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
9 March 2015
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 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.

\[
AC_{WPS-ARR} = \sum_{i=1}^{n} \left\{ AC_{ACTUAL}/AR-ACM0003 \right\}
\]

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:

\[ \Delta C_{\text{WPS, ARR}} \]  
Net GHG removals under the ARR project scenario up to time \( t^* (t \text{ CO}_2\text{e}) \)

\[ \Delta C_{\text{ACTUAL,}\text{ACM0003}} \]  
Actual net GHG removals by sinks, in year \( t (t \text{ CO}_2\text{e}) \)

\( t \)  
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.

\[
\Delta C_{\text{WPS, ARR}} = \sum_{t=1}^{t^*} \Delta C_{\text{ACTUAL, ACM0003}} + GHG_{\text{WPS, WRC}} 
\]

(2)

Where:

\[ \Delta C_{\text{WPS, ARR}} \]  
Net GHG removal under the ARR project scenario up to time \( t^* (t \text{ CO}_2\text{e}) \)

\[ \Delta C_{\text{ACTUAL, ACM0003}} \]  
Actual net GHG removals by sinks, in year \( t (t \text{ CO}_2\text{e}) \)

\[ GHG_{\text{WPS, WRC}} \]  
Net GHG emissions in the WRC project scenario up to year \( t^* (t \text{ CO}_2\text{e}) \)

\( t \)  
1,2,3…..\( t^* \) time elapsed since project start (years)

6 DATA AND PARAMETERS

6.1 Data and Parameters Available at Validation

<table>
<thead>
<tr>
<th>Data / Parameter</th>
<th>[ \Delta C_{\text{ACTUAL, ACM0003}} ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data unit</td>
<td>( t \text{ CO}_2\text{e} )</td>
</tr>
<tr>
<td>Description</td>
<td>Actual net GHG removals by sinks, in year ( t )</td>
</tr>
<tr>
<td>Equations</td>
<td>1, 2</td>
</tr>
<tr>
<td>Source of data</td>
<td>AR-ACM0003 Afforestation and reforestation of lands except wetlands</td>
</tr>
<tr>
<td>Value applied</td>
<td>N/A</td>
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<tr>
<td>Justification of choice of data or description of measurement methods and procedures applied</td>
<td>AR-ACM0003 is approved by the UNFCCC’s CDM</td>
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<td>Purpose of Data</td>
<td>Calculation of project emissions</td>
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### 6.2 Data and Parameters Monitored

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<thead>
<tr>
<th>Data / Parameter</th>
<th>Description</th>
<th>Equations</th>
<th>Source of data</th>
<th>Description of measurement methods and procedures to be applied</th>
<th>Frequency of monitoring/recording</th>
<th>QA/QC procedures to be applied</th>
<th>Purpose of data</th>
<th>Calculation method</th>
<th>Comments</th>
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</thead>
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<td>Module M-PEAT</td>
<td>See module M-PEAT</td>
<td>See AR-ACM0003</td>
<td>See AR-ACM0003</td>
<td>Calculation of project emissions</td>
<td>See AR-ACM0003</td>
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<td>$\Lambda C_{ACTUAL,WRS}$</td>
<td>Actual net GHG removals by sinks, in year $t$</td>
<td>1, 2</td>
<td>A/R CDM consolidated methodology AR-ACM0003 (Afforestation and reforestation of lands except wetlands)</td>
<td>See AR-ACM0003</td>
<td>See AR-ACM0003</td>
<td>See AR-ACM0003</td>
<td>Calculation of project emissions</td>
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Data unit: t CO$_2$e
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<th>Data unit:</th>
<th>t CO₂e</th>
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<td>Equations</td>
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<tr>
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### 7 REFERENCE

None.
DOCUMENT HISTORY

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<td>9 March 2015</td>
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