REDD Methodological Module

"Estimation of carbon stocks in the litter carbon pool"

Version 1.0 – April 2009

I. SCOPE, APPLICABILITY AND PARAMETERS

Scope

This module allows for estimating carbon stocks in forest litter. Stocks are assumed to be stable prior to deforestation.

The estimation of emissions from litter due to deforestation is dealt with in the baseline modules.

Applicability

This module is applicable to all forest types and age classes with stable or increasing stocks in the with-project case.

Parameters

This methodology produces the following parameters:

Parameter	SI Unit	Description
$C_{LI,i,t=0}$	t CO_2-e ha^{-1}	Initial carbon stock in litter in strata i

II. PROCEDURES

Estimation of initial carbon stocks in litter

To estimate the mean carbon stock per unit area in litter for each stratum:

$$C_{LIi,t} = \frac{10}{A_{sp,i}} * \sum_{sp=1}^{P_i} C_{LIsp,i,t} * CF * \frac{44}{12}$$
(1)

Where:

$C_{LI,i,t}$ Mean carbon stock in litter for stratum i, at time t; t CO_2-e ha^{-1}

$C_{LI,sp,i,t}$	Biomass of litter in sample plot sp in stratum i at time t; kg d.m.
CF	Carbon fraction; t C t^{-1} d.m.
Asp_i	Total area of all sample plots in stratum i; m^{-2}
sp	$1, 2, 3 \ldots P_i$ sample plots in stratum i
i	$1, 2, 3 \ldots M$ strata
t	$1, 2, 3 \ldots t$ years elapsed since the start of the project activity
$44/12$	Ratio of molecular weight of CO_2 to carbon, t CO_2-e t C^{-1}

Baseline

Post-deforestation stocks in the baseline case are treated as a constant value reflecting the ultimate stocks of the designated replacement land use. Where the land use is part of a cycle, the time-weighted average of the carbon stocks can be used. Proxy measurement sites must represent the land use, site conditions and management practices identified as the most likely conversion use in the baseline, and documentation must be provided to the satisfaction of the verifier establishing that the lands are representative.

Proxy sites should only differ from the project area with respect to landuse. All other factors (soil type, climate, hydrology, etc.) should be kept constant in as much as possible. Sites in close proximity to each other often meet this requirement.

III. DATA AND PARAMETERS __NOT__ MONITORED (DEFAULT OR POSSIBLY MEASURED ONE TIME)

Data / parameter:	*CF*
Data unit:	t C t^{-1} d.m.
Used in equations:	1
Description:	Carbon fraction of dry matter
Source of data:	Default value 0.47 t C t^{-1} d.m. can be used, or species specific values from the literature (e.g. IPCC 2006 INV GLs AFOLU Chapter 4 Table 4.3).
Measurement procedures (if any):	
Any comment:	

Data / parameter:	*Asp*
Data unit:	m^{-2}
Used in equations:	1
Description:	Total area of all sample plots
Source of data:	Recording and archiving of number and size of sample plots
Measurement procedures (if any):	
Monitoring frequency:	
QA/QC procedures:	
Any comment:	

Data / parameter:	$C_{LI,sp,i,t}$
Data unit:	kg d.m.
Used in equations:	1
Description:	Biomass of litter in sample plot *sp* in stratum *i* at time *t*
Source of data:	Field sampling and laboratory determination
Measurement procedures (if any):	Litter (dead organic surface material < 10 cm diameter) is collected from within fixed area sampling frames, harvested at ground level and dried at 70ºC to a constant weight to determine dry weight biomass. In cases where sample bulk is excessive, the green weight of the total sample and

	of a representative sub-sample are recorded in the field and the sub-sample taken for moisture content determination in the lab (i.e. oven dry weight:green weight ratio), from which the dry weight biomass of the total green weight recorded in the field can be estimated. Further guidance is provided in the IPCC 2003 GPG-LULUCF.
Monitoring frequency:	
QA/QC procedures:	
Any comment:	