A Comparison of Practices between Non-Indigenous and Indigenous Community Forestry in the Use of Firewood and Non-Timber Forest Products

Background

Forest cover in Cambodia

The Kingdom of Cambodia covers an area of 181,035 km^2, bordering Vietnam in the east, Laos in the north and Thailand in the north, west and south. It is among the richest Southeast Asian countries in the diversity of natural resources, containing 80 percent of the most valuable and endangered indigenous tree species in the region, which are under ongoing threat from development and land use changes (FA 2003). An assessment prepared by the Forestry Administration (2011) shows that between 2002 and 2010, the total forest cover in the country declined from 61.15 percent to 57.07 percent, a decrease of 0.51 percent annually, equivalent to 740,502 hectares in total.

Table 1: Forest type and area in Cambodia

Forest type	Area	
	ha	%
Evergreen	3499185	19.27
Semi-evergreen	1274789	7.02
Deciduous	4481214	24.68
Other	1108600	6.10
Total	**10363789**	**57.07**

Source: FA 2011

Firewood and non-timber forest products

Rural households in developing countries generally depend on firewood as the primary fuel for cooking. In Cambodia, wood is the main cooking fuel for 80 percent of the population (FAO 2010; Chan, Sasaki and Ninomiya 2015). Non-timber forest products (NTFP) are also critically important for their livelihoods, either for subsistence or for cash income (De Boer and Baquete 1998; Kumar and Shahabuddin 2005). The over-exploitation of these forest products is likely leading to forest degradation and deforestation as well as social, environmental and economic impacts on local communities (San et al 2012; Chan, Sasaki and Ninomiya 2015; Chhun 2015).

Community forestry

Community forestry (CF) was introduced to Cambodia in the mid-1990s to foster the sustainable use and management of forest resources and improve local livelihoods, with support from international and national non-government organisations. The government officially adopted a Guideline on Community Forestry in 2006, in addition to a Sub-Decree on Community Forestry Management in 2003 and the Forestry Law in 2002 (FA 2015). The steps for a community forest to receive official recognition are listed in Table 2.

By completing steps 1-7, the community secures access to forest resources in the approved area for the agreed duration (15 years), which may be revoked only if the community fails to meet the requirements outlined in the CF agreement. However, four additional steps are required for the community to manage the forest optimally, to commercialise forest products legally and to maintain tenure over the land.

The number of community forests officially registered with the Ministry of Agriculture, Forestry and Fisheries increased rapidly. In September 2015, there were 499 CF areas covering 417,635.86 ha in 21 provinces (Figure

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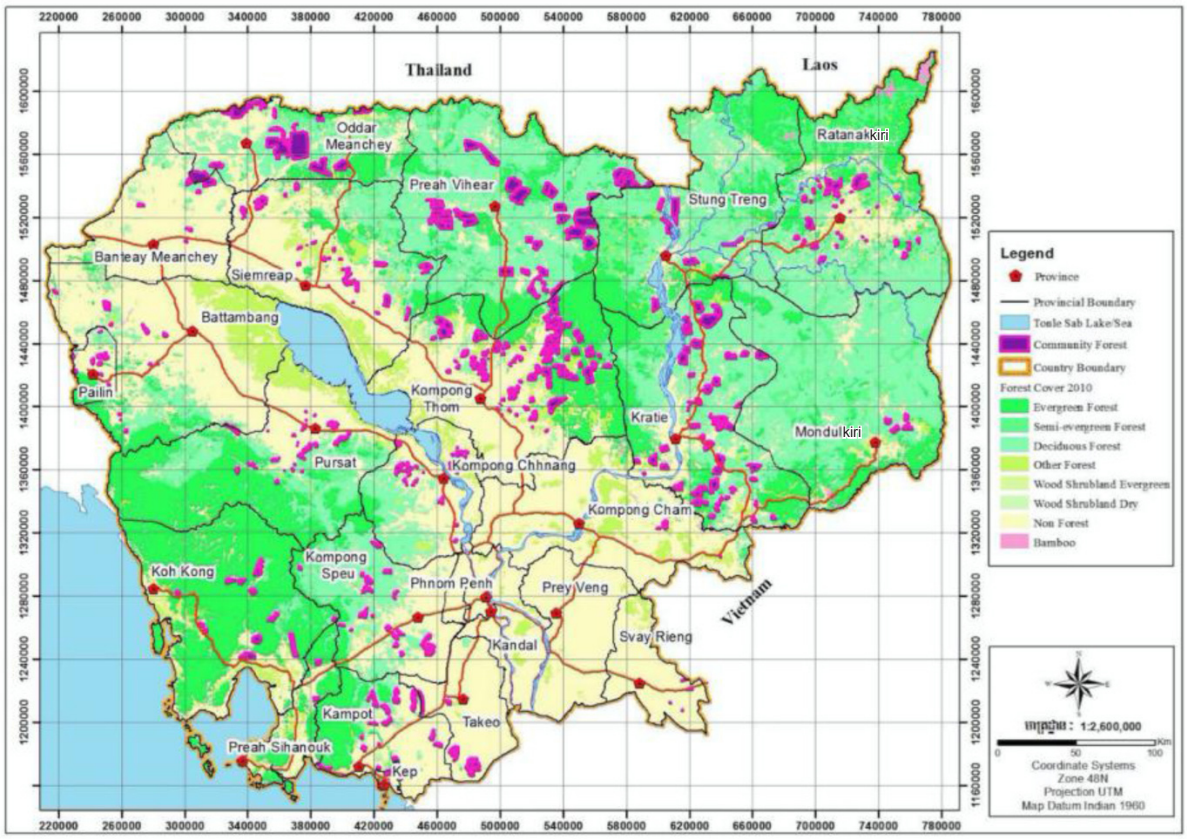
1). Of these, 401 had received approval from the ministry, equal to 338,316.78 ha, though only 328 forestry communities had signed an agreement with the Forestry Administration Cantonment.

Table 2: The 12 steps in formalising a community forestry site

Step 0: CF area identification and approval	Step 6: Preparation of CF regulations
Step 1: CF formulation	Step 7: Preparation and approval of CF agreement
Step 2: Information gathering	Step 8: CF management plan and inventory
Step 3: Establishment of CF management committee	Step 9: Enterprise/ livelihood development
Step 4: Development of internal rules	Step 10: CF management plan implementation
Step 5: Demarcation of boundaries and mapping	Step 11: Monitoring and evaluation

Source: RGC 2010

Figure 1: Registered community forestry sites



Source: FA 2015

Minorities

Cambodia is a multi-ethnic society, with Khmer making up the majority (90 percent). Indigenous and other minorities make up a much smaller proportion of the population than in neighbouring countries. Based on their spoken language, indigenous groups are classified into 17 different categories, predominantly in the north-east provinces (NGO Forum 2006).

In Ratanakkiri, ethnic minorities form about 75 percent of the total population, comprising eight primary ethnic groups: Tampoun, Kreung, Cha Ray, Pnov, Pnong, Ka Vet, Ka Chak and Lun. Most of the indigenous residents are subsistence farmers who rely on gathering forest products.

Objectives

Studies on NTFP, firewood and its marketing chain flow have been conducted in different parts of Cambodia. However, there have been no recent studies of resource use patterns and stakeholder perspectives across different cultural groups (non-minority and minority) under the CF mechanism.

Figure 2: Location of studied sites

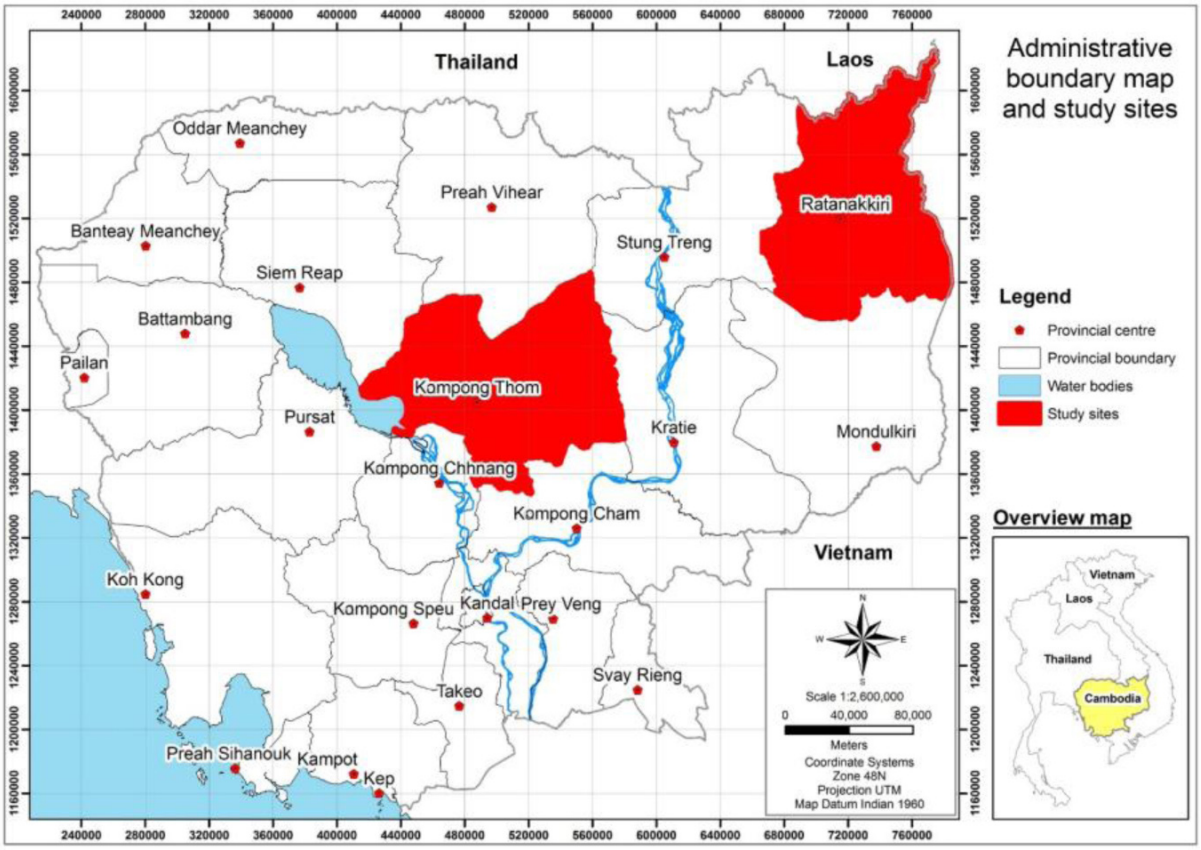
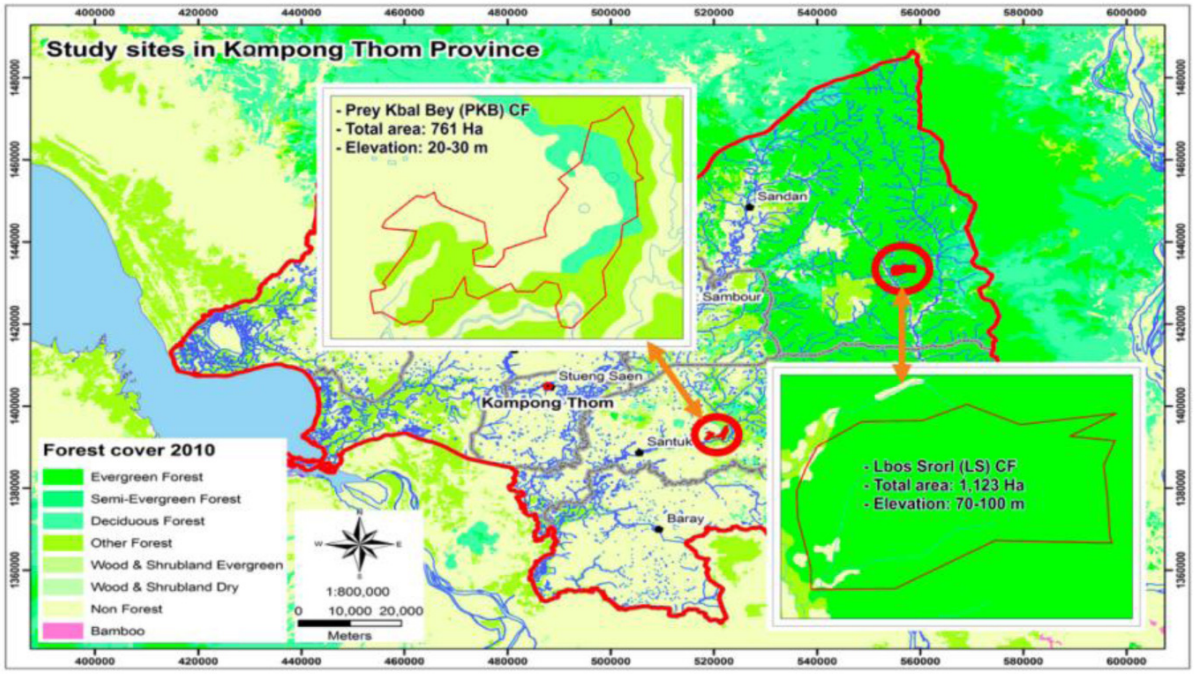


Figure 3: Study sites in Kompong Thom province



The objective of this study was to document differences among ethnic groups in their use of firewood and other NTFP in their designated community forests, as well as their perceptions on historical trends of firewood and NTFP and how well the current management scheme functions in each community.

Method

Two provinces in Cambodia were selected for this study (Figure 2): Kompong Thom in the central lowlands (non-minority groups) and Ratanakkiri in the north-east (minority groups). In each province, two registered forestry communities were selected, and semi-structured interviews of heads of household (or their representatives) were conducted, a sample of 37 in total and 8-10 households per community (Lbos Srorl 8, Prey Kbal Bey 9, Phnom Chra Phang 10 and Phruok10). These were complemented by direct observation and key informant interviews with representatives of Forestry Administration units (one national and two local), a non-government organisation assisting CF development, the head of each CF committee and the village chief.

In Kompong Thom, two communities were selected: Lbos Srorl with a total area of 1123 ha and Prey Kbal Bey, which covers an area of 761 ha. These communities represent non-minority groups.

In Ratanakkiri, representing minority groups, we selected Phnom Chra Phang, with an area of 191 ha, and Phruok, with an area of 136 ha.

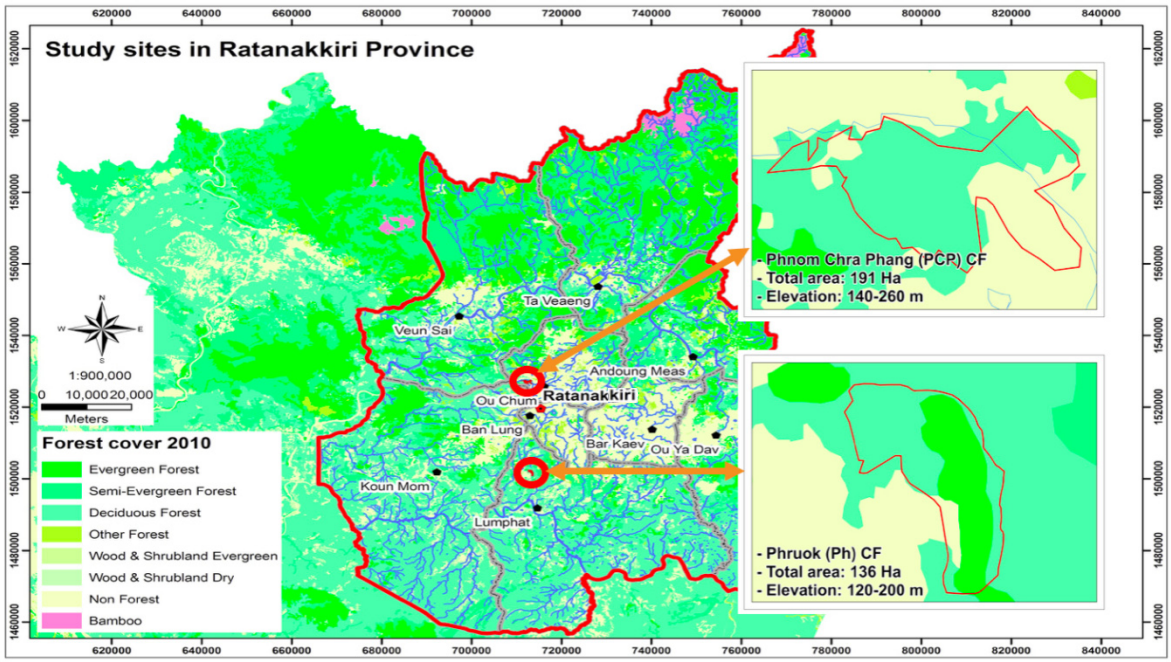
The selected communities in the two provinces differ in many aspects other than ethnicity, including the availability of a CF management plan (only in Kompong Thom), the size of areas approved for CF (larger in Kompong Thom), distance to cities (greater in Kompong Thom) and patterns of ongoing land-use change.

Key findings

Use of firewood and NTFP

In the four studied communities, households own both paddy fields and cashew nut plantations. All of the respondents reported that they use firewood as the main fuel for their daily cooking, and none of them had ever produced or used charcoal. Households in the non-minority groups in Kompong Thom, particularly in Lbos Srorl, lop the branches of their cashew nut trees to use as firewood instead of collecting wood from the community forest (Figure 5). These cashew nut plantations are located a short distance from their houses, so that it is easy to collect firewood, while the area designated for CF is substantially farther

Figure 4: Study sites in Ratanakkiri province



away. In contrast, in Ratanakkiri, especially in Phruok, the majority of households rely on community forests for their firewood.

Figure 5: Sources of firewood for daily consumption

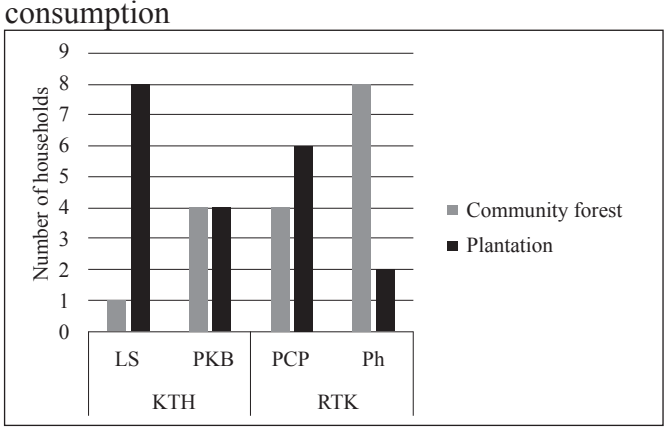


Table 3 summarises the NTFP reported. The four communities differ substantially in the type of NTFP they collect from their community forests, and the diversity of NTFP can be as low as a single product. In Kompong Thom, CF members in Lbos Srorl collect resin from Dipterocarpaceae trees (*Dipterocarpus alatus*) to supplement their incomes, and in Prey Kbal Bey collect several species of edible fruit. In Ratanakkiri, CF members in Phnom Chra Phang collect only bamboo shoots and those in Phruok collect mushrooms, honey and rattan in addition to bamboo shoots. In general, all four CF groups collect firewood only for subsistence because there is no market demand.

Table 3: NTFP collected in each community

English name	Local name	Collected in	Purpose	
			Subsistence	Generate income
Firewood	Os	LS, PKB, PCP, Ph	O	X
Charcoal	Khyoung	none	X	X
Resin	Chor teuk	LS	X	O
Edible fruit #1	Rumduol	PKB	O	O
Edible fruit #2	Kuy	PKB	O	O
Edible fruit #3	Raol, sae-maon	PKB	O	O
Mushroom	Psit	PKB, Ph	O	O
Bamboo shoots	Tum paing	PKB, PCP, Ph	O	O
Honey	Toek khmum	Ph	O	O
Rattan	Pdao	Ph	O	O

Note: LS - Lbos Srorl; PKB - Prey Kbal Bey; PCP - Phnom Chra Phang; Ph – Phruok.

Figure 6: Photos of the edible fruits listed in Table 4

Rumduol

Kuy

Raol/Sae-maon

Photos: Courtesy of Mr Kourn Mun, head of Prey Kbal Bey CF

Perceptions

Some CF groups gain more benefits from their forests than others, which may not gain much either for subsistence or cash income. Figure 7 summarises interviewees' perceptions of the importance of CF for their livelihoods. In Kompong Thom, 8 of 9 respondents in Lbos Srorl and 6 of 8 respondents in Prey Kbal Bey reported that CF is "very important" for trading and for subsistence. In Ratanakkiri, 9 of 10 respondents in Phnom Chra Phang said CF was important to them largely for some NTFP that they used, while 8 of 10 respondents in Phruok, replied that CF did not benefit them through sale of forest resources.

Asked about the trends of firewood use in their households, the majority of respondents in Kompong Thom, especially in Lbos Srorl, responded that firewood consumption had not changed much in the last five years (Figure 8). In contrast, in Ratanakkiri, responses were diverse.

More than half of the households in all communities expected that their firewood consumption would keep increasing as their family size increases (Figure 9). In Ratanakkiri, some interviewees said that they were willing to go further into either their own community forest or other forested areas to find firewood for cooking, if necessary.

Many interviewees in Phnom Chra Phang, Ratanakkiri, reported that they are likely to depend less on NTFP because forest is being converted into agricultural land by both locals and outsiders/intruders. They intend to clear the remaining bamboo forest and stop harvesting bamboo shoots. But, even within the same province, many in Phruok reported that they were likely to increase use of NTFP, similarly to those in Lbos Srorl and Prey Kbal Bey in Kompong Thom.

Current management

On performance, all except one respondent in Kompong Thom rated their CF committees as "very good" or "good". In Ratanakkiri, many in Phnom Chra Phang considered the current

Figure 7: Perceptions of the importance of CF to livelihoods and communities

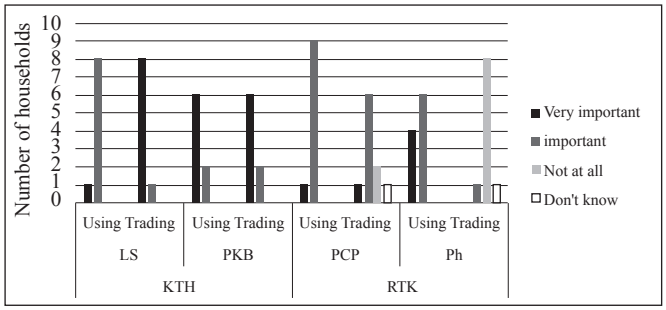


Figure 8: Perceptions of historical trends of firewood use

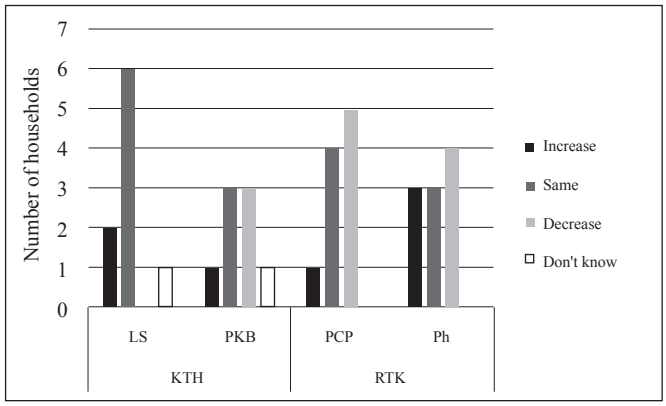


Figure 9: Perceptions of future firewood use

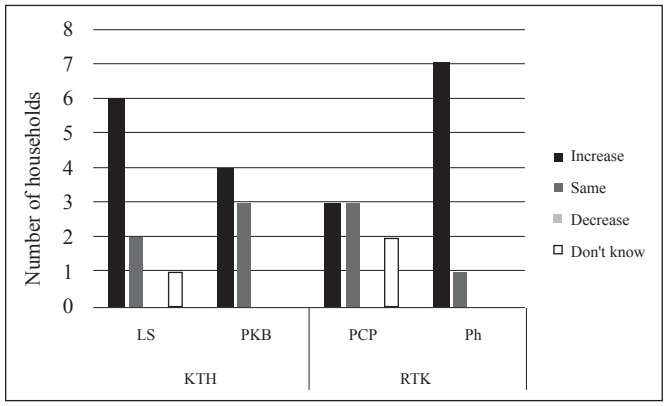


Figure 10: Perceptions of future use of other NTFPs

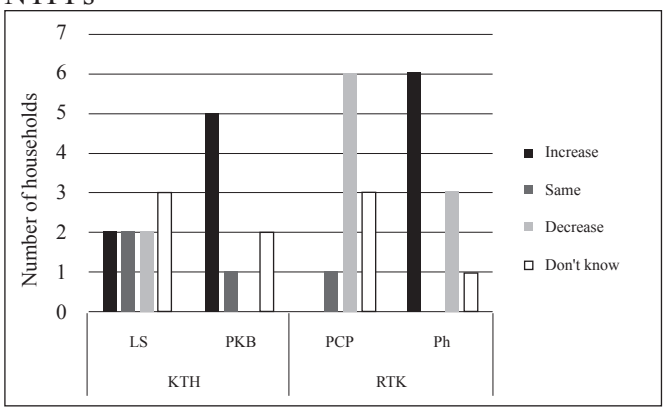


Figure 11: Perceptions of the performance of current CF committees

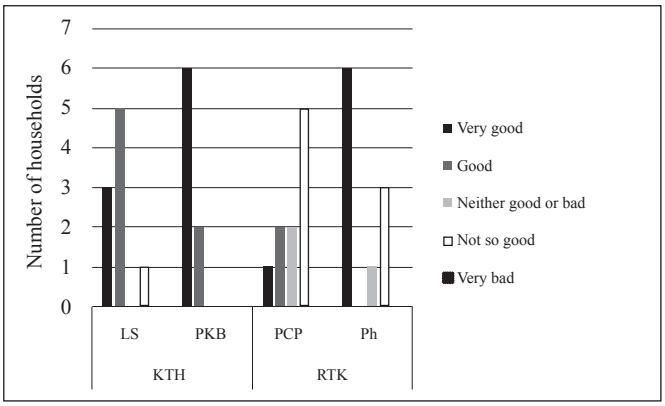
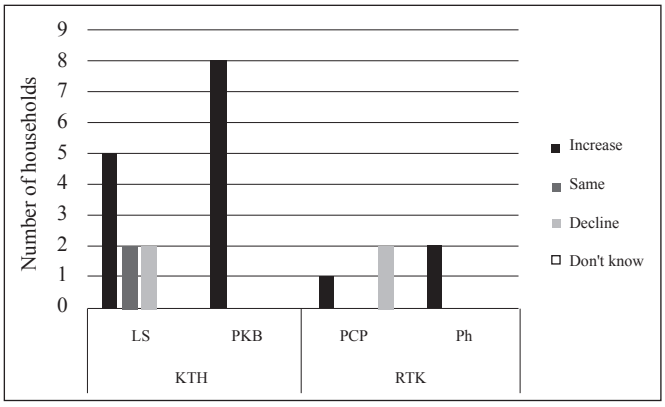


Figure 12: NTFP production before and after CF registration



CF committee "not so good" because it cannot prevent land invasion activities, whereas many people in Phruok considered their CF committee "very good" (Figure 11).

There were major differences between the two provinces in perceptions of the impacts of CF registration on NTFP production (Figure 12). Thirteen out of 17 respondents in Kompong Thom considered that the production of NTFP increased after CF registration. All members in Prey Kbal Bey reported increased production of edible fruits, mushrooms and bamboo shoots as a result of better NTFP management and increased vegetation cover. In contrast, those in Phnom Chra Phang and Phruok in Ratanakkiri reported a decline in NTFP. All respondents confirmed that the decline in NTFP was due to continuing forest degradation, and that without CF, those areas would not be forested in the face of rapid economic development and land conversion.

Conclusion and recommendations

The study found that members in all four communities relied on firewood for cooking only, while none of them produced or used charcoal or used wood for commercial purposes because the profit after covering transport and labour costs is very low. Different communities extracted different types of non-timber forest products, which reflected availability in each locality (resin, mushrooms and three edible wild fruits in Kompong Thom, mushrooms, bamboo shoots, honey and rattan in Ratanakkiri). The rural Khmer communities in Kompong Thom owned cashew nut plantations in the vicinity of their villages, and depended on them for firewood as well, rather than travelling farther into designated community forests. In Ratanakkiri, in contrast, the two minority communities used their forests for firewood. In both provinces, firewood consumption was related to household size. In the respondents' perceptions, current firewood consumption is similar to what it has been in the past. However, all expected the demand for firewood and other forest resources to increase in the future given increases in household size and economic growth.

Firewood-saving solutions and wood energy management are critically needed to reduce the massive collection of firewood and improve forest management.

Community forestry is a good local mechanism for sustainable forest use; good collaboration and additional support are still needed.

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