

VCS Module

VMD0045

Methods for monitoring greenhouse gas emissions and removals in ARR project activities on peat and mineral soil (M-ARR)

Version 1.0

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Sectoral Scope 14

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1 SOURCES

This module is one of numerous modules that constitute VCS methodology *VM0007 REDD+ Methodology Framework (REDD-MF)*.

This module uses the latest version of the following CDM tool and VCS modules:

- CDM methodology *AR-ACM0003 Afforestation and reforestation of lands except wetlands*
- *VMD0046 Methods for monitoring of soil carbon stock changes and greenhouse gas emissions and removals in peatland rewetting and conservation project activities (M-PEAT)*

2 SUMMARY DESCRIPTION OF THE MODULE

This module provides procedures for the monitoring of GHG emissions and removals under the project scenario of ARR project activities on peat and mineral soil.

3 DEFINITIONS

Definitions are set out in in VCS document *Program Definitions*, and REDD-MF. This module does not set out any further definitions.

4 APPLICABILITY CONDITIONS

This module is applicable under the following conditions:

- The applicability conditions provided in AR-ACM0003.¹
- Applicability conditions included in AR-ACM0003 and corresponding tools that exclude project activities on wetlands can be neglected for the purpose of their use in this module, as accounting procedures for the peat soil are provided in module BL-PEAT.

5 PROCEDURES

GHG emissions and removals under the ARR project scenario on mineral soils are estimated using the procedures provided in CDM methodology *AR-ACM0003 Afforestation and reforestation of lands except wetlands* and associated tools.

$$\Delta C_{WPS-ARR} = \sum_{t=1}^{t^*} (\Delta C_{ACTUAL,t,ACM0003}) \quad (1)$$

¹ In case there is a conflict between the CDM methodology requirements and the VCS rules, the VCS rules must be followed, as outlined in VCS AFOLU guidance document *Additional guidance for VCS Afforestation, Reforestation and Revegetation projects using CDM Afforestation/Reforestation Methodologies* available on the VCS website.

Where:

- $\Delta C_{WPS-ARR}$ Net GHG removals under the ARR project scenario up to time t^* (t CO₂e)
- $\Delta C_{ACTUAL, ACM0003}$ Actual net GHG removals by sinks, in year t (t CO₂e)
- t 1,2,3..... t^* time elapsed since project start (years)

ARR activities with a WRC component must estimate the net GHG emissions under the project scenario using:

- For the non-soil pools estimate using AR-ACM0003 and associated tools where the estimation of carbon stock changes in the soil components and below-ground biomass must not be included.
- For the soil pools estimate using procedures provided in module M-PEAT.

$$\Delta C_{WPS-ARR} = \sum_{t=1}^{t^*} \Delta C_{ACTUAL, ACM0003} + GHG_{WPS-WRC} \quad (2)$$

Where:

- $\Delta C_{WPS-ARR}$ Net GHG removal under the ARR project scenario up to time t^* (t CO₂e)
- $\Delta C_{ACTUAL, ACM0003}$ Actual net GHG removals by sinks, in year t (t CO₂e)
- $GHG_{WPS-WRC}$ Net GHG emissions in the WRC project scenario up to year t^* (t CO₂e)
- t 1,2,3..... t^* time elapsed since project start (years)

6 DATA AND PARAMETERS

6.1 Data and Parameters Available at Validation

Data / Parameter	$\Delta C_{ACTUAL, ACM0003}$
Data unit	t CO ₂ e
Description	Actual net GHG removals by sinks, in year t
Equations	1, 2
Source of data	<i>AR-ACM0003 Afforestation and reforestation of lands except wetlands</i>
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	AR-ACM0003 is approved by the UNFCCC's CDM
Purpose of Data	Calculation of project emissions

Comments	N/A
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Data / Parameter	$GHG_{WPS-WRC}$
Data unit	t CO ₂ e
Description	Net GHG emissions in the WRC project scenario up to year t^*
Equations	2
Source of data	Module M-PEAT
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See module M-PEAT
Purpose of Data	Calculation of project emissions
Comments	N/A

6.2 Data and Parameters Monitored

Data / Parameter:	$\Delta C_{ACTUAL, ACM0003}$
Data unit:	t CO ₂ e
Description:	Actual net GHG removals by sinks, in year t
Equations	1, 2
Source of data:	A/R CDM consolidated methodology AR-ACM0003 (Afforestation and reforestation of lands except wetlands)
Description of measurement methods and procedures to be applied:	See AR-ACM0003
Frequency of monitoring/recording:	See AR-ACM0003
QA/QC procedures to be applied:	See AR-ACM0003
Purpose of data:	Calculation of project emissions
Calculation method:	See AR-ACM0003
Comments:	N/A

Data / Parameter:	$GHG_{WPS-WRC}$
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Data unit:	t CO ₂ e
Description:	Net GHG emissions in the REDD project scenario up to year t^*
Equations	2
Source of data:	Module M-PEAT
Description of measurement methods and procedures to be applied:	See module M-PEAT
Frequency of monitoring/recording:	See module M-PEAT
QA/QC procedures to be applied:	See module M-PEAT
Purpose of data:	Calculation of project emissions
Calculation method:	See module M-PEAT
Comments:	N/A

7 REFERENCE

None.

DOCUMENT HISTORY

Version	Date	Comment
v1.0	9 March 2015	Initial version