

Community-based production forest: A viable alternative modality in Cambodia

Working paper



Overview

- Commercial timber harvesting run by communities using community-based production forest (CbPF) as an alternative modality in large and well-stocked forests needs to be further explored, if the community forestry goal is to be achieved;
- CbPF should be established in a large area where harvesting is permitted so there will be no conflicts between conservation and production objectives;
- Simplified timber flow procedures should be tested alongside those presently allowed by the Forestry Administration (FA) to identify technical problems and solutions;
- Royalties should be waived for all community forest products even if they are used for commercial purposes because the income is used mainly to improve the communities' socio-economic conditions; and
- New technical procedures should be tested for the inventory needed for community forest management plan (CF-MP) preparation because current regulations are too costly to implement in relation to relatively low harvest volumes.

Introduction

Cambodia has one of the highest levels of forest cover in Southeast Asia. According to the 2010 forest cover assessment carried out by the FA of the Cambodian Ministry of Agriculture, Forestry and Fisheries, the country was covered by approximately 10.36 million hectares of forest representing some 57 percent of the total land area. On the other hand, the same study showed a high and steady rate of deforestation calculated at 0.5 percent per year in the last decade.

The government has set a goal of 2 million hectares of forest to be included under community forestry by 2030; the thrust to achieve this will be supplemented with the help of aid organizations and international donors. At present, the FA has approved only two CF-MPs.

CbPF is suggested in the National Forestry Programme as an alternative community forestry modality in zones with large and well-stocked forests, where commercial timber harvesting run by communities would be the main objective.

The ForInfo Project provided funding and technical assistance to two sites: CbPF Keo Seima in Mondulkiri Province and CbPF Toul Kros in Pursat Province.

The CbPF Keo Seima Project has been operating since 2006 in the buffer area of the Seima Protection Forest in southeast Cambodia, as a joint activity of the Wildlife Conservation Society, the FA and local communities. The Institute for Global Environmental Strategies and the Rainforest Alliance have made significant contributions. The CbPF Toul Kros Project is sponsored by a UNDP-GEF project implemented by RECOFTC and is in early phases of development.

Purpose and approach

During project implementation in CbPF Keo Seima, different approaches for the forest inventory needed for the CF-MP were tested to compare their accuracy and efficiency. These approaches included: a) the official method envisioned in the national community forestry guidelines, b) a new type of plot layout called the K-tree method and c) the use of the diameter at breast height (DBH) to height relationship method.

The trial harvest was intended to test – on a small scale – some of the key activities that will be laid out in the CF-MP, including annual operation planning, harvesting techniques, sales and benefit-sharing. This testing was appropriate in a site where large operations are foreseen in the future but community capacity remains low and methods are still being developed. A harvesting plan was then prepared by the CbPF members based on a 100 percent pre-harvest inventory (PHI) carried out in a 60-hectare test coupe.

Results

After analysing the time required for the different tests of the general forest inventory and comparing the accuracy of their results it was revealed that:

- The K-tree plot design is too complicated for use by local communities but the standard rectangular plots advocated by the community forestry guidelines are also too time-consuming. For the latter, a team of eight to ten people can complete one rectangular plot of 50 x 100 metres in a day; one plot being the requirement to survey 16.6 hectares of forest. Considerable time is required just to set up the precise boundaries of a plot. In CbPF Keo Seima, there are 6 475 hectares of evergreen forest; the FA wants 380 plots to develop the CF-MP covering the full area and communities are not expected to be able to do such extensive work;
- The timber equations presently being used by the FA to estimate standing volume from DBH and commercial height are too general and need improvement to increase accuracy. Problems are evident particularly for trees with irregular shapes and large buttresses like *Lagerstroemia* spp. (the main species in the CbPF), as the FA equations resulted in underestimated computations for volume; and
- Building DBH relationships was less time-consuming than estimating the height of every tree owing to more comparable accuracy.

Lessons learned

The PHI was extremely time- and money-consuming: 13 person days are required to survey 1 hectare at a cost of US\$120 per hectare (including daily subsistence allowances to the government officers supervising the work). Most of the time was spent in laying out inventory strips.

The Cambodian Forestry Law does not allow the processing of timber on the felling ground, thus the CbPF should have moved round logs for 1-2 kilometres to the second landing and processing site using heavy machinery such as tractors and trucks. This requirement is needed from the FA to monitor timber flow and avoid illegal logging. The communities do not yet have the capacity and the financial resources to use such complicated systems. In the contexts of traditional harvesting methodologies and external contractors, the production costs for square logs delivered to Phnom Penh would have been very high, estimated at around US\$214 per cubic metre. Another value is US\$38 per cubic metre for forest concessions in Malaysia, with consideration of the production cost of round logs delivered to the sawmill (Fisher et al.2011).¹

Both the silvicultural requirements and the growth rate of the species present in the CbPF area are not well known. Various silvicultural alternatives were considered and an attempt was made to estimate the growth rate but without definitive results. Without this

1. Fisher, B., Edwards, D.P., Larsen, T.H., Ansell, F.A., Hsu, W.W., Roberts, C.S. and Wilcove, D.S., 2011, Cost-effective conservation: calculating biodiversity and logging trade-offs in Southeast Asia. *Conservation Letters*, Vol. 4, pp. 443-450.

information, the sustainability of a management system based on selective harvesting within a 30-year cycle is still unverified.

The payment of royalties is based on the round logs which reach the second landing. For the main species present in the CbPF, *Lagerstroemia*, the fee is US\$82 per cubic metre. As there will be more timber waste before the final products can be produced, the estimated total sum is around US\$126 per cubic metre or 30 percent of the market price (around US\$430 per cubic metre).

An estimation of costs and benefits is given in the table below. It is essential to test all the steps to verify this assessment on the ground, particularly regarding production costs. An improved scenario is presented where CbPF will eventually reach a similar capacity to forest concessions and royalties are waived.

Costs/ prices for 1 m ³	PHI costs	Production costs	Adminis- tration	Royalties	Market price	Profit
Baseline data	US\$40	US\$214	US\$26	US\$126	US\$427	US\$21
Source/ comments	Project reports	Assessment with local timber operators. Squared logs (using Alaskan chainsaw mills) delivered to Phnom Penh	Estimate figure, 10% of PHI & production costs	Cambodian Forestry Laws, based on round logs	Interviews with timber operators	
Improved scenario	US\$2	US\$120	US\$12	-	US\$427	US\$293
Source/ comments	According to forest conces-sions in Malaysia (Fisher et al. 2011), increased for the production of squared logs delivered to Phnom Penh		As above	Waived, as allowed for CFs	As above	



After submitting the complete harvesting plan in accordance with all requested compliances, the trial harvest received neither approval nor clear rejection. What could have been a major source of information to understand the feasibility of community-run timber operations never happened and the above-mentioned issues are still open or unproven.

CbPF Toul Kros is still being developed and it has not yet yielded technical lessons learned. Still, comparing it with the development of CbPF Keo Seima, there were concerns about: a) the long-term sustainability of harvesting operations (giving the communities the management of large, well-stocked forests is necessary to ensure a long harvesting cycle, although not sufficient by itself to make the project successful) and b) the difficulties of applying the same timber flow procedures as described.

Recommendations

New technical procedures should be tested for the inventory needed for CF-MP preparation such as: introduction of the DBH to height relationship method and testing of smaller rectangular plots or of fixed circular plots in lieu of K-tree plots which may be too complicated for local communities.

CbPF should be established in a large area where harvesting is permitted so there will be no conflicts between conservation and production objectives. CF-MP preparation should be allowed for small portions of the area in accordance with where harvesting will take place next. The system in use for forest concessions could be considered – it includes a low intensity inventory at the general level to be used for broader 15-year-long planning and a more intense inventory only in the forest area that will be the target of activities within the next five years.

Timber volume estimation should be improved with the preparation of species-specific equations at the national or local level. With the large extent of legally approved deforestation activities, the FA could use the trees removed as sources of data.

Solutions to improve the PHI are more difficult to identify because the main problem was how to mark straight lines – constrained by the impenetrability of the understorey. The use of better tools or at least decreasing the amount of data to be collected can improve efficiency but this awaits verification. More discussions with the FA are necessary to share ideas and research new methods.

Simplified timber flow procedures should be tested alongside those presently allowed by the FA to identify technical problems and solutions. Particular attention should be focused on alternative harvesting technologies that must be sustainable and locally accepted and adapted. Sustainability implies environmental and social concerns. Technology introduced to a system to improve efficiency should be locally available or can be produced locally.

Royalties should be waived for all community forest products even if these are used for commercial reasons, considering that the income derived from operations would be mostly used for the improvement of the communities' socio-economic conditions and only a minor part would be redistributed directly to the members.

Silviculture requirements of Cambodian tree species must be studied by relevant stakeholders to serve as the fundamental basis for the implementation of sustainable forestry management in conjunction with better studies on annual growth rate in terms of volume.





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