information, answer questions, or receive input.

Community forestry programmes in the RAAN have received funding and technical support from a series of multiscale institutions, including multi- and bilateral donors, environmental organisations, and academic institutions. In spite of increasingly support, insufficient technical training and legal support for Indigenous loggers and leaders

continues to create major impediments to participatory or empowering development methods. There has been an increasing urban and rural divide in the RAAN. Two universities initiated since the early 1990s in the two regional seats and a few additional municipal seats have improved capacity for resource management and strengthened multiethnic political autonomy. However, while the quality and rigor of regional resource management in these locations have improved tremendously, gains among regional academic and political institutions are rarely felt in villages. Additional efforts need to be made to bring these educational and technical improvements to rural areas.

Human resource development in marginalised, impoverished villages will require long-term support. It was found in Alamikangban that illiteracy levels were as high as 36 percent, while another 48 percent of the population had only attended a few years of primary school, but less than two percent of the population obtained an education beyond high school (Brook 2005). On average, 43 percent of the population above the age of ten in the Autonomous Regions is illiterate. Educational improvements will be necessary to broaden employment opportunities within the forestry sector. While the national requirement for professionally-trained foresters to write management plans to assure technical quality are valid, there may need to be an additional process that guarantees further involvement of broader stakeholders, particularly impacted villages. However, this has been resisted within the government because it is argued that most villagers to not have the educational capacity to make such decisions. Yet is still necessary for local and regional populations to participate in determining culturally appropriate methods to assure Indigenous decision-making, rather than receiving mandates that are poorly matched with local institutions and livelihoods and thus foster additional conflict.

Multiscale solutions for land titling reform

The process of delineating, mapping, and titling Indigenous and Afro-descendent territories is complex due to the various and multiple-scaled actors involved (Offen 2003b). While mapping may potentially generate new forms of conflict, transparent and genuinely participatory mapping projects can also demonstrate customary cultural relationship with land and communicate the specifics of human-environment interactions in local livelihoods to previously uninformed national and international audiences (Chapin and Threlkeld 2001; Herlihy and Knapp 2003).

Several land demarcation projects in Indigenous territories have received support from international donors. In most instances, such as the World Bank's Atlantic Biological Corridor, Rural Municipalities, and Land Administration programmes, the funding was largely administered through central government institutions where power remained concentrated in spite of decentralisation shifts. All three of these programmes had approximately five-year funding cycles; after offices closed, the knowledge and experience that was garnered became dissipated. By 2003 there were some foreign aid transfers directly to regional institutions, but financial inequities between state institutions in the east and west continued. While RAAN responsibilities grew in number and complexity, officials in charge of demarcation commonly experienced budget shortfalls that made them less effective in resolving governance needs (pers. comm. 11/06/03, 01/09/07). Nevertheless, the situation was made worse by conflict between political parties, ethnic groups and among the leaders of the North and South Autonomous Regions.

Insufficient training in dispute resolution is limiting factor. Regional agencies need to resolve hundreds of contrasting claims between neighbouring jurisdictions, and between new settlers and historical dwellers, that in some cases have advanced into armed struggles. While the need for conflict resolution mechanisms as part of land management and land demarcation programmes is clear, and receives brief mention in many academic studies and foreign aid programmes, it remains underanalysed in Latin America in comparison to work in Asia and Africa. Deininger (2005: 225) does note the need for improved land administration to contribute to social peace in the region. His overarching conflict resolution suggestions, although broad and preliminary, point to the need to include communal institutions and empower local populations:

(a) development of an incentive structure that rewards the settlement of conflicts and requires informal resolution as the first step;
(b) creation of a system of conflict monitoring and information distribution to establish norms of acceptable behavior to assist individuals in resolving conflicts on their own.

Formal mechanisms that are sensitive to local histories and differences have not been developed for the RAAN. These would need to address issues of asymmetric power relations, such as unequal representation between ethnic groups, as well as ensure cross-checks to neutralise the power of particular political and economic interest groups. Mechanisms must also strengthen the monitoring and oversight of court and state procedures and assure broad communication of rulings.

CONCLUSION

The 1987 Autonomy Statue and the 2003 Demarcation Law created new political space for Indigenous leaders in regional and local institutions. To create additional hope for equity and inclusion means requiring educational reforms and dispute resolution procedures as well as encouraging accountability and transparency. Culturally sensitive improvements will value local practices, such as public village assemblies, rather than blindly impose external norms, such as signatures of one elected official permitting forest extraction. Conservation programmes with Indigenous populations often disrupt communal leadership systems and informal social networks as well as weaken cultural identity (Colchester 2004). Similar impacts have been documented to have occurred from national land and resource policy reforms in eastern Nicaragua, but Indigenous leaders in subnational institutions have increasingly self-organised to stem further decay and to target the implementation of the policy shifts with the potential to protect Indigenous claims and increase participation. While this has proven to be a slow process, and the degree of conflict between political parties, ethnic groups and neighboring villages has often been discouraging, there is administrative experience building among a small group of visionary and dedicated leaders. There have been subnational initiatives to respond to incidences of sindiko corruption by reinforcing democratic electoral procedures and helping villages remove leaders who refuse to step down or abuse their power for personal gain. Regional and local NGOs educate people about what to characteristics look for in an effective leader before election and what to expect from them during their administration. RAAN-based programmes such as these that now currently exist in

isolated pockets need to be supported and extended as an avenue to resolve resource and tenure conflict and promote SFM through inclusive means.

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