Smallholders and forest landscape restoration in upland northern Thailand

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SUMMARY

Forest landscape restoration (FLR) considers forests as integrated social, environmental and economic landscapes, and emphasizes the production of multiple benefits from forests and participatory engagement of stakeholders in FLR planning and implementation. To help inform application of the FLR approach in upland northern Thailand, this study reviews the political and historical context of forest and land management, and the role of smallholders in forest landscape management and restoration in upland northern Thailand. Data were collected through a literature review, interviews with 26 key stakeholders, and three case studies. Overall, Thai policies on socioeconomics, forests, land use, and agriculture are designed to minimize smallholders' impact on natural resources, although more participatory processes for land and forest management (e.g. community forests) have been gaining some traction. To enhance the potential for FLR success, collaboration processes among upland forest stakeholders (government, NGOs, industry, ethnic minority smallholders, lowland smallholders) must be advanced, such as through innovative communication strategies, integration of knowledge systems, and most importantly, by recognizing smallholders as legitimate users of upland forests.

Keywords: North Thailand, smallholders, forest management, upland, land use

Politique forestière et utilisation de la terre par petits exploitants dans les terres hautes de la Thaïlande du nord

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Cette étude cherche à comprendre le contexte politique de la gestion forestière dans les terres hautes de la Thaïlande du nord, et l'expérience qu'ont les petits exploitants de ces politiques. Des données ont été recueillies à l'aide d'une analyse de la littérature, d'interviews avec 26 parties prenantes-clé, et d'une étude-cas. Les politiques Thaï en socio-économie, foresterie, relocalisation, immigration, droits à la terre et agriculture sont généralement conçues pour minimiser l'impact des petits exploitants sur les ressources naturelles, bien que des processus plus participatifs soient encouragés dans la gestion de la terre et des forêts (comme, par exemple, les forêts communautaires). Alors que ces intérêts sont en compétition dans les forêts des terres hautes (services de l'écosystème des terres basses contre les revenus de subsistance des foyers), une hétérogénéité sociale et biophysique doit être reconnue comme étant un élément essentiel du paysage. Des processus de collaboration entre les parties prenantes de la forêt des terres hautes (gouvernementales et non-gouvernementales, industrie, petits exploitants des tribus des collines, et de celles des terres basses) doivent être mis en avant, en utilisant, par exemple, des stratégies de communication innovantes, une intégration des systèmes de savoir et, plus important encore, en reconnaissant les petits exploitants comme des utilisateurs légitimes des forêts des terres hautes, afin de fortifier la résistance socio-économique de ces terres hautes.

Política forestal y uso de la tierra por pequeños propietarios en las tierras altas del norte de Tailandia

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Este estudio tiene como objetivo comprender el contexto político del manejo forestal en las tierras altas del norte de Tailandia y cómo los pequeños propietarios asumen estas políticas. Los datos se recopilaron mediante una revisión de la literatura, entrevistas a 26 partes interesadas clave y tres estudios de caso. En general, las políticas tailandesas sobre socioeconomía, silvicultura, reubicación, inmigración, derechos sobre la tierra y agricultura están diseñadas para minimizar el impacto de los pequeños propietarios en los recursos naturales, aunque también se fomentan procesos cada vez más participativos para el manejo de tierras y bosques (p. ej. bosques comunitarios). Si bien existen intereses contrapuestos sobre los bosques de tierras altas (servicios ecosistémicos para las áreas de tierras bajas versus medios de vida de subsistencia), es necesario reconocer la heterogeneidad social y biofísica como un componente esencial del paisaje. Para mejorar la resiliencia socioecológica de las tierras altas, es necesario avanzar en los procesos de colaboración entre las partes interesadas en los bosques de tierras altas (instituciones gubernamentales y no gubernamentales, industria, pequeños propietarios tribales de tierras altas y pequeños propietarios de tierras bajas), a través de estrategias de comunicación innovadoras, la integración de sistemas de conocimiento y, lo más importante, reconociendo a los pequeños propietarios como usuarios legítimos de los bosques de tierras altas.

INTRODUCTION

The catastrophic floods of 2011 that affected over 85% of Thailand's provinces, and resulted in the deaths of 815 people and the destruction of 2 million ha of farmland (Emergency Operation Center 2012), served to emphasize the urgency for upland forest landscape reform. The floods were widely blamed on extreme run-off from the northern highlands into the lower Chao Praya river plains, where Thailand's capital city of Bangkok is located. Striking at the heart of Thailand's self-sufficiency, economic wealth, and political power, people wondered: Was enough being done to improve Thailand's upland forest management?

Upland forests are popularly viewed by government authorities, non-governmental organizations (NGOs), and the general public in Thailand as a natural barrier to flooding and drought across the lowlands (FAO 2009, Huffington Post 2011, Mydans 2011), although there is little scientific evidence linking forests and floods (Calder and Aylward 2006, Dijk *et al*. 2009). Strict bans on logging, ambitious implementation of protected areas and reforestation projects, and a crackdown on deforestation over the last 25 years have not had the results expected to improve Thailand's upland forest degradation (Delang 2002). Despite the perception that sloping uplands are important to Thailand's future, there is still much to be learned about how smallholders manage forests on these landscapes, and their potential to manage forests in new socio-political and environmental contexts.

Historically, forest restoration in Thailand has been focused on the production of economically valuable wood products and forest cover. With increased calls for greater decentralization and people-based natural resource management in Thailand (FAO 2009, Fujioka 2002, Nepal 2002, Vandergeest 1996), forest landscape restoration (FLR) may be a useful approach to guide forest management in Thailand. FLR emphasizes the production of multiple benefits for various stakeholders by considering forests as integrated social, environmental and economic landscapes, and engaging stakeholders in the FLR planning and action process through participatory mechanisms (Appanah 2016).

To help inform application of FLR in upland northern Thailand, this study examines the political and historical context of forest management, and the role of smallholders in forest landscape management and restoration in upland northern Thailand. The political and historical context of smallholder land and forest management in upland northern Thailand is reviewed. Smallholder perspectives of these policies are presented based on data collected from interviews. Three case studies of a highly regulated watershed, a government-registered community forest, and community-based land management are presented to demonstrate the complexity between policy and smallholder land use. Finally, recommendations are offered to enhance the potential for FLR success in northern Thailand.

METHODS

Data were collected through literature surveys, unstructured interviews with key informants, and site visits to three case studies (Figure 1). Literature surveyed included peer reviewed papers, grey literature, and Thai-language publications.

Unstructured interviews were conducted over a 3-week period during October and November 2013 in Bangkok and North Thailand, with 26 key informants from different governance levels (Table 1). Interviewees were selected based on 1) their representation of governance level, 2) having a perspective relevant to North Thailand forest management, 3) having an active role in a case study, and 4) leadership role. Most interviews lasted 30 min to 1 hour, and were conducted by the author in the Thai language, in-person, and at the interviewee's work location. The interviews aimed to establish a cultural baseline; collect information about land types, ownership, and use/management; and identify and assess the effect of interventions into land use (Appendix I).

Data collected from the interviews were analyzed by coding the responses until common themes emerged. These data were used to complement the literature review, present a synthesis of smallholder perspectives, and inform the case studies. Throughout the results, information collected through the interviews is often cited by governance level (government, community, NGO, academic, industry).

Study site

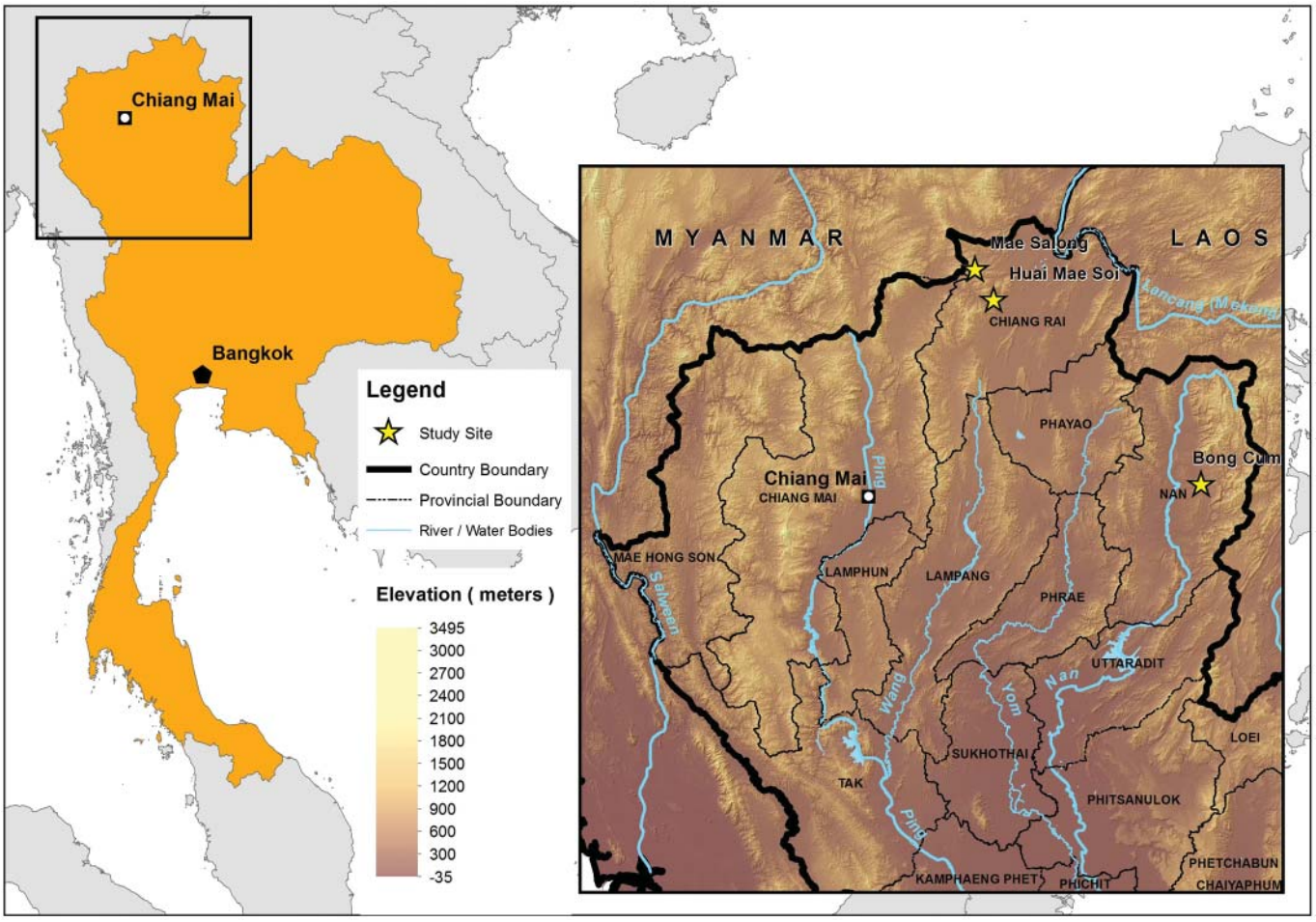
Thailand is located in Southeast Asia, sharing borders with Myanmar, Laos PDR, Cambodia, and Malaysia. The Chao Praya and Mekong Rivers are Thailand's most important watersheds, supporting a wet rice-based agricultural economy. Thailand's 76 provinces are commonly categorized into North, Northeast, East, Central, and South regions.

Thailand has a land area of 51.8 million ha (RFD 2015), which is categorized as 31.6% forest (16.3 million ha, RFD 2016), 36.1% agricultural land holding (18.7 million ha, NSO 2016), and the remainder as unclassified land (NSO 2012a). About 44% of Thailand is National Forest Reserves and 12% is protected area, which is one of the highest rates in the world (DNP 2016). While Thailand's forest cover fell from about 60% of Thailand's total land area in the 1950s to a low of 25% in 1998, Thailand's official measure for forest cover today is approximately 31.6% of the total land area (RFD 2016) (Table 2).

There are 65.5 million people in Thailand (NSO 2011a), who are mostly Buddhist (95%) (NSO 2012b). The official language is Thai, although over 60 ethnic languages are also spoken. Thailand has the second largest economy in Southeast Asia (NESDB 2013). About 70% of Thai people live in rural areas, and many are poor. Approximately 1.2–2 million people live in and around protected areas, and 20–25 million people live near National Forest Reserves (FAO 2009).

The Thai government is organized into central (based in Bangkok), provincial, and local levels (sub-districts and villages). After a period of civil unrest that had been escalating since 2006, Thailand's constitutional monarchy system was replaced by a military junta, National Council of Peace and Order (NCPO), in May 2014. In addition, with the recent death of King Bhumibol Adulyadej (1946–2016), the monarchy changed hands to King Vajiralongkorn. All of these events

FIGURE 1 *Elevation map of North Thailand and the location of three case studies: Mae Salong watershed in Chiang Rai province, Huai Mae Sai community forest in Chiang Rai province, and Bong Cum Village in Nan province*



occurred after this study was conducted; therefore, the results of this study are most relevant in the political context prior to 2012.

North Thailand is located at the foothills of the Himalayan Mountains, bordered by Myanmar, Laos, and the Mekong River (Figure 1). North Thailand has 17 provinces, and the city of Chiang Mai is its governing center. There are 11.5 million people in North Thailand (17.5% of Thailand's population) (NSO 2011a). In 2010, the average household income in North Thailand was USD$ 536 per month; Thailand's national average is USD$ 718 per month (NSO 2011b).

Northern Thailand is the most mountainous region in the country, with the highest elevations at just above 2 000 meters. Mountain ranges run north-south with parallel western, central, and eastern ranges. The Nan, Ping, Wang, and Yom rivers funnel water from North Thailand to the Chao Praya river plains in Central Thailand. North Thailand has a monsoon climate with rainy and dry seasons, and an average annual precipitation of 1 572 mm (Thai Meteorological Department 2014). Like most of Thailand, North Thailand has a tropical savanna climate, but its relatively higher altitude and latitude contribute to cooler winters. The average annual temperature is 25 to 26 degrees C.

North Thailand has a total land area of 17 million ha (Office of Agricultural Economics in NSO 2012a), and the most forest area in Thailand at 9.0 million ha (RFD 2016). In Thailand, North Thailand has the largest protected area (2.7 million ha, representing 43.5% of the protected area in Thailand) and National Forest Reserves (11.2 million ha, representing 48.9% of the reserves in Thailand) (DNP 2016). About 25.9% of land in North Thailand is agricultural holdings (Office of Agricultural Economics in NSO 2012a) (Table 3). North Thailand's forest area fell from 67% in 1973 to 43% in 1995, and recovered to 53% in 2016 (RFD 2016) (Table 2). About 50% of land (8.6 million ha) in North Thailand has soil erosion problems (LDD in NSO 2012a) of which most occurs in the hilly and mountainous landscape, or uplands.

Who are upland smallholders of North Thailand?

North Thailand's demography has been defined by the international migration of ethnic minorities into upland Thailand from neighbouring countries, internal migration into the uplands by lowland Tai ethnic groups, and internal out-migration of upland ethnic minorities to the lowlands. Historically,

TABLE 1 *List of interviewees, noting interviewees' governance level, affiliation, and location. Some affiliations had more than one interviewee; some interviewees represented more than one governance level*

Governance level	Affiliation and Location
Government	Ministry of Natural Resources and Environment, Bangkok Federal Police, Bangkok Royal Forest Department, Chiang Rai, Chiang Rai Land Development Station, Doi Mae Salong, Chiang Rai
Community	Long time resident, Bangkok Yao village, Huai Mae Sai Village, Chiang Rai Lisu village, Jalae Village, Chiang Rai Chinese village, Doi Mae Salong, Chiang Rai Akha village, Doi Mae Salong, Chiang Rai Lahu village, Padaang Lahu Village, Chiang Rai Buddhist temple, Bong Cum Village, Nan
Academic	Chiang Mai University, Chiang Mai, Chiang Mai Independent Scholar, Chiang Mai, Chiang Mai
NGO (national)	HRDI, Chiang Mai, Chiang Mai Association for Akha Education and Culture (AFECT), Chiang Rai, Chiang Rai HRDI, Bong Cum Village, Nan
NGO (international)	ICRAF, Chiang Mai, Chiang Mai
NGO (national); Academic	FORRU, Chiang Mai University, Chiang Mai, Chiang Mai
Government; NGO (national)	National park (previous employee); FORRU, Doi Suthep, Chiang Mai
Industry; NGO (national)	Doi Chang Tea Chiang Rai; HDRI, Doi Chang, Chiang Rai
NGO (national); Community	FORRU Chiang Mai; Mae Sa Mae Village, Chiang Mai

TABLE 2 *Forest cover trajectory in North Thailand and Thailand from 1973-2016*

Year	North Thailand		Thailand	
	million ha	%	million ha	%
1973	11.4	67.0	22.2	43.2
1976	10.2	60.3	19.8	38.7
1978	9.5	56.0	17.5	34.2
1982	8.8	51.7	15.7	30.5
1985	8.4	49.6	15.1	29.4
1988	8.0	47.4	14.4	28.0
1989	8.0	47.3	14.3	28.0
1991	7.7	45.5	13.7	26.6
1993	7.5	44.4	13.4	26.0
1995	7.4	43.6	13.1	25.6
1998	7.3	43.1	13.0	25.3
2000	9.6	56.8	17.0	33.2
2004	9.2	54.3	16.8	32.7
2005	8.9	47.3	16.1	31.4
2006	8.8	52.1	15.9	30.9
2008	9.5	56.0	17.2	33.4
2016	9.0	52.5	16.3	31.6

From: Royal Forest Department (2016)

lowland North Thailand was inhabited by a ruling Tai ethnic majority (Tai-Kadai language family), while the uplands were inhabited by ethnic minorities (i.e. hilltribes), which originated from linguistic stocks separate from the Tai-Kadai language family (e.g. Sino-Tibetan).

Upland ethnic minorities in Thailand include secondary forest swiddeners (Karen, Lua, Khamu and H'tin tribes) that migrated 200 to 800 years ago to the middle elevation areas (700 to 1000 m) of North Thailand, and primary forest swiddeners (Meo, Yao, Lahu, Lisu and Akha tribes) who migrated from Myanmar, Laos, and Southern China to elevations above 1000 m in North Thailand within the last century (Delang 2002). The agricultural practices of secondary and primary forest swiddeners are differentiated by the varying length of cultivation and fallow periods, affecting how quickly forest recovers. While both types of shifting cultivation have a low environmental impact, in the context of low population pressure and a lengthy rotation cycle, today's higher population and increased competition for land and forest resources in North Thailand leaves little opportunity for shifting cultivation.

Upland ethnic minorities represent less than 8% of North Thailand's population (Rerkasem 2003). However, they are often the focus of upland forest management discourses because they make up the majority of the landless, upland forest-dependent population and are often illegal immigrants; upland ethnic minorities are frequently blamed for deforestation (FAO 2009). Comparatively, there is much less information available about lowland smallholders, who replace

TABLE 3 *Land use areas in North Thailand, relative to the total land in North Thailand and Thailand overall*

	North Thailand land area (million ha)	Percentage of total land in North Thailand	Percentage of total land in Thailand
Total land area	17.0	100%	32.8%
Forest area (2016)[1]	9.0	53.0%	17.4%
Agricultural holdings (2013)[2]	4.4	25.9%	8.7%
Protected areas (2016)[3]	2.7	15.9%	5.2%
National Forest Reserves (2016)[3]	11.2	65.9%	21.6%

[1] Royal Forest Department (RFD)
[2] Office of Agricultural Economics
[3] Department of National Parks, Wildlife, and Plant Conservation

out-migrating upland ethnic minorities to practice supplementary shifting agriculture in the uplands (Schmidt-Vogt 2001).

A "holder" is defined by the Office of Agricultural Economics of Thailand as an individual that manages an agricultural operation (NSO 2016). In 2013, there were almost 1.3 million "holdings" (an economic unit of agricultural production) in North Thailand with a total area of 4.4 million ha, and the majority of holdings were under 6 ha (85%). In this study, smallholders are defined as all people residing in upland North Thailand (including Tai migrants and ethnic minorities), who are directly engaged in agriculture, or experience smallholder benefits from their household or community, and have holdings of <6 ha.

RESULTS

The National Economic and Social Development Plans of Thailand (NESDPs) provide five-year plans to help guide the overall development of Thailand's policies, including those that affect upland forest management. While initial NESDPs focused on economic and social development, the natural resource deterioration that occurred during the Fourth NESDP (1977–1981) further undermined Thailand's socioeconomic stability. Therefore, during the Sixth NESDP (1987–1991), guidelines were created for improved water resource management, and logging was banned nationwide with new zoning to help manage forest use by smallholders (ICEM 2003).

Notably, Thailand's focus on sustainable development began during the Seventh Plan (1992–1996) (NESDB 1991); agricultural efficiency through cultivation of high value crops was prioritized, and farmers were encouraged to develop non-agricultural employment skills (Sethaputra *et al*. 2001). After a severe regional economic crisis in 1997, Thailand's Ninth NESDP (2002–2006) (NESDB 2006) emphasized an economy with a strong local-based foundation to increase resiliency to external changes. The Tenth (2007–2011) (NESDB 2006) and Eleventh (2012–2016) (NESDB 2011) NESDPs progressed further toward self-sufficiency with goals of attaining a stable and equitable economy, sustainable and high-quality environment and natural resources, and a just system of democracy.

Forest management and reforestation

Much of the 19th and 20th centuries marked an era of commercial timber exploitation, which provided a major source of revenue for Thailand (RFD 2013). Selective logging in the North, availability of extensive lowland farming areas, and a relatively low population, allowed Thailand to exploit timber while maintaining about 60% of its total area as forest (ICEM 2003). During this time, however, the Thai population increased rapidly, agricultural exports intensified, and new roads were built to access forests. As a result, the northern forests were heavily logged and converted to agricultural land. Ethnic minorities migrating from bordering countries also intensified their shifting cultivation cycle in response to population pressures and reduced land availability, leading to increased land degradation (Akber and Shrestha 2013, Delang 2002, World Bank 2011, Ziegler *et al*. 2004).

With Thailand's forests quickly depleting (forest cover reduced to 43% by 1973, RFD 2016), an era of forest protection began through new policies supporting natural resource and biodiversity conservation (ICEM 2003). The Wild Animals Reservation Act (1960) and National Parks Act (1961) defined Thailand's first protected areas, and the National Forest Reserve Act (1964) established production forest reserves for the collection of timber and NTFPs. The National Forest Policy (1985) was adopted to maintain forest resources, stipulating that 40% of Thailand's land area should be forest.

In 1988, a catastrophic landslide in Nakhon Si Thammarat Province in South Thailand catalyzed a nationwide logging ban in 1989 in all natural forests. But Thailand still had its timber demands. To provide a source of timber, the Forest Plantation Act of 1992 allowed logging in plantations, established ownership of plantations, and allowed timber importation from neighbouring countries (Waggener 2001). However, smallholders resisted wide-scale commercial conversion of degraded forest reserve to plantations (viewed as favoring the wealthy). They also found little economic benefit for using their own limited area for producing timber (return time on the investment was unfeasible, Lakanavichian 2006). By 2004, efforts to encourage smallholders to cultivate timber

plantations had resulted in only 710 000 ha, which was short of the initial target for 800 000 ha. Today, there remains no legal timber production in Thai natural forests, and tree plantation is promoted mostly to prevent landslides and erosion (Forbes and Broadhead 2011, Turkelboom *et al*. 2008).

After the logging ban, the number and area of protected areas in Thailand increased significantly (ICEM 2003). The Wildlife Conservation and Protection Act (1992) designated new wildlife conservation areas. Watershed classification was introduced to guarantee a consistent water supply to the lowlands (Tungittiplakorn 1995); upper watersheds (WCS 1A, >35% slope) are strictly protected. By 2007, Thailand had approximately 13.5 million ha of upper watersheds, which are mostly in North Thailand (Punyatrong and Potichan 2004). The protection and use of watersheds continue to be a source of conflict between farmers, stakeholders of biodiversity and forest resources, and lowland Thailand's need for water (ICEM 2003).

Official reports have shown that forest cover has steadily increased since 1998, and these reports have been supported by recent studies using forest statistics and remote sensing (Leblond and Pham 2013). Despite this, politicians, forest officials, researchers, activists, and journalists have hotly debated these reports, and selectively used official surveys to support continued claims of deforestation (Leblond and Pham 2013).

Regardless, Thailand has still fallen short of their 40% forest cover goals (RFD 2016), revealing some weaknesses in Thai forest policies. First, more attention is needed as to the causes of deforestation outside of logging. Second, forest cover is assumed to be associated with environmental and biodiversity protection, but it may not be an appropriate metric. For example, early reforestation efforts often used monoculture plantations of eucalyptus and pine as a substitute for natural forest cover. Third, the target number of 40% forest cover was arbitrarily selected; the appropriate amount of forest area required to meet environmental services and socioeconomic needs is still unknown. Fourth, smallholders are a key stakeholder of upland forests, but they were not included in the forest management strategies outlined by the National Forest Policy of 1985 because they were viewed as part of the deforestation problem. Today, most forests in North Thailand are owned and managed by the government (NSO 2012c); smallholders can collect only NTFPs in forest reserves, and no activity is permitted in protected areas.

While early national policies placed most natural areas off-limits to subsistence uses, more recent policies have moved toward accepting smallholders in upland forests, and incentivizing their cooperation to maintain and increase forest. For the past two decades, a community forestry movement has encased a national debate on whether upland forest resources can be used by smallholders, while still ensuring ecological integrity. The Decentralization Act of 1999, the Seventh NESDP (1992–1996), and a new drafting of the Constitution of Thailand in 1997 provided the political environment for submission of three different versions of a Community Forestry Bill (supported by the Royal Forest Department-RFD), but none was successful (ICEM 2003). Negotiations broke down around community access and control of land within protected areas, which the Department of National Parks (DNP) and conservation groups greatly opposed.

In 2007, a new version of the Community Forestry Bill finally passed. However, civil groups, representing mostly local NGOs and farmers, felt that they had gained no new additional benefits, particularly around the use of protected areas. As a result, these groups filed a petition with the Constitutional Court (Onprom 2011), leading to the Community Forestry Bill being rescinded (RECOFTC 2011, Usher 2009). Overall, government authorities still perceive forest-based people as contributors to forest degradation and incapable of sustainable resource management (Neef 2008), so they hesitate to give up control of valuable forests (FAO 2009). Government authorities also fear that community forestry could be a vehicle to allow land to be taken over by illegal immigrants, facilitate their Thai citizenship (FAO 2009), and allow privatization and conversion of forest into other types of land use.

Despite these set-backs, an informal network of community forests has been growing. There were an estimated 15,000 community forests in 2008 (Usher 2009). With the expectation that the Community Forestry Bill will eventually be passed, the RFD began recognizing community forests that met specific criteria in 2002 (Office of Community Forestry 2012) (Appendix II). As of 2014, RFD had formally registered 8 415 community forests across Thailand, including 2 753 community forests in North Thailand (1.8% of North Thailand's land area) (Office of Community Forestry 2014). According to an interviewed RFD official, RFD considers their current community forestry project to be a success. A relatively high number of communities participate in the project, and most have applied to extend their community forest permit for another five-year term.

Other ways that people-centred approaches to forest management are being implemented include co-management schemes for protected area buffer zones, reforestation, forest fire prevention, and climate change mitigation. In co-management arrangements in buffer zones, RFD allows local communities to use forest reserve resources in exchange for their commitment to protect strict conservation core zones (e.g., watershed) (ICEM 2003). As part of reforestation strategies, smallholders' planting of useful species and increased forest area for enhanced livelihood stability are encouraged (See case study 3). Co-management of forests is also used to improve fire management in North Thailand, as forest fires threaten ecosystem services and livelihoods (Rakyutidharm 2002) (See case study 2).

According to an interview with a government official, Reduced Emissions from Deforestation and Forest Degradation (REDD+) is being tested in community forests and community-based reforestation projects in the uplands (e.g., Nan province). According to this same official, REDD+ has high potential for success because it can function without formal forest ownership by smallholders, does not require gaining community support for their participation in the program, and REDD+ funds can be easily funneled to smallholders through existing funding schemes.

An academic, NGO representative, and community members stated that the Thai government demonstrates an overall lack of trust and confidence in smallholders' abilities to manage forests sustainably; the government is reluctant to revise forest management laws, particularly with regard to smallholders' use of protected areas. Interviewed community members believe that this reluctance stems from the importance of upland forests to lowland people, who view upland forests as a natural barrier to flooding and drought across the lowlands. These same interviewees pointed out that the government has had little success with sustainable forest management, so new approaches to upland forest regulation are needed.

Advancements toward any community-based resource governance, however, have been undermined by centralized state-driven institutions. According to one government official, within the RFD's current community forest framework, smallholders are still required to seek permission for many forest activities. One community member noted that cutting a tree, for example, requires an RFD permit, although sometimes community members simply ignore the formal terms and quietly enter to forest to cut it (following their community's informal rules). Interviewees noted that RFD-registered community forests bring few new benefits to communities (i.e. legal access to land and resources of new areas, such as protected areas), while requiring new responsibilities for community members, such as forest protection and patrolling.

An academic and NGO representative perceived that still today, upland ethnic minorities are used as a scapegoat for deforestation. This has led to the development and continued implementation of policies that impact upland ethnic minorities negatively, such as relocation to lower lands to reduce their land impact and development initiatives that aim to change their livelihood approach. Certainly, however, there are examples of destructive smallholder agricultural practices. An NGO representative stated that development agencies often function on the belief that smallholders' lack of knowledge and skills about forest management prevent them from being good forest stewards. According to an industry representative, this is a perspective shared by most people who work closely with smallholders, although upper-level policy makers and academics may not agree.

A community member pointed out that there are more opportunities than ever for smallholders to express their opinions about forests or resource management, have open dialogues with decision-makers, and participate in the decision-making process. However, there is still much more work to be done. According to an NGO representative, lack of empowerment and autonomy among smallholders is to blame for the relatively few examples of community forests that have been organized solely through community initiative. Therefore, collaborating with the State, such as through formal RFD processes for managing community forests, may be the external assistance needed to push forward community-based projects. At the same time, smallholders must be accepted as co-creators of community forestry guidelines to ensure its relevance within the smallholder context. According to a government official, some of the community forest criteria (e.g., Thai citizenship, >50 people in the community) are almost impossible to achieve for many people, such as upland ethnic minority groups. Socioeconomic diversity, like women's perspectives, must also be better addressed within management plans.

To achieve more balance in management approaches, an NGO representative suggested that new communication strategies are needed for different stakeholders. Forestry officials often use an aggressive approach ("like a tiger"), which sets smallholders on an opposing side. By using a more open-minded approach ("like a hornbill"), forestry officials can leave themselves more open to new ideas and perspectives; therefore, being more effective in reaching smallholders.

According to an academic and government representative, community-based forestry has the potential to be quite successful in North Thailand, because there still exists a traditional sense of forest stewardship among many of the groups that directly derive livelihood benefits from the forests. Local people often believe, for example, that if they care for the forest, then they are its owners and stewards. Similarly, without any ownership, there is little motivation for communities to help manage forests. Indeed, this sentiment follows closely with theories that tenure security for forest-dependent people can improve forest conditions and lead to more secure livelihoods (Dahal *et al.* 2011). Likewise, FLR relies on this same principle by assuming that more ownership of the restoration process (i.e. participatory engagement) leads to greater FLR success (Appanha 2016). Local tradition and spiritual needs, which are often tightly tied to forests, provide a people-centred basis for supporting forest conservation. For example, according to community members, Lisu conserve forests around their spirit ceremonial areas. Buddhist monks often encourage villagers to protect the forest (Darlington 2007).

A community member and government representative pointed out that RFD supports the teaching of traditional knowledge among young people as part of forest management programs. RFD also helps smallholders understand the underlying philosophy of reforestation and access information to help improve their long-term planning strategies. Community members pointed out that communities must first decide what is best for themselves before considering the ideas of others. One academic noted that, "Thai people must be re-educated as to what forests mean to Thailand," indicating that contemporary discourse about Thai forests more often emphasizes their market value, while disregarding the cultural value that forests have traditionally held for many communities in Thailand.

Relocation and migration

In the 1950s, Thai authorities sought to combat communist insurgency and opium production, and much of their efforts focused on upland ethnic minorities, who moved easily across borders and practiced shifting cultivation in remote areas that were suitable for opium. As part of their strategy, in 1961 and 1969, the Thai government relocated upland ethnic minorities to permanent settlements in the lowlands (the first of many

other relocation and removal events), where welfare services could be more easily provided; vacated lands were intended to be returned to forest area. The Royal Project and Department of Agricultural Extension (DOAE) were established in 1969 and 1979, respectively, to encourage upland ethnic minorities to produce valuable crops that out-competed opium cultivation, and convert from shifting agriculture to permanent agriculture to reduce pressure on watershed areas (UNODC 2008).

By the 1980s and 1990s, the Thai government considered communism and opium production to be largely resolved. As a result, upland ethnic minority development shifted toward natural resource conservation and livelihood improvement (Fujioka 2002). By 1998, forest cover was at an all time low at just 25.3% across Thailand, and environmental problems in the lowlands were blamed on deforestation in upland North Thailand (Punpuing *et al*. 2011). Forest cover targets and watershed classification established in 1985 justified more upland ethnic minority relocation or removal, but the allocated land and resettlement costs were often insufficient to support stable livelihoods (Chupinit 1988). Government programs, like the Master Plans for Highland Development and Narcotic Crops Control (1992–2001), also emphasized socioeconomic improvement and employment skills development, with the goal of integrating upland ethnic minorities into Thai mainstream culture. Today, social development, agricultural extension, and sustainable land and forest management initiatives are still conducted among upland ethnic minorities through the Royal Project, Department of Public Welfare (established in 1976), and DOAE.

Thailand's policies in the 1950s and 60s promoted economic development by allowing smallholders to own more land for cash cropping (Tepsonkroh 2010) and increasing their access to available capital. During the 1960s and 70s, landless lowland farmers, agribusinesses, and logging companies migrated to North Thailand to farm the expansive land cleared by timber companies, leading to increased deforestation of the uplands. From 1945 to 1987, large numbers of refugees, such as the Karen and Karenni upland ethnic minority groups from Myanmar, were also settling in North Thailand. In the late 1980s, to help support its quickly growing economy, the Thai government relaxed its international immigration policies to allow illegal, temporary, and unskilled migrants, mostly from Myanmar and Laos, to help meet Thailand's increasing labour demands (Paitoonpong and Chalamwong 2011). With rapidly diminishing forest resources in the uplands, however, stringent forest protection and reforestation programs were also enforced in the late 1980s, leaving an estimated 10 million people across Thailand living and farming on land now belonging to the State (ICEM 2003).

With increased environmental protection, lack of access to land, and a growing development gap between rural and urban areas, rural people began migrating permanently to urban areas during the 1980s and 90s (ICEM 2003), as opposed to the seasonal migration that was common during the 1970s (Punpuing *et al*. 2011). In addition, from 1986 to 2005, forest management policies displaced at least 51 000 people (45% were upland ethnic minorities) (Chupinit 1988, Leblond 2010), often to lower lands, making the uplands available for illegal occupation (ICEM 2003) (e.g., logging from corrupt government officials (Chupinit 1988), intensified shifting cultivation by lowland smallholders (Schmidt-Vogt 2001).

By the late 1990s, international migration had also become a major concern (Paitoonpong and Chalamwong 2011), which Thailand addressed through increased border security, opium reduction, forest and watershed protection, deportation, and bilateral agreements with neighbouring countries (Paitoonpong and Chalamwong 2011). As of 2013, there were nearly 82 000 registered refugees and 13 000 asylum seekers in Thailand, and many were in North Thailand (UNHCR-Thailand 2013). Today, only about 30% of upland ethnic minority people have Thai citizenship (FAO 2009), partly due to fear that upland ethnic minorities are involved in illegal trafficking (Fujioka 2002). Lack of official residency status creates great obstacles for improving people's socioeconomic status, such as to own land, be protected by labour laws, and move to other areas (International Justice Mission 2010).

Community members and an NGO representative stated that political pressure to reduce traditional agricultural practices (i.e. shifting cultivation) and the dwindling availability of agricultural land has led to outward migration, loss of culture among ethnic minorities, and unstable livelihoods. Smallholders are increasingly leaving their traditional livelihoods, although they, and particularly ethnic minority groups, would prefer to work with the land and stay in the community. A community member and NGO representative pointed out that land abandonment may be positive for forest regeneration projects, but it is detrimental to smallholder land rights. An NGO representative predicted that in the future, smallholders will have less impact on land use because many of them are abandoning their land as they move to cities.

Land rights and agriculture

The concept of individual land ownership was introduced in Thailand in the early 1900s. Smallholders began occupying the cleared upland forest areas in great numbers during the 1960s and 70s, when the Land Law of 1954 instituted that a holding could have a maximum of eight hectares, although exceptions could be granted (ICEM 2003). By the 1960s, there were 1 million title deeds for agricultural land, but 3.4 million agricultural households. About 60% of total holdings had a formal title. The other 40% lacked a formal title, resulting in land insecurity and an inability to secure agricultural credit (ICEM 2003).

Forest laws in 1941 and 1964 defined forest as land with natural features that no one possessed (RFD 1941, 1964), effectively making RFD the owner of about 40% of Thailand's land. An estimated 10 million smallholders suddenly found themselves living and farming in National Forest Reserves (FAO 2009). After demonstrations from farmers, the Agricultural Land Rent Control Act of 1974 was passed to allow six-year, renewable land rental contracts (ICEM 2003).

Landless and tenant farmers could also buy up to eight hectares of land from private holders, RFD and crown lands (ICEM 2003). In 1982, the Sor Por Kor (SPK) program was established as a co-management scheme, in which the land belongs to the government, but the resources belong to farmers (Carlsson and Berkes 2005). Farmers could practice agriculture, but were required to grow or maintain 20% of the land with forest.

In 1992, RFD divided the National Forest Reserves into: 1) Conservation Forest Zone, as protected area, allowing minimal or no human activity; 2) Economic Forest Zone, as mostly degraded forest and land under cultivation; at initiation of SPK, RFD transferred almost 7 million ha of Economic Forest Zone land to forest dwellers; and 3) Agricultural Zone, as deforested area suitable for agriculture, and these were allocated to farmers (ICEM 2003). In 1997, due to King Bhumibol Adulyadej's intervention, families living in a site prior to 1997 were eligible for a minimum of 1 ha of privatized land of National Forest Reserves or a maximum of 1 ha of privatized land of protected areas (FAO 2009). Today, a holder is considered a land owner if they possess a land certificate (e.g., title deed of private ownership or legal rights to operate the land), or occupies and cultivates the land for over 10 years (NSO 2003).

The SPK program helped to defuse a heated controversy between RFD and millions of farm families (93 200 ha of SPK titled land was issued in North Thailand by 2002), although many farmers have yet to obtain land rights. Currently in Thailand, government-administered land accounts for 14.6 million ha (2008), land for community use accounts for about 1.2 million ha (2010), and land owned by individuals and firms is 1.1 million ha (2008). No land is owned by communities (EU FLEGT 2011). Thailand's land laws, however, only consider the lowlands as agricultural land. As a result, upland smallholders can not acquire legal titles to their lands (ICEM 2003).

Based on the interviews, land conflicts between smallholders and the Thai government are still a major issue today. Many smallholders, particularly those that were residing in an area before state ownership of land was enforced, still lack ownership titles to their land. One community member noted that most smallholders in midland to highland zones of North Thailand do not have official ownership of their land, because their land is often classified as protected area.

According to an NGO and community representative, RFD often allows smallholders to continue living on State-owned land, while making strict restrictions on land use expansion. Without official land ownership, however, livelihood options are limited, as land may not be used as collateral for credits, loans, and to negotiate better prices for corn produce. While some communities have gained official land titles for their residential area, their agricultural land is often registered through SPK status. An NGO representative points out that a lack of land titles makes smallholders less able to defend their land from outsiders, and creates a challenge for the government and development projects that must impose taxes or monitor land development, respectively.

A changing livelihood system

Up to the 1960s, most agriculture in North Thailand consisted of shifting cultivation (Schmidt-Vogt 2001). Indeed, for many poor farmers in Southeast Asia, shifting cultivation is often their most rational economic and environmental choice (Cramb *et al*. 2009, Padoch *et al*. 2007, Schmidt-Vogt *et al*. 2009). Although the environmental costs and benefits of shifting cultivation practices depend highly on the demographic and environmental context, most contemporary land laws and policies seek to discourage shifting agriculture (Padoch *et al*. 2007). As such, high-value commercial crops are often promoted to substitute subsistence crops (Fox and Vogler 2005), resulting in drastic changes to livelihood systems. Brokers and seed companies promote cash crops, such as corn, by providing credit, access to agricultural inputs, product aggregation, and transportation services (Rerkasem 2003). In addition, smallholders are encouraged to move away from agriculture through increased education and development of the non-farm sector.

Overall, upland ethnic minority farmers are reluctant to give up subsistence-based rice farming, as it provides livelihood security for them (Hill 2010). With no implementation of state policies, smallholders often continue practicing shifting cultivation as their main form of agriculture. With increased enforcement of land use policies, however, shifting cultivation is often reduced, as smallholders engage in more permanent and commercial agriculture. Unfortunately, these smallholders often enter into debt with more dependency on external institutions (Forsyth 1996, Schmidt-Vogt 1998, Kanchanapan *et al*. 2004).

Rapid expansion of cash cropping in the uplands has led to environmental concerns and land disputes. Despite these issues, permanent agriculture is now the predominant type of land use in the uplands, while shifting cultivation practices have greatly declined in Thailand. By 1988, agriculture was providing employment for over half of Thailand's labor force (ICEM 2003). In addition, North Thailand smallholders are increasingly seeking out non-agriculture livelihood activities (NSO 2003), and those that stay in commercial agriculture are falling deeper into debt. Thailand's rural farming population declined from 90% in 1950 to 70% in the early 2000s (ICEM 2003). In North Thailand, the age of holders has been increasing, and less people are engaging in agricultural activities as their primary activity (56% in 1993 and only 33.2% in 2003). Since 1998, the proportion of holders earning household income only from agriculture has decreased by almost 50%; most holders (78.6%) now also engage in other sources of income. In 2005, in North Thailand, 33% of household income came from non-farm activities (Ekasingh *et al*. 2005). In 2003, most holders in North Thailand (60.1%) were in debt from agriculture.

According to one interviewed academic, forests in Thailand were once most valued as a key livelihood component for local people. Today, forests are often more valued as a financial resource that also offers the promise of political control (Leblond and Pham, 2013). As it is, the land titling system is structured to support the interests of private capital (Johnson

and Forsyth 2002). A community member noted that although reforestation projects attempt to reverse forest degradation in the uplands, the efforts are often ineffectual because more powerful and wealthy people often make decisions about forests that suit their own personal interests over that of smallholders and forest restoration.

Still today, many smallholders depend on forests and land for their basic livelihood, but their needs are at odds with the incentives and goals of a market-based society (Johnson and Forsyth 2002). One community member pointed out that Thai government officials tell smallholders not to cut forest, but they do not tell them how they can live without cutting the forest. In recognition of this dilemma, many local park officials relax harvesting rules in protected areas for community members on an ad hoc basis (FAO 2009).

Although many studies show that upland ethnic minority groups are culturally diverse with varied land practices (Forsyth and Walker 2008), Thai policy often considers all upland ethnic minorities as one in the same. Therefore, when one group is viewed negatively, all are affected. Likewise, when development programs target one group, it is often assumed that the upland ethnic minority "problem" is being solved. An industry representative and government official noted that Karen and Akha upland ethnic minority groups, for example, are known for being good forest stewards, as they practice sustainable subsistence activities and respect nature as part of their traditional culture. In contrast, the Hmong are known for practicing destructive agricultural techniques by intensifying commercial cultivation, using chemical fertilizers, and burning vegetation. As such, benefits from development programs are often unevenly distributed among the upland ethnic minority groups to focus on groups with the most destructive agricultural practices and engagement in opium production. According to industry and NGO representatives, with the presence of more dominant groups, such as lowland people or ethnic Chinese, upland ethnic minority people are less likely to have land rights, and some specific upland ethnic minority groups (like the Akha) are even more disadvantaged.

Overall, interviewees noted that current land use policies do not support smallholder diversity and population growth. According to community members, new migrants and generations of smallholders have difficulty gaining official rights to land, as there is limited allocated land for agricultural purposes. As a result, these landless people must borrow agricultural land or leave to find work. According to an NGO representative, governmental policy is still directed towards intensifying smallholder's cultivation and specialization in cash crops, although it should be more supportive of forest-based livelihood diversity to enhance smallholder resilience.

CASE STUDIES

Three case studies, which were informed from interviews and literature review, offer different examples of the role of upland smallholders in forest and land management in North Thailand. These case studies describe a highly regulated watershed, an RFD-registered community forest, and community-based land management. The locations of the case studies are shown in Figure 1.

Case study 1. Mae Salong Watershed, Chiang Rai province

Mae Salong Watershed consists of 112 000 ha of area, and is located at the far north of Thailand. Mae Salong is composed of National Forest Reserve and Watershed Classes "1A" and "1B," which characterizes the area as very steep (>30%), highly vulnerable to land erosion, and with low human disturbance. In Mae Salong, over 13 000 people live in 12 communities belonging to different ethnic groups, including Chinese descendants and Akha, Lisu, Yao, Shan and Lawa minority groups.

The initial land use planning of the Mae Salong region in the 1950s was led by the Royal Thai Armed Forces' (RTAF) efforts to maintain authority over a sensitive border area that was engaged in opium cultivation and trafficking (Duangjai *et al*. 2015). No local land use surveys were used to inform the borders of the Mae Salong watershed, greatly contributing to the complications of land use between government authorities and local communities in Mae Salong today.

The Mae Salong Watershed is officially managed by RTAF, which now offers mainly land support. Active land use management is conducted by the Land Development Department (LDD), which strictly enforces how Mae Salong's designated agricultural land and protected forest are used. In addition to these government agencies, Thai-based NGOs (FORRU, the Royal Project, and HRDI) assist with reforestation efforts, and the International Union for Conservation of Nature (IUCN) provides access to funding and information to help support conservation initiatives.

According to interviews and literature (Duangjai *et al*, 2015, Fisher *et al*, 2012), the Chinese are the largest (composing about half of the population) and one of the longest-residing ethnic group in Mae Salong (since 1950s), and they own most of the usufruct land rights to grow high-value tea. In contrast, the other minority ethnic groups have rights to only very small land areas that are used to provide subsistence resources. Community members note that most people have enough land to support their household. The remainder that lack sufficient land rights must earn income by working mostly as day labor in Mae Salong (e.g., tea plantations) or leaving the region. New generations of community members are most affected by this low availability of land. With such strong presence of authorities in Mae Salong, encroachment on forest and new migrants to the region are rare. At the same time, interviewees noted that there is little social conflict between the different ethnic groups, despite their diverse ethnicities and socioeconomic status. Indeed, other studies have noted a general lack of conflict between the different stakeholders in Mae Salong (Fisher *et al.* 2012).

In 2007, RTAF initiated a forest restoration program in Mae Salong that focused on reforestation of farmland area. After farmers protested against these activities, a landscape

management approach based on multi-stakeholder negotiation over land use for farming and conservation was implemented (Fisher *et al.* 2012). Today, government authorities and NGOs also conduct socioeconomic development initiatives and land use education to change the behavior of local communities, in order to help balance land use goals and conservation of Mae Salong. LDD leads most of these efforts through profit-driven land-use strategies, such as by introducing new agricultural techniques, so that community members convert from corn production to high-value organic produce, paddy rice, and fruit trees, and raise livestock to help support sustainable land management. LDD relies on participatory and community-based approaches to initiate new projects by gaining the support of at least a few community members, who volunteer to lead the projects. Community members participate in reforestation activities that are focused on headwater areas and mountaintops, which are culturally important to many of the ethnic minority groups in Mae Salong, such as for conducting Akha spiritual ceremonies. According to LDD, community members use reserve forests for NTFP collection, and collect timber from the fast growing, non-native pioneer species that are used in early reforestation.

According to NGO and governmental representatives, the co-managed agroforestry landscape of Mae Salong (e.g., forest patches integrated with multicropping) is considered a model for sustainable sloping land use in Thailand, and demonstrates how watersheds and upland smallholders can co-exist. While conservation and reforestation targets are indeed being met, it still remains to be seen if the livelihoods of its culturally diverse smallholders will be sustainable. While community involvement in local-level institutions has increased over time (Duangjai *et al.* 2015), weak land tenure and the lack of a long-term vision for livelihood security means that smallholder commitments to forest conservation and reforestation in Mae Salong may be limited.

Case study 2. Huai Mae Sai Community Forest, Chiang Rai province

Huai Mae Sai Community Forest is located just outside of Chiang Rai city. The community forest is owned by RFD, but managed by seven communities of different minority ethnic groups, including Yao (Mien), Akha, and Lahu, which all have unique languages and animist beliefs. Of the approximately 20 000 people among the villages, 90% have citizenship and 10% have residency status; the population is fairly stable with few new migrants. The communities are located along a river and surrounded by steeply sloping hills, where the community forest is found.

The communities had once been located higher in the mountains, until they were asked by the Department of Public Welfare in 1970 to relocate closer to urban infrastructure, modern social infrastructure, and work opportunities (day labor). They were designated very limited land at 2 ha (1 rai) for each household, and no land for agriculture. Today, many of the households earn income through work in Chiang Rai city or other countries. While some families have used this income to buy agricultural land for earning supplemental income and meeting subsistence needs, most residents do not practice any agriculture or raise livestock, because of the limited land area and infertile soil, which requires high investment with fertilizer.

Since around 1970, each community administered a small portion of the forest directly adjacent to their residential area. In 2004, the communities joined these forests into the Huai Mae Sai Community Forest (159 ha) for the purpose of registering the forest with RFD, who also provided the communities with funding and training for map making, surveying, and basic forestry skills. According to interviews with community members, without RFD's assistance, the communities would have maintained the forest regardless, because it provides essential forest products and spiritual resources for the communities.

Huai Mae Sai Community Forest is composed of conservation forest (36%) that is fully protected from all use, and restricted forest that is used only for cultural ceremonies (1%). The remaining 63% is designated as utilization forest for the collection of NTFPs; timber collection is not permitted in any of the forest. Community members believe that prohibiting timber collection protects them from deforestation, and therefore, flooding. Huai Mae Sai Community Forest also prohibits the shooting of guns, fishing with unsustainable means, and burning the forest (Ban Huai Mae Sai N.D.).

The Community Forest committee, which is composed of one representative from each village, monitors and restricts forest encroachment and fires; they enforce community-based reforestation projects if any of these activities occur. The Community Forest is also used to support community-based tourism and education about local culture, ethnobiology, and biodiversity. Collaboration with university academics has resulted in several identification books and educational material related to the Community Forest (Pingmoung 2011). Overall, the community hopes that the Community Forest Bill gets passed, so that their claims to the forest will be fully validated.

As an example of an RFD-registered community forest, Huai Mae Sai Community Forest demonstrates unusually high community-based social organization and communication with government authorities. This case study shows how different upland ethnic minority groups have adapted their livelihoods to relocation and lack of space for agricultural activities. By agreeing to relocate, they essentially gave up their lives as shifting agriculturalists to become integrated into the market economy.

Case study 3. Bong Cum Village, Santisuk district, Nan province

The people of Bong Cum Village are predominantly Tai ethnicity, which is the majority group of the lowlands, and Buddhists. The village was established in 1897, long before the state had officially designated any land titles in the region.

A multi-decadal drought that ended in 1991 stimulated Bong Cum Village's interest for improved natural resource management (Kaewhiang 2000). They believed that the drought had been caused by deforestation at the headwater of their watershed area that displeased the forest spirits.

Therefore, inspired by a successful forest conservation project in a neighbouring village and encouraged by the chief abbot of Bong Cum Temple, the community established the Bong Cum Community Forest in 1991 (1 920 ha or 12 000 rai, Kaewhiang 2000) along the top of an adjacent mountain; it strategically joined a community forest of the next district. Previously an agricultural field for corn, the community forest was reforested by natural regeneration through community protection.

Around the same time that the community forest was established, RFD declared all of the forest around the village as a protected area, including their designated usage forest. Despite this, Bong Cum Village continued to manage their community forest according to their informal laws, demonstrating how community organization can be used to overcome RFD rules (Kaewhiang 2000). Today, the community forest is divided into conservation forest at the head of the watershed area where no trees can be cut, and usage forest that provides timber resources for construction and charcoal; timber can be cut with permission from the committee, but a new tree must be planted as a replacement. An established Community Forest committee ensures that the rules of the community forest are implemented through regular monitoring.

Each family in Bong Cum Village has agricultural land, which is mostly titled as SBK land, and they produce such crops as corn, manioc, and rubber for income. Their need for land to support commercial agriculture (mostly corn) resulted in the initial reduction of the forest area. Aware of the natural and social instability associated with growing corn for income (high agricultural inputs, low selling value) and to optimize for economic growth, Bong Cum community members have been open to opportunities for livelihood change. As such, HRDI (Highland Research and Development Institute, which is associated with the Royal Project), with the support of the well-respected village abbot, provides the community with external assistance by implementing reforestation projects and alternative agriculture approaches.

HRDI-led reforestation initiatives occur on land that is no longer used for agriculture (e.g. land abandoned by aging smallholders and out-migration of younger generations). To support reforestation efforts, HRDI provides the community with seedlings (raised in a nursery at the village temple) and minor financial aid. Mostly exotic tree species are used, as these trees can be used for timber (exotic species are not protected by the State). However, these reforestation initiatives have not had the success that was intended. In contrast to protecting their community forest, villagers see little use of HRDI-initiated forest, asking, "Why should we plant this forest? So rabbits can live there and eat our corn?" In addition, HRDI encourages community members to move away from corn to diversify in high-value, low-impact produce (e.g. bamboo, pineapple, and rattan). In practice, however, villagers are reluctant to enter into new systems of agriculture that require different types of maintenance, markets, and income adjustments (i.e. more money over the long term).

Bong Cum Village is an example of how a community self-organized to provide itself with the forest resources that they needed, and the effect of economic and environmental pressures on their livelihood strategies. HRDI's experiences with Bong Cum Village also show how difficult it is for an external agency to intervene and change the agricultural habits of smallholders, even when they show a propensity for adaptation.

DISCUSSION

North Thailand uplands are shaped by upland-lowland dynamics and competition between stakeholders of shifting and permanent cultivation, forestry, and conservation. Over the past 70 years, forest and land policies in the uplands of North Thailand have shifted from a focus on economic development, national security, and narcotics to that of sustainable development, community-based resource management, and environmental conservation. Most recently, there has been drastic political change in Thailand's central government, as a military junta (NCPO) replaced Thailand's constitutional monarchy system. In April 2017, NCPO repealed and replaced the 2007 Thai constitution with a new constitution of their own. It still remains to be seen what these political changes may mean for forest management, reforestation, and land use in the uplands.

The results of this study show that perceptions are slowly changing about the potential role of upland smallholders as partners in Forest Landscape Restoration (FLR) and sustainable forest management. Likewise, other studies have shown that there has been increased community involvement and empowerment in local-level institutions (Duangjai *et al.* 2015). Overall, however, there is still hesitancy among governmental authorities to give up control of forests and lands (Ganjanapan 2008, Forsyth and Walker 2008), demonstrating the continued perceptions that smallholders are harmful to forest and watershed conservation. Similarly, smallholders lack confidence that upper-level governing bodies are willing to represent their interests (Hares 2009, Neef 2008), and for good reason.

The needs of the lowlands are almost always prioritized over the uplands, so watersheds and upland forests are often targeted for protection from smallholder traditional agriculture. As such, the role of smallholders in North Thailand is shifting from that of an isolated, subsistence-based agriculturalist to a more society-integrated, market-based, and permanent or even non-agriculturalist. Smallholders are encouraged to practice permanent, high-value agriculture on small plots of land, where soil is degrading, land availability diminishes, and a reliance on external assistance and financial capital is required. New generations are encouraged to learn non-agriculture skills and seek income in cities.

Overall, agricultural activities may be declining in the study area due to pressure to reduce traditional agricultural practices, a lack of land availability, and abandonment of agricultural land. Indeed, other studies have sought to understand the causes of agricultural decline in Northern Thailand (Leblond 2008). It is expected that agricultural-based upland

smallholder populations will shrink in the future and reduce smallholders' impacts on forests, but at what cost? Much of Thailand's traditional knowledge and culture is tied to forests and land use. A resilience to withstand unforeseen shocks, such as economic crises, is linked to Thai people's ability to revert to subsistence-based activities (Jitsanguan, 2001). As the last two decades have demonstrated, forest recovery will be slow. To date, much of Thailand's approach to forest restoration has focused on its biophysical functions, but the social dimension of forest restoration is equally, if not more, important (Stanturf *et al.* 2014).

In alignment with FLR approaches that consider forests as integrated social, environmental, and economic landscapes (Appanah 2016), it would be appropriate to view the forests, land, water, governance systems, and smallholders in upland North Thailand as integral parts of an adaptive, dynamic social-ecological system. As such, upland North Thailand should be framed as a dynamic and interconnected complex landscape, rather than discrete parts that must be managed in isolation for specific stakeholders.

Through increased community-based approaches, the social institutions that already exist among smallholders and upland forests in Thailand can be leveraged to develop sustainable upland forest management that is anchored in its local context. Upland farmers should be seen as legitimate users and stewards of the land (Walker 2003). Shifting agriculture and their associated secondary forest can be viewed as a natural parts of the landscape that provide important ecosystem services, such as plant cover, complexity in species composition and stand structure, and socio-cultural benefits for Thai people (Schmidt-Vogt 2001). Indeed shifting agriculturalists in Thailand have considerable knowledge about the plants associated with fallows and fallow dynamics, so their insight can be used to improve forest restoration approaches (Wangpakapattanawong *et al.* 2010).

There is still more to be done to attain an integrative, systems-based forest management model that is inclusive of traditional smallholder land use of the uplands, where integrated livelihoods and forests allow for adaptation to social and environmental change. To advance toward a people-centred, co-management, and systems-driven FLR approach that enhances the social-ecological resilience of the uplands, the following recommendations should be considered:

- Strategies for building capacity to strengthen lateral communication and social organization among community groups are needed to improve the sharing of ideas and lessons learned regarding forest and land management, and forest restoration.
- More investment in building communication skills and mutual understanding between government officials and development staff, and local communities are needed as foundations for true participatory decision-making.
- Increased integration of traditional knowledge and culture with conventional knowledge is needed to develop forest management and restoration plans.
- Policies must broaden their focus on integrating smallholders and forest resources into a market-based economy, and include support for a vision that forest and diverse land uses are integral parts of complex, sustainable livelihoods.
- The social heterogeneity among smallholder must be recognized and supported by social development initiatives.
- Smallholders must be viewed as equal collaborators in forest management and restoration, instead of part of the process or as end users of assistance.
- The local social-ecological context must be used as the foundation for FLR of the uplands.

CONCLUSION

This study shows that there is still much to be done to resolve the differences between the reality of upland smallholders in North Thailand, and Thailand's development goals and approach. Strict land use policies and social development initiatives are leading to the decline of smallholder agriculturalists in North Thailand's uplands. It is unlikely, however, that the reduction of upland smallholders will solve Thailand's problems of environmental degradation. Indeed, reducing the rich diversity of land use, traditional knowledge, and ethnicity in the uplands, may have unknown repercussions on Thailand's overall social-ecological resilience and FLR capacity.

While it is still unknown how the most recent political changes may affect the potential for FLR frameworks to be implemented in the uplands of North Thailand, the last couple of decades have shown increasing and broadening support for a grassroots push towards decentralization, community-based forest management, and a livelihoods-focused agenda. Such movement offers a starting place for the expansion of FLR initiatives that rely on active participation of smallholders in landscape planning and management. Through further support of policies that display greater confidence in smallholders as responsible stewards of forest resources, a successful balance between smallholder traditional livelihoods and national forest conservation goals can be made possible.

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APPENDIX I: INTERVIEW TOPICS

Cultural baseline

- Types of ethnic groups living in the focus area
- Types of ethnic groups affected by the focus intervention(s)
- Status of Thai citizenship or legal residence among inhabitants
- Ability to speak Thai or other languages (demonstrates level of integration into other cultures and retention of their culture)
- Religion practiced in the communities (demonstrates level of integration into other cultures and retention of their culture; identifies potential cultural and natural resource conflicts)
- History of the population: Origin of inhabitants, length of time living in the region, status of migration into or out of the region, reasons for migrating to the region, history of growth or reduction of the population

Land types, ownership, and use/management

- Location of agricultural plots and forest areas in relation to the residential area
- Determine if the agricultural area is growing or shrinking.
- Determine if community has official ownership titles for their house and agricultural land. If there is no official ownership title, determine the type of tenure that exist. (Official house and land ownership allow people to borrow money, participate in subsidy programs, and accessing government assisted markets)
- Existence of a community forest. If a community forest exists, determine how many years of establishment, group of people who initiated its establishment, whether the forest area is growing or shrinking, rules of the forest and the people who determine these rules, and whether or not the forest is registered with RFD.
- Existence of a protected forest. If a protected forest exists, determine how many years of establishment, group of people who initiated its establishment, whether the forest area is growing or shrinking, rules of the forest and the people who determine these rules, whether the community was founded before or after the establishment of the protected forest.
- Presence of RFD or other government enforcement of land use rules. (Determined by the frequency that government officials survey the land and forest)
- Peoples' level of concern regarding their land/resource tenure security
- Perception that there is sufficient land for current community members and forthcoming generations. Potential consequences of lack of land. (availability of land for grandchildren to build houses and practice agriculture; alternatives for new members without land; potential that forest will be converted to agricultural area to allow space for new members)
- Role of markets: Types of agricultural products grown, types of forest products collected, purpose of cultivation/collection (subsistence or for sale), location of markets, transportation method
- Reforestation: Types of species used, people who select the species, origin of and method for procuring seeds, people who plant and care for the seedlings, incentives for local people to participate in reforestation programs
- Main income sources for residents, including non-agricultural sources

Interventions

- Main drivers of deforestation in the area
- Overall sense that local people like or dislike forests. (Is there local support for more forest? What type of forests and species do they want?)
- Main challenges of land use in the region. For example, flooding, erosion, land degradation. Local and external strategies for overcoming challenges.
- Types of interventions that have been implemented in the region. Types of interventions that specifically target local land use challenges. Length of time that the intervention has been established. Group of people (local and external) responsible for initiation of intervention. Role of community in intervention.
- Barriers to intervention goals. Strategies for overcoming barriers.
- Local people reaction and perceptions about intervention. Level of resistance and support of intervention.
- Social actors involved with development and management of land and forest in the region

APPENDIX II: RFD COMMUNITY FOREST CRITERIA

Process and criteria for being recognized as a community forest by the Office of Community Forestry, Royal Forest Department of Thailand

1. The site must be recognized as a community forest by local authorities.
2. The site must be located in national reserves or state lands recognized as public lands (e.g., land allocated for farmer use), and not within a protected area, a special conservation area, or RFD research area.
3. The forest must be adjacent to a community.
4. More than 50 adults with Thai citizenship from the village must submit a letter to a state authority asking to establish a community forest.
5. The community must establish a local committee to work with the state, who sends a RFD official to survey the status of the land as a final step. The RFD community forestry permit is valid for 5 years, after which they can renew their license by passing an evaluation by a RFD officer demonstrating their sustainable management of the forest, such as by preventing poachers and deforestation activities (Office of Community Forestry, 2012).

Capacity-building services offered by the RFD

Through the community forestry program, RFD provides training and infrastructure to help smallholders with sustainable forest management and reforestation, and capacity building services, such as supporting a learning network

for community forest managers, and helping communities demarcate forest areas, prepare operational plans, and learn basic forestry skills. RFD also helps communities to develop plant nurseries and fire protection programs. RFD does not provide any financial support to communities that are participating in community forest activities, and offers little support for developing commercialization of NTFPs.

In addition to community forestry, RFD promotes forestry training for young people, water management, promotion of local vegetables, traditional medicine, organic farming, new technology to improve efficiency for using natural resources, and developing and marketing value-added local NTFPs and crafts through the One Tambon One Product (OTOP) government program (Pinaisap and Khampan, 2006).