



Traditional made cookstove in Kbal Khla Village, Sandan District, Kampong Thom Province, Cambodia.
Photo: Chhorn Vireak, FA/ITTO

cover which may be caused by human choices of land use. Indirect drivers are results of complex economic, technological, social, political, and cultural variables that can contribute to the change of forest cover (Gautam, 2013). Results showed that the main direct drivers of deforestation and forest degradation included illegal logging and unauthorized encroachment, commercial wood products, and land clearing for commercial agriculture.

It is important to note that 98% of 219 respondents agreed that illegal logging was the main reason for forest degradation while unauthorized encroachment was the main reason for deforestation in their respective community forests. Respondents observed that their community forests have been encroached and the trees have been cut by both local community and outsiders due to the lack of alternative sources for their daily subsistence and livelihood. Also, about 88% of the respondents rated commercial wood productions as the second biggest threat in the area. Data from focus group discussions revealed that local communities have witnessed multiple accounts of commercial wood being exported their community areas. As these groups of loggers had little knowledge about tree felling, their activities have caused huge damages to residual stands and therefore result in rapid forest degradation and reduction of forest cover. Finally, the third biggest direct threat identified by the respondents (80%) was land clearing for commercial agriculture. Particularly,

the economic land concessions to grow cassava, rubber tree and cashew nuts were identified as a major factor in reducing the forestland area and cover in the project area.

Besides these three, other direct drivers included (i) charcoal production, (ii) land clearing for subsistence cultivation, (iii) new settlements/migration, (iv) natural disaster (drought and storm), (v) human induced forest fire and (vi) fuelwood (domestic usage). These are listed in order of their magnitude with regards to the reduction of forestland area and forest cover in the project area.

Indirect drivers and agents of deforestation and forest degradation in the project area

The most important indirect driver of deforestation and forest degradation in the project area identified by 97% of the total respondents was the limitation of law enforcement. In focus group discussion, participants revealed that the limited capacity of enforcement officers in arresting the illegal loggers contributed the most to the forest loss in the project area. For example, due to budget limitation, rangers normally conduct their patrol twice a week, while illegal logging would occur on the other days of the week. In addition, area of community forest is commonly large, for example Veal O Khdey has an area of 4,450 ha; thus rangers could not patrol the whole area due to their capacity constraints. Illegal loggers therefore took advantage of this opportunity. Other indirect drivers in the project areas identified by respondents included increasing demand for wood linked to population growth as well as the unclear land tenure and rights for local communities.

Conclusions and Policy Recommendations

Evidence from the survey and focus group discussions revealed that the main agents of deforestation and forest degradation were furniture makers, medium and largescale agricultural investors, migrants and local people including charcoal makers, firewood collectors, and subsistent famers. The survey and focus group discussion data also indicated that the appropriate activities that would be acceptable by local people to address the drivers of deforestation and forest degradation would include:

- (i) Clarify land tenure and management rights of community forests;
- (ii) Strengthen law enforcement capacity and resources to address illegal logging;
- (iii) Promote participatory community forest management, and environmental education;
- (iv) Restore degraded forestland and promote sustainable land use planning;
- (v) Offer alternative sources of crop production through agricultural intensification and better management of water resources;
- (vi) Improve market access for agriculture products by local communities; and
- (vii) Introduce fuelwood efficient cookstoves, as well as create alternative sources of energy such as the introduction of rooftop solar energy could also reduce reliance on fuelwood.



POLICY BRIEF

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Drivers and Agents of Deforestation and Forest Degradation in Tumring, Kampong Thom Province

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Highlights

- **Methods:** Quantitative survey (219 families) and focus group discussions (72 participants, 39 females).
- **Direct drivers (in order of significance):** Illegal loggings, commercial wood productions, land conversion for agriculture, charcoal production, land conversion for subsistence cultivation, new settlements/migration, natural disaster, human induced forest fire and fuelwood (domestic usage).
- **Indirect drivers (in order of significance):** limited law enforcement, lack of capacities and budget for rangers, increasing demand for wood linked to population increase, and unclear land tenure.
- **Agents of deforestation and degradation:** furniture makers, medium and largescale agricultural investors, migrants and local people including charcoal makers, firewood collectors, and subsistent famers.
- **Seven recommendations recorded through focus group discussion:** clarify land tenure and management rights, strengthen law enforcement, promote community forestry participation, restore degraded areas, offer alternative livelihood options, improve links to market, and introduce fuel efficient cookstoves.

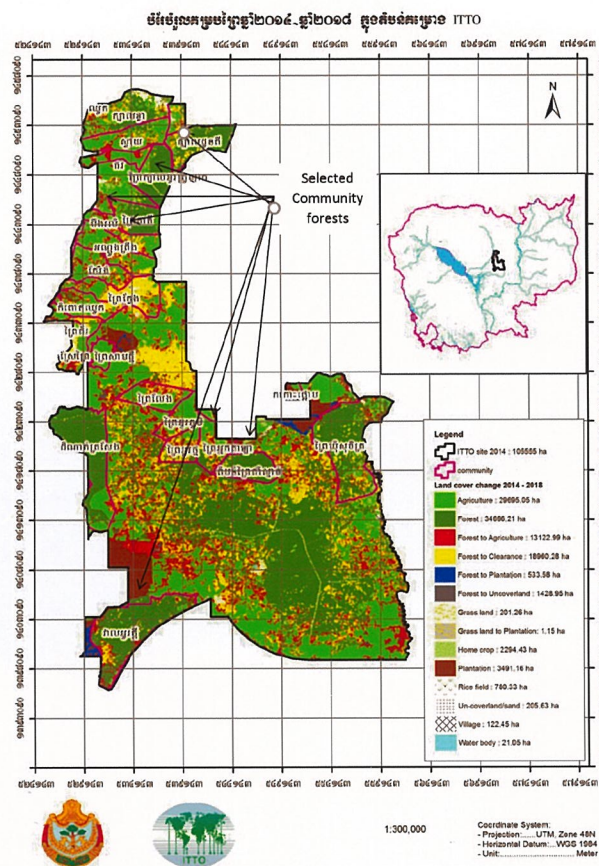
Introduction

The Royal Government of Cambodia's (RGC) recognises that deforestation and forest degradation negatively affect the livelihoods of poor forest dependent communities, and are significant sources of greenhouse gas emissions both nationally and regionally. As an active Party and a signatory to the United Nations Framework Convention on Climate Change (UNFCCC), Cambodia fully supports the implementation of REDD+, which stands for actions to reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks. Cambodia has been a strong supporter of the



Conversion from forestland to agriculture land in the area near the Prey Kbal O Kranhak Community Forest. Photo: Sreng Synearth, FA/ITTO

Figure 1. Map of the Tumring REDD+ Project and selected research sites



adoption of REDD+ and in started its REDD+ Readiness process in 2008. Several REDD+ projects have started since then. Tumring is one of the recently validated REDD+ projects in Cambodia, which has a total land cover of approximately 66,645 hectares next to the Prey Lang Wildlife Sanctuary. Tumring REDD+ project area is rich in biodiversity and ecosystem services, but these services and biodiversity have been threatened by high rate of deforestation and forest degradation (Wildlife Works Carbon LLC, 2017). Therefore, as part of the International Tropical Timber Organization's (ITTO) project, this brief investigates the drivers and agents of drivers that lead to deforestation and forest degradation in this area and to discuss the appropriate measures to address the deforestation and forest degradation problems.

Methodology

The report used both quantitative (questionnaire survey) and qualitative (focus group discussion) in its methodology. In total, 219 families from 7 community

forests in Tumring REDD+ project area were interviewed in August 2018. These community forests included Veal O Khdey, Prey Cheam Smach, Prey Naktala, Prey Kbal Daun Tey, Prey Kbal Ou Kror Nhak, Beong Rolom, and Andoung Pring. These communities were purposely selected to locate in or near the areas where the highest rate of forest cover change or most vulnerable to future forest loss was observed (see the map in figure 1). In addition to the survey, four focus group discussions were conducted with local people in Prey Cheam Smach, Prey Naktala, Prey Kbal Ou Kror Nhak, and Prey Kbal Daun Tey. The total number of participants were 72, including 39 females.

Both questionnaire survey and focus group discussions were conducted to identify the drivers and agents of deforestation and forest degradation, and to discuss the consensus of the local communities on appropriate activities for addressing the drivers and their agents. The survey was designed according to Likert scale format to detect the degree of agreement from local people toward drivers and agents of deforestation and forest degradation as well as suitable solution for their region. Focus group discussions data was used to triangulate results from the survey. According to Likert scale, the score ranked from strongly disagree (1) to strongly agree (5). Therefore, the drivers and agents of deforestation and forest degradation with a score from 3 or higher were accepted as the drivers and agents of forest loss in study areas. Applicable activities to address the drivers were based on the focus group discussions using the survey results.

Results

Direct Drivers of deforestation and forest degradation in the project area

Drivers of deforestation and forest degradation can be grouped into direct and indirect drivers. Direct drivers refer to activities that have direct impacts on forest



Firewood trade in Krayera Commune, Santuk District, Kampong Thom Province, Cambodia. Photo: Chhorn Vireak, FA/ITTO