



Training Workshop on Community Carbon Accounting (CCA), Seima, Mondulkiri, Cambodia

17 - 21 February 2011: Workshop Report

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The main objective of the Training Workshop on Community Carbon Accounting was to develop methods that enable local communities to estimate and measure carbon stocks during community forest management activities. It was decided that the training workshop would be conducted in the Pilot Community-based Production Forestry (CBPF) area, part of the buffer zone within the broader Seima Protection Forest and Biodiversity Conservation Area (SPFBCA). It was thought that carbon monitoring could be included in the inventory requirements for the CBPF area¹; hence, in addition to the main workshop objective, it was expected that the workshop would contribute to better understanding of forest management on carbon stocks within the CBPF area, and thus contribute to better management of this area.

1. CBPF work prior to the workshop

Preparatory work with Community Forestry Office

During December 2010, meetings were held with members of the Community Forestry Office (CFO) and RECOFTC's Cambodia program to make a *provisional 2011 workplan*. The workplan has been accepted informally by CFO, but the key elements which differ from existing Community Forestry guidelines will have to be formally approved by higher levels of the FA or MAFF as the project proceeds.

Community awareness campaign on REDD

REDD awareness meetings were held in the three target communities following a methodology developed by WCS and FA. The villages were visited on the following dates: Pu Char - 27-28/12; Ou Char 28-29/12; Pu Kong 30-31/12. This was part of a broader consultation with 15 communities all around the Seima Protection Forest Core Area.

Cantonment launch meeting

A meeting was held with the Mondulkiri Cantonment on 12 January. Minutes are available in Khmer with an English summary. The Cantonment is crucial to the CBPF progress since they must give approval at several intermediate stages, and after intensive work with them over recent months they have now become supportive of the project.

¹ The Wildlife Conservation Society (WCS) has been implementing the Pilot Community-based Production Forestry model in the SPFBCA buffer zone since 2007.

Community launch meeting

A full day meeting was held in Ou Chrar village on 14 January, with 40 participants (11 women), with about ten people each the committees of the three Forest Management Groups and key local officials such as the Commune Chief. The first part of the meeting presented the outline workplan for the year. The second part of the meeting focused on identifying two trial blocks (one deciduous, one evergreen/semi-evergreen), which will be used as training areas for all the techniques including inventory, harvesting and silviculture.

Finalisation of training forest areas

The boundaries of the proposed areas were inspected by motorbike and on foot by the WCS team, and a demarcation team (three people from each village) then walked the entire boundary of each on foot, recording GPS points and placing wooden signboards at key points.

2. Workshop summary

a. Aim

The Training Workshop on CCA was organized by RECOFTC, WCS Cambodia, IGES and the Forestry Administration. The aim of the workshop was to provide training to community members who would later act as trainers on CCA, as well as to test sample plot designs and measurement techniques.

b. Agenda

Day 1: 18 Jan

Course preparation by trainers, review of Community Forestry Guidelines etc

Day 2 : 19 Jan

- **Morning session** with classroom training on general principles of survey methodology according to FA requirements
- **Afternoon:** technical training on plot lay out compass measurements and tree heights

Observation: Trainees seem to have captured the training message quite easily as shown in the subsequent field work

Day 2:

- **Full day training in Dense Evergreen Forest**, under-storey with mean shrub density and limited visibility

Observations

- Method to lay out 50 x 100 m plots appeared to be a **major problem**, a survey team of 6 persons needed just over 3 hours to lay out the plot boundaries with a total length of 420 m. Cleaning the plot boundary lines was the most time consuming part of the work.

- Training on diameter measurements including demonstration of a method to determine diameters of trees at 4 m height for trees with buttress .
- Diameter measurements will take about 3 hours with a 4 person team
- Measurements of all heights will need an additional 3 to 4 hours with a 2 person team
- It appears that a 6 person team will need a 8 hour working day to finish one plot 100 x 50 m in this forest type. Most likely it would take even another 4 hours if visibility drops further.

Parallel tests applying the 6 tree method showed that borderless plots may take about 20 to 25 min per plot with average diameters of around 35 to 40 m resulting in plot sizes of around 1000 to 1300 m².

Day 3:

- **5 hour training exercise** in Dry Dipterocarp forest, with excellent visibility

Observations

- Plot lay out time is reduced to about 1.5 hours for the 50 x 100 m plot
- Diameter and height measurements will take about 3 hours with a 6 person team for the full plot

Parallel tests with the 6 tree method including an additional 6 trees for trees from 10 to 30 cm dbh showed that such plots can be done within 15 minutes for dbh and 15 minutes for height measurements. The average diameter of plots will be around 28 to 30 m resulting in plot sizes of around 700 to 750 m²

Afternoon session: theoretical background of the 6 tree method

c. Trainers

The training was led by Thong Sokunthea from CFO, who is a specialist in the techniques mandated under the CF Guidelines. Mr Bernhard Mohns (RECOFTC Bangkok Forestry Specialist) provided inputs on alternative inventory techniques and the WCS/FA team provided inputs on supplementary techniques for measuring carbon pools not covered by the CF Guidelines. Hyakamura Kimihiko (Policy Researcher, Natural Resource Management Group, IGES) and Kestutis Dedinas ('KC', an independent consultant) attended as observers.

d. Trainees

- Ms. Leng Soukan (DPA)
- Mr. Sok Kosal (DPA)
- Ms. Am Samath (DPA)
- Mr. Long Lorn (DPA)
- Mr. Lun Panha (FA Triage)
- Mr. Chhoun Sereywath (FA Division)
- Mr. Chum Sithay (FA Cantonment)
- Mr. Pet Phaktra (FA[CFO]/WCS)
- Mr. Em Tray (FA[CFO]/WCS)

Mr. Hing Mesa (FA/WCS)

Mr. Peak Monour (FA[CFO])

The trainees were from the WCS/FA team on site (3), local branches of FA (3), CFO (1) and the Ratanakiri branch of the local NGO DPA (4).

Outcomes

- The standard techniques under the guidelines were mastered by the participants, in particular the FA and WCS staff who had prior experience of similar methods. These include measurements of standing live trees, saplings, bamboo, standing dead wood and lying dead wood, which together account for almost all above ground biomass.

- It was also felt it would be feasible to use stump measurements to reconstruct past standing volumes in the forest.

A technical report on this aspect was written by Bernhard Mohns (Annex 3), and a set of field protocols will be produced by the WCS/FA field team. In summary,

- The basic techniques are feasible for measuring forest carbon stocks, but there are serious concerns about the efficiency of the legally required sampling framework. It has excessively high time and financial cost relative to the data obtained and is unlikely to be economically viable across the whole 10,000 ha+ of the CBPF forest area. It is **strongly recommended that more efficient alternative methods be permitted for the CBPF project**, based on standard techniques in use outside Cambodia.

- The two key concerns are:

- plot dimensions - the mandated sizes are very large in relation to tree density, so a part of the time on each plot is spent without adding significant new information. Furthermore, a single plot in semi-evergreen forest covers 0.5 ha (50 x 100 m) and takes 2-3 hours to mark with rope and compass before measurements begin. Even the mandated 50 x 50 m plot in deciduous forest takes approximately an hour to mark with rope and compass. This greatly limits the number of plots that can be measured in a day. A more efficient alternative would be to aim for the same sampling fraction (3% in evergreen/semi evergreen, 1% in deciduous) but to use **variable radius circular n-tree plots** which require no demarcation (so are quicker) and deliver much higher statistical precision for the same sample fraction. It is suggested to use a 6 or 7 tree count, to be assessed through further field studies. We tested several plots in deciduous forest and found 6 trees appeared to be enough to stabilise estimates of the mean DBH and basal area in either the 10-29 cm or 30+ cm dbh classes, and may even be sufficient for the two classes together.

- tree height measurements - these are highly time consuming and of perhaps questionable accuracy, especially in denser forest and with less experienced observers, fatigued or bored after taking many such measurements. A more efficient and accurate alternative would be to develop a site-specific tree height:DBH equation separate from the plot work, using a limited subsample of trees (e.g. 50-100 per species group). This would allow plot teams to measure only DBH, and estimate height mathematically after the fieldwork.

- Some suggestions were made for sourcing equipment that would improve the quality of the main inventory phase - notably improved compasses, large callipers for DBH,

additional DBH tapes, additional clinometers and, if possible, short-distance range-finders. Most of this has since been obtained.