



T-VER-P-TOOL-01-11  
Calculation of Long-Term Average GHG benefit

Version 01

## 1. Introduction

This document is a tool for calculating long-term carbon removal by sink for forest projects where harvesting is taking place. Carbon losses from harvesting will be included in the quantity of greenhouse gas emissions of the project and must be used to calculate the long-term average GHG benefit. Therefore, the maximum amount of credits that can be applied to the project must not exceed the long-term average GHG benefit of the project.

## 2. Relevant definitions

Details are shown in Annex 1

## 3. Characteristics of relevant activities and conditions

Project activities involve harvesting with management objectives to generate income from harvesting. Therefore, the long-term average GHG emissions benefits of a project depend on the difference in carbon removal between the project implementation and the baseline scenario. This comes from estimated selected carbon pool and N<sub>2</sub>O, CH<sub>4</sub> and CO<sub>2</sub> emissions from fossils and project leakage.

## 4. Calculation

The long-term average GHG emissions benefit is calculated using the following procedure:

- 1) Determine the period for which long-term average GHG emission benefits will be calculated with the following remarks:
  - Even-aged stand period for which long-term GHG emissions benefits are calculated must include at least one trimming cycle of all milling cycles including the last cut.

For example, if the project credit period is 40 years, while the tree is cut every 12 years, 4 cuts in total, the long-term average GHG emissions benefit will be defined for a period of 48 years.
  - The forest management improvement project has a selective cutting model. The period for which the long-term average is calculated is the project credit period.
- 2) Determine the project's total projected GHG emissions benefit for each year during the specified period. In each year, the total greenhouse gas emission benefit is the

- greenhouse gas reduction or emissions projected from project implementation minus the amount of greenhouse gas emissions projected in the baseline.
- 3) Sum up all GHG emissions benefits for each year over the specified period.
  - 4) Calculate the average greenhouse gas emission benefits of the project over a specified period.
  - 5) Calculate long-term average greenhouse gas emission benefits. using the following equation:

$$GHG_{benefit} = \frac{\sum_{t=0}^n PE_t - BE_t}{n}$$

Where:

$GHG_{benefit}$  = Average Long-Term Greenhouse Gas Emissions Benefits

$PE_t$  = Estimate GHG emissions reduction or removal from project implementation in year t (equivalent to tons of carbon dioxide)

*\* Reducing greenhouse gas emissions from project implementation requires consideration of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub> emissions and project leakage.*

$BE_t$  = Estimate GHG removal from the baseline in year t (equivalent to tons of carbon dioxide)

$t$  = Year of monitoring

$n$  = Number of project's years

- 6) Projects can apply for certification of carbon credits at each verification to long-term average GHG emissions benefits. When the project requests certification of carbon credits for all greenhouse gas emission benefits, projects will not be able to claim carbon credits exceeding the specified value. The long-term average GHG emissions benefit is calculated whenever it is verified. This means that long-term average greenhouse gas emissions benefits may change over time depending on verification data. Therefore, it is information that must be tracked continuously for the closest credit calculation.

However, buffer credits are deducted only when carbon credits are issued. Reserve credits are only deducted based on the amount of carbon sequestration change. Therefore, the reserve credit is based on changes in long-term average carbon sequestration. using the following equation:

$$LC_{AVE} = \frac{\sum_{t=0}^n C_{PROJ,t} - C_{BSL,t}}{n}$$

Where:

$LC_{AVE}$	=	Change in long-term average carbon stock
$C_{PROJ,t}$	=	Sum of carbon stock in the project in year t (tons of carbon dioxide equivalent )
$C_{BSL,t}$	=	Sum of carbon stock of in the baseline in year t (tons of carbon dioxide equivalent)
$t$	=	Year of monitoring
$n$	=	Number of project's years

## 5. Reference

- 1) The American Carbon Registry. 2018. Improved Forest Management Methodology for quantifying GHG removals and emission reduction through increased forest carbon sequestration on Non-Federal U.S. forestlands. Version 1.3
- 2) VERRA. 2022. Verified Carbon Standard: A VERRA Standard.
- 3) VCS VM0003 Methodology for Improved Forest Management Through Extension of Rotation Age (IFM ERA).
- 4) The Gold Standard for the Global Goals. 2021. 403\_V1.0\_0.8\_LUF\_AR-Methodology\_Rotation-Forestry-Projects-Tool.



Document information
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Version	Amendment	Entry into force	Description
01	--	1 March 2023	-