

VCS Module

VMD0041

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Estimation of baseline carbon stock changes and greenhouse gas emissions in ARR project activities on peat and mineral soil (BL-ARR)

Version 1.0

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Sectoral Scope 14

Module developed by:



ERNST MORITZ ARNDT  
UNIVERSITÄT GREIFSWALD



Wissen  
lockt.  
Seit 1456



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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 versions of the following methodology and module:

- CDM methodology *AR-ACM0003 Afforestation and reforestation of lands except wetlands*, and associated tools.
- *VMD0042 Estimation of baseline soil carbon stock changes and greenhouse gas emissions in peatland rewetting and conservation project activities (BL-PEAT)*

## 2 SUMMARY DESCRIPTION OF THE MODULE

This module provides procedures for the estimation of net GHG removals under the baseline scenario ( $\Delta C_{BSL-ARR}$ ) in ARR project activities.

## 3 DEFINITIONS

Definitions are set out in in VCS document *Program Definitions*, and methodology *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 set out in *AR-ACM0003 Afforestation and reforestation of lands except wetlands* must be met.<sup>1</sup>
- Applicability conditions included in *AR-ACM0003 Afforestation and reforestation of lands except wetlands* and corresponding tools that exclude project activities on wetlands can be disregarded for the purpose of their use in this module, as accounting procedures for the peat soil are provided in module BL-PEAT.
- Where the ARR project activity is implemented on peatland, the peatland must be degraded in the baseline scenario as identified by the presence of drainage infrastructure (ditches, canals) and associated lowered water tables below the surface. In the case of forested peatland, degradation may be identified by the removal or degradation of the tree cover before the project start date.

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

This module is not applicable under the following condition:

- Project scenarios involving the harvesting of trees are excluded from this module. Therefore, procedures for the estimation of long-term average carbon stocks are not required.

## 5 PROCEDURES

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

$\Delta C_{BSL-ARR}$  (net GHG removals under the ARR baseline scenario up to time  $t^*$ ; t CO<sub>2</sub>e) is equal to the summation from  $t=1$  to  $t^*$  of  $\Delta C_{BSL,t}$  (baseline net GHG removals by sinks in year  $t$ ; t CO<sub>2</sub>e) in *AR-ACM0003*, as follows:

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

Where:

$\Delta C_{BSL-ARR}$	Net GHG removals under the ARR baseline scenario up to time $t^*$ (t CO <sub>2</sub> e)
$\Delta C_{BSL,t,ACM0003}$	Baseline net GHG removals by sinks in year $t$ (from AR-ACM0003) (t CO <sub>2</sub> e)
$t$	1,2,3..... $t^*$ time since project start (years)

ARR project activities on peatland must develop a baseline considering peat as the soil carbon pool and incorporating the resulting emission estimates to the calculation of emissions and carbon stock changes of the ARR project activity. Net GHG emissions under the ARR baseline scenario on peat soils must be estimated using the following:

- Non-soil pools (such as aboveground biomass and wood products) must be determined using AR-ACM0003. The estimation of carbon stock changes in the soil components and below-ground biomass must not be included.
- Soil pools must be determined using module BL-PEAT.

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

Where:

$\Delta C_{BSL-ARR}$	Net GHG removal under the ARR baseline scenario up to time $t^*$ (t CO <sub>2</sub> e)
$\Delta C_{BSL,t,ACM0003}$	Baseline net GHG removals by sinks in year $t$ (t CO <sub>2</sub> e)
$GHG_{BSL-WRC}$	Net GHG emissions in the WRC baseline scenario up to year $t^*$ (t CO <sub>2</sub> -e)

$t$  1,2,3..... $t^*$  time since project start (years)

Procedures for the estimation of uncertainty for ARR project activities are provided in AR-ACM0003.

## 6 DATA AND PARAMETERS

### 6.1 Data and Parameters Available at Validation

Data / Parameter	$\Delta C_{BSL, ACM0003}$
Data unit	t CO <sub>2</sub> e
Description	Baseline net GHG removals by sinks in year $t$
Equations	1, 2
Source of data	AR-ACM0003
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 baseline emissions
Comments	N/A

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

### 6.2 Data and Parameters Monitored

None.

## **7 REFERENCES**

None.

## DOCUMENT HISTORY

Version	Date	Comment
v1.0	9 March 2015	Initial version